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Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance

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1 INTRODUCTION

1.1 Background

- 1.1.1 In 2007, the Chief Executive, in his Policy Address, announced the development at Lok Ma Chau Loop (the Loop) as one of the ten major infrastructure projects for economic growth. As a joint project of the Hong Kong Special Administrative Region (HKSAR) Government and Shenzhen Municipal Government, the Loop's development shall meet the future development needs of both cities and consolidate the strategic position of Hong Kong and Shenzhen in the Pan-Pearl River Delta region.
- 1.1.2 The Development of the Lok Ma Chau Loop (hereafter called "the Project") is classified as a Designated Project (DP) under the Environmental Impact Assessment Ordinance (EIAO). An Environmental Impact Assessment (EIA) Report was therefore conducted to assessing the environmental impacts including land contamination and the EIA Report was approved with conditions on 25 October 2013 by the Authority of EIAO. An Environmental Permit (EP) with a number EP-477/2013 held by CEDD was granted on 22 November 2013. An Environmental Team (ET) headed by an ET Leader and an Independent Environmental Checker (IEC) were appointed pursuant to Conditions 2.1 and 2.2 of the EP, and mitigation of land contamination implication to the Project shall be carried out in accordance with Conditions 2.15 to 2.17 of the EP.
- 1.1.3 Three reports related to land contamination were completed and appended to the approved EIA Report:
 - 1. Contamination Assessment Plan (CAP) describing the methodology of Site Investigation and soil/groundwater test in accordance with the Risk-Based Remediation Goals (RBRGs) of EPD.
 - 2. A combined Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) summarising the site investigation, laboratory test results, interpretation of the test results and recommendation of land remediation.
 - 3. Supplementary Contamination Assessment Report (SCAR) and Remediation Action Plan (RAP) updating the estimation of the quantity of contaminated soil based on the results of stage 2 site investigation.
- 1.1.4 In accordance with the CAR, Arsenic levels of the soil samples taken from five boreholes were found to have exceeded the relevant RBRGs limits and the report concluded that five zones, namely LD-001, LD-002, LD-003, LD-004 and LD-005 as shown on *Figure 1.1*, were contaminated by Arsenic. It was recommended in the SCAR and the RAP that the Arsenic-contaminated soil with a total amount of approximately 57,444m³ should be treated by cement solidification/stabilisation, i.e. excavate the contamination soil from underground and mix with proper ratio of cement, for on-site backfilling within the Loop.
- 1.1.5 Contract No. YL/2017/03: Development of Lok Ma Chau Loop Land Decontamination and Advance Engineering Works (the Contract) was awarded to Sang Hing Kuly Joint Venture (SKJV) in June 2018. Black & Veatch Hong Kong Limited (B&V) is the consultant of Agreement No. CE 5/2014 (CE) Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works Design and Construction and *Project Manager/Supervisor* of the Contract. SMEC Asia Ltd (SMEC) has been engaged by SKJV as the Land Contamination Specialist (LCS) for the Contract to provide advice and prepare this interim Remediation Report (RR).
- 1.1.6 A Re-appraisal Report enclosed in B&V's letter (B&V's ref.: 184794-0481) recommending implementation of all land remediation works as recommended in the aforementioned CAR/RAP was submitted to EPD on 28 November 2018 in accordance with Condition 2.15 of the EP. EPD confirmed no further comment on the Re-appraisal Report on 8 April 2019 (EPD's ref.: () in EP2/G/S3/152 Pt.4).

- 1.1.7 As such, all recommendations of the CAR/RAP remain unchanged and shall be implemented. A Remediation Report (RR) providing details on the remediation works being carried out, types and volume of contaminated soil, standards and levels of treatment, and locations of all disposal sites (including record of disposal) shall be submitted to the EIAO Authority no later than one month after the completion of the remediation works pursuant to Condition 2.16 of EP-477/2013. As required in the EP, the RR shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the EIA Report prior to being submitted to the EIAO Authority.
- 1.1.8 The RAP stipulated that no construction work at the identified contaminated areas shall be carried out prior to the RR being approved by the EIAO Authority. In order to allow carrying out of construction work at LD-002 after remediation of the contaminated soil in this area, prior to completion of remediation at the remaining contaminated areas, separate RR for each of the contaminated areas LD-001 to LD-005 will be prepared and submitted to the EIAO Authority for approval separately in accordance with Condition 2.16 of EP-477/2013. The status of RR of each contaminated areas is summarised in *Table 1-1*.

Table 1-1: Summary of Latest Status of RRs

CONTAMINATED AREAS	STATUS OF RR
LD-001	Approved by EPD on 6 January 2020 (EPD's ref.: () in EP2/G/S3/152 Pt.5)
LD-002	Approved by EPD on 3 September 2020 (EPD's ref.: (3) in EP2/G/S3/152 Pt.7)
LD-003	Approved by EPD on 18 March 2020 (EPD's ref.: () in EP2/G/S3/152 Pt.6)
LD-004	Tentatively to be submitted to EPD by end of May 2021
LD-005	Tentatively to be submitted to EPD by end of September 2020

1.1.9 The remediation work was completed on 07 July 2020 upon the last testing result of treated soil was obtained. This interim RR for LD-002 is to record the results from closure assessment and solidification/stabilisation test for soil remediation works at LD-002, and the backfilling strategy of LD-002.

1.2 Objective

- 1.2.1 The objectives of this interim RR are to:
 - Delineate the contamination extent at LD-002 and ensure complete removal of contaminated soil for remediation.
 - Demonstrate that all contaminated soil excavated from LD-002 has been remediated by cement solidification/ stabilisation.
 - Indicate the temporary storage and permanent placement locations of treated soil for LD-002.

HOO HOK WAL LEGEND: LD-005 LOK MAU CHAU LOOP PROPOSED ECOLOGICAL AREA SHEN ZHEN PROPOSED GROUND TREATMENT WORKS AREA PROPOSED LAND DECONTAMINATION AREA SHENZHEN RIVER-SHENZHEN CATION PLAN

SCALE 41 1 : 50000
A3 1 : 100000 LD-001 LD-004 HA WAN LD-003 LOK MA CHAU STATION LOK MA CHAU LD-002 DEVELOPMENT OF LOK MA CHAU LODP: LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS PROJECT LAYOUT PLAN 184794/B&V/T/GL/001 A1 1 : 5000 土木工程拓展署
CEDD Civil Engineering and
Development Department SAM PO SHUE -Legend: LD-001 to LD-005 **Contaminated Sites**

Figure 1.1: Location of Five Contaminated Sites in Lok Ma Chau Loop

2 CLOSURE ASSESSMENT

2.1 Delineation of Contamination at LD-002

- 2.1.1 Method for delineation of contaminated soil in the five contamination zones was defined in Figure 6.1 of "Appendix A" of the SCAR. The total quantity of contaminated soil was estimated to be approximately 5,280m³ at LD-002 (also name as A-SG10 in the CAR) as summarised in Table 4.1 and Figure 4.1.3 of the SCAR. After the clean top soil was removed, the contaminated soil at the depth identified in approved SCAR was excavated for cement solidification/ stabilisation. Figure 4.1 of the SCAR is contained in *Appendix A* to indicate the location of each contamination zone and estimated quantities of contaminated material to be excavated for treatment in each contamination zone.
- 2.1.2 In order to confirm all contaminated soil had been excavated from LD-002, confirmatory samples were taken from sidewalls of the excavated pit at LD-002 with a lateral spacing of not more than 15m. Confirmatory samples were also collected at the bottom of excavated pit at LD-002 on grid spacing not larger than 15m x 15m (i.e. one sample per approximately every 225m²) as recommended in the RAP. Locations of confirmatory sampling at the excavation pit in LD-002 are provided in *Figure 2.1*.
- 2.1.3 With reference to the CAR/RAP, the ground level of investigation borehole for LD-002 was recorded at +5.14mPD and the Arsenic-contaminated soil for LD-002 was concluded to be between 4.0mbgl and 5.5mbgl. That means contaminated soil should be found at -0.36mPD to +1.14mPD based on the ground level at +5.14mPD. Confirmatory samples were therefore collected at -0.36mPD to ensure consistency with the CAR.
- 2.1.4 Confirmatory soil sampling was carried out at LD-002 from 8 to 15 May 2020. A total of 18 samples were collected from the pit base and 15 samples were collected at the sidewalls of excavation pit. A re-confirmatory soil sampling was carried out at 0.5m below the confirmatory sampling level, which was -0.86mPD, of LD-002 Area 6 on 22 June 2020 due to the exceedance of arsenic concentration in soil. Besides the aforementioned confirmatory soil samples, four duplicate soil samples (i.e. one for sidewall and three for pit base) and three equipment blank samples were also taken for QA/QC purpose. Soil samples were collected under supervision of LCS and delivered to ALS Technichem (HK) Pty Limited (ALS) for testing of Arsenic concentrations. ALS is a laboratory accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS).
- 2.1.5 Soil confirmatory and QA/QC sampling works, and laboratory analytical results are summarised in *Table 2-1*. Test reports are enclosed in *Appendix B*.
- To summarise, a total of 33 confirmatory soil samples (which did not include the samples of duplicate sample and equipment blank) were collected from LD-002 to analysis their Arsenic concentration. In accordance with the laboratory test results, the Arsenic concentrations of 32 confirmatory samples were found to be below 21.8 mg/kg at dry soil condition, which is the Risk Based Remediation Goal (RBRG) criterion for Rural Residential Use, except the confirmatory sample of LD-002 at Area 6. Thus, a re-confirmatory of the soil sample at LD-002 Area 6 was then collected and the laboratory test result shown that Arsenic concentration was below 21.8 mg/kg. The excavation depth for remediation in LD-002 Area 6 for re-confirmatory of the soil sample is -0.86 mPD to +1.14 mPD) and other areas in LD-002 are-0.36 mPD to +1.14 mPD. Based on the laboratory analysis results, it is confirmed that all contaminated soil as designated at LD-002 had been excavated.
- 2.1.7 The details of the contaminated soil at LD-002 excavated, treated and backfilled were summarised below:
 - Contaminated Soil Excavated: 5,509m³

- Treated Soils after cement solidification/stabilisation treatment: 6,446m³
- Treated Soil back-filled on site: 0m³
- Treated Soil temporary stockpiled to be back-filled on site: 6,446m³

Table 2-1: Summary of Confirmatory Sampling Results

				CONFIRMATORY	ANALYTICAL RESU					
CONTAMINATION ZONE	LOCATION OF SAMPLES	GRID NO.	SAMPLE ID	SAMPLING DEPTH (mPD)	Dry Soil Sample (mg/kg)	Water Sample (μg/L)	RBRG LEVEL (mg/kg)			
Confirmatory Soil Samples										
		1	TCLP-Area 1 Contaminated soil	-0.36	15		21.8			
		2	TCLP-Area 2 Contaminated soil	-0.36	16		21.8			
		3	TCLP-Area 3 Contaminated soil	-0.36	17		21.8			
		4	TCLP-Area 4 Contaminated soil	-0.36	16		21.8			
		5	TCLP-Area 5 Contaminated soil	-0.36	15	No water	21.8			
		6	TCLP-Area 6 Contaminated soil	-0.36	<u>22</u>		21.8			
		7	TCLP-Area 7 Contaminated soil	-0.36	17		21.8			
		8	TCLP-Area 8 Contaminated soil	-0.36	16		21.8			
LD-002 (ASG10 in		9	TCLP-Area 9 Contaminated soil	-0.36	15		21.8			
CAR)	Base	10	TCLP-Area 10 Contaminated soil	-0.36	17	encountered	21.8			
		11	TCLP-Area 11 Contaminated soil	-0.36	16		21.8			
		12	TCLP-Area 12 Contaminated soil	-0.36	15		21.8			
		13	TCLP-Area 13 Contaminated soil	-0.36	14		21.8			
		14	TCLP-Area 14 Contaminated soil	-0.36	14		21.8			
		15	TCLP-Area 15 Contaminated soil	-0.36	15		21.8			
		16	TCLP-Area 16 Contaminated soil	-0.36	15		21.8			
		17	TCLP-Area 17 Contaminated soil	-0.36	16		21.8			
		18	TCLP-Area 18 Contaminated soil	-0.36	14		21.8			

				CONFIRMATORY	ANALYTICAL RESU		
CONTAMINATION ZONE	LOCATION OF SAMPLES	GRID NO.	SAMPLE ID	SAMPLING DEPTH (mPD)	Dry Soil Sample (mg/kg)	Water Sample (μg/L)	RBRG LEVEL (mg/kg)
		H1	TCLP-LD002-H1 Contaminated soil	-0.36	16		21.8
		H2	TCLP-LD002-H2 Contaminated soil	-0.36	15		21.8
		Н3	TCLP-LD002-H3 Contaminated soil	-0.36	16		21.8
		H4	TCLP-LD002-H4 Contaminated soil	-0.36	15		21.8
		H5	TCLP-LD002-H5 Contaminated soil	-0.36	16		21.8
	Sidewall	Н6	TCLP-LD002-H6 Contaminated soil	-0.36	2		21.8
		H7	TCLP-LD002-H7 Contaminated soil	-0.36	4		21.8
LD-002 (ASG10 in CAR)		Н8	TCLP-LD002-H8 Contaminated soil	-0.36	3	No water encountered	21.8
,		Н9	TCLP-LD002-H9 Contaminated soil	-0.36	15		21.8
		H10	TCLP-LD002-H10 Contaminated soil	-0.36	15		21.8
		H11	TCLP-LD002-H11 Contaminated soil	-0.36	16		21.8
		H12	TCLP-LD002-H12 Contaminated soil	-0.36	16		21.8
		H13	TCLP-LD002-H13 Contaminated soil	-0.36	15		21.8
		H14	TCLP-LD002-H14 Contaminated soil	-0.36	15		21.8
		H15	TCLP-LD002-H15 Contaminated soil	-0.36	15		21.8
Re-Confirmatory S	oil Samples						
LD-002 (ASG10 in CAR)	Base	6	TCLP-Area 6 Contaminated soil (Retest carry out on 22/6/2020)	-0.86	2	No water encountered	21.8

				CONFIRMATORY	ANALYTICAL RESU		
CONTAMINATION ZONE	LOCATION OF SAMPLES	GRID NO.	SAMPLE ID	SAMPLING DEPTH (mPD)	Dry Soil Sample (mg/kg)	Water Sample (μg/L)	RBRG LEVEL (mg/kg)
QA/QC Samples							
		LD-002 Water	Equipment Blank	N/A	N/A	<1	N/A
	Equipment Blank	Sample for Equipment	Equipment Blank	N/A	N/A	<1	N/A
			Equipment Blank	N/A	N/A	<10	N/A
LD-002 (ASG10 in		10	TCLP-Area 10(1) Contaminated soil	-0.36	18		21.8
CAR)	Duplicate	16	TCLP-Area 16(1) Contaminated soil	-0.36	14		21.8
	from Base	6	TCLP-Area 6(1) Contaminated soil (Retest carry out on 22/6/2020)	-0.86	2	No water encountered	21.8
	Duplicate from Side Wall	H9(1)	TCLP-LD002-H9(1) Contaminated soil	-0.36	14		21.8

Note:

Bold and underlined letter indicates that Arsenic concentration in dry soil condition exceeded 21.8mg/kg which is the Risk Based Remediation criterion for Rural Residential Use.

Figure 2.1: Location of Confirmatory Sampling of LD-002

PIT BASE	COORI	DINATES	PIT	AREA	^			LD-00	2
			BASE	(m2)				Contaminant Soil	+1.14 to -0.36mPD
	EASTING	NORTHING	1	89.5			Pt	EASTING	NORTHING
	025020 244	044004044	2	199			H1	826078.775	841846.788
1	826039.211	841834.314	3	125	H13	H14	H2 H3	826089.719 826096.924	841836.582
2	826048.786	841842.544	4	222		9 H15	H4	826096.924	841823.567 841808.687
3	826060.117	841850.192	5	225		H1	H5	826090.906	841795.229
4	826044.484	841823.408	6	225			H6	826079.447	841785.758
5	826056.429	841832.48	7	187.5	H120 2	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	H7	826064.905	841782.849
6	826068.374	841841.553	8	225	4	6 15 H2	110	826050.852	841787.623
			9	225	H110		H9	826040.667	841798.341
6(1)	826067.392	841840.384	10	225	H110 5	$\langle \rangle$	H10	826036.516 826035.315	841812.712 841827.641
7	826042.396	841806.259	11	170		10/	H3 H12	826037.931	841842.296
8	826053.556	841811.463	12	225	4	0	H13		841852.747
9	826065.501	841820.535	13	225		9 14	H14	826062.935	841854.430
10	826077.447	841829.608	14	225	H100 C		H4 H15	826071.206	841851.336
11	826053.585	841790.843	15 16	216 178	\ ₀ \ 8,	13 18 18 18 18 18	9		
12	826062.629	841799.517	17	209	\ -		/		
13	826074.574	841808.59	18	124	H9 /	12 17			
14	826086.519	841817.662			110	/ \ / H	5		
15	826086.526	841835.412			8	√16			
16	826070.686	841788.909			H8	H6			
17	826083.559	841797.138]			H/			
18	826092.98	841807.484							
							LEGEN	D	
								_	
					1.5	000	O PIT BA	SE LOCATION FOR CONF	IRMATORY TEST
					LL	0-002	O HORIZ	ONTAL LOCATION FOR C	ONFIRMATORY TEST
1	PROJECT: DEVELOPMENT OF LOK MA CHAU LOOP: LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS							生興-豐利聯	常 營
YL/2017/03					S	ang Hing - Kuly Jo	int Venture		
DRAWING TI	DRAWING TITLE:					Dwg No :	Rev.	Drawn	Bv :
PRO	OPOSED CONFIR	RMATORY TESTIN	IG LOCA	TION FOR	HOTSPOT LD-002	LD-002-01 Design By:	Scale :	Date :	LEO
						Design by :	Scale :	Date :	

Source: provided by SKJV

3 SOIL REMEDIATION WORKS

3.1 Pilot Test

- 3.1.1 A pilot test to determine and confirm the appropriate soil and cement mixing ratio for achieving the treatment targets was conducted on 8 May 2019 with a contaminated soil: cement: sand ratio of 1:0.1:0.1 (or 10:1:1). Toxicity Characteristics Leaching Procedure (TCLP) test was conducted for the solidified soil sample. Unconfined Compressive Strength (UCS) of the cement-solidified soil sample was also tested to ensure compliance with the minimum requirement of 1MPa as recommended in the RAP.
- 3.1.2 The UCS results were found to be much higher than the criterion of 1MPa for the contaminated soil solidified using the aforementioned ratio. Therefore, an additional pilot test was conducted on 16 August 2019 to amend cement ratio from 10% to 7.5%.
- 3.1.3 The pilot test details and results are summarised in *Table 3-1*, and the submissions are enclosed in *Appendix C*.

	SOIL	CEMENT	SAND				
Pilot Test on 8 May 2019							
Quantity Used, kg	20	2	2				
Soil : Cement : Sand		10:1:1					
TCLP Test Result for Arsenic, mg/L		<0.1					
UCS, MPa		1.571					
Pilot Test on 16 August 2019							
Quantity Used, kg	20	1.5	2				
Soil : Cement : Sand	10:0.75:1						
TCLP Test Result for Arsenic, mg/L	<0.1 (Trial 1 and Trial 2)						
UCS, MPa							

Table 3-1: Cement Solidification/Stabilisation Pilot Test Details and Results

As shown in *Table 3-1*, the pilot test samples' TCLP test results for Arsenic were found to be below Limit of Reporting (LOR) of 0.1mg/L which complies with the treatment target of 5mg/L as recommended in Table 7.3 of the RAP. The UCS test results of the pilot test samples were found to be 1.571– 4.799MPa, which is above the minimum required UCS of 1MPa. Therefore, both the Soil: Cement: Sand ratios of 10:1:1 and 10:0.75:1 can be adopted for solidifying the contaminated soil.

3.2 Cement Solidification / Stabilisation

- 3.2.1 5,509m³ of Arsenic-contaminated soil was excavated from LD-002. All contaminated soil from LD-002 were transported to the designated mixing area within the Lok Ma Chau Loop for cement solidification / stabilisation as stipulated in the RAP, the mixing ratio of soil to cement to sand was 10:0.75:1 for Arsenic-contaminated soil from LD-002.
- 3.2.2 One set of TCLP test for Arsenic and UCS test were conducted for every 100m³ of the treated soil and each batch of treated soil was labelled as S1, S2, S3......etc. All TCLP test results for Arsenic were found to be below the treatment target of 5mg/L for Arsenic. All UCS test results were found to be above 1MPa, which fulfilled the UCS minimum requirement of 1MPa as recommended in the RAP.
- 3.2.3 The test results are summarised in *Table 3-3* and the laboratory reports are provided in *Appendix D*.

3.2.4 All treated soils were considered to be satisfactory for on-site backfilling in accordance with the approved RAP. 6,446m³ of treated soils were generated after treatment in which 6,446m³ were temporarily stored at site area inside the loop as shown in *Appendix E* and were scheduled to be backfilled in LD-005 around August 2020, after closure assessment confirms that all contaminated materials have been fully removed from LD-005. All the temporarily stored treated soils were lined with impermeable sheeting and bunded, and covered by impervious sheeting. The latest backfilling schedule is summarised in *Table 3-2*.

Table 3-2: Latest Backfilling Schedule

CONTAMINATED SITES	VOL. OF TREATED SOIL, m ³	TENTATIVE PERMANENT BACKFILL LOCATION	TENATIVE DATE FOR BACKFILL
LD-001	7,190	LD-004 [note 1]	After excavation of contaminated soil from LD-004
LD-002	6,446	LD-005	After excavation of contaminated soil from LD-005
LD-003	8,298	LD-004 [note 2]	After excavation of contaminated soil from LD-004
	800	LD-005 [note 2]	After excavation of contaminated soil from LD-005
LD-004	5,500 ^[note 3]	LD-004	After confirming the results of
	18,341 ^[note 3]	LD-005	treated soil from LD-004 complying with the criteria
LD-005	12,200 [note 3]	LD-004	After excavation of contaminated soil from LD-004
	7,500 ^[note 3]	LD-005	After confirming the results of treated soil from LD-005 complying with the criteria

Notes:

- 1. The tentative permanent backfill location has been changed as per the RR of LD-001.
- 2. The tentative permanent backfill location has been changed as per the RR of LD-003.
- 3. The volumes of the treated contaminated soils from LD-004 and LD-005 are estimated and the exact volumes will be finalised after completion of the treatment.
- 4. After excavation of LD-004 and LD-005, the void spaces of LD-004 and LD-005 will be approx. 23,841m³ and 21,034m³ to ground level + 4.0mPD respectively. And the surrounding ground will also be used for backfilling treated soil from +4.0mPD to +5.0mPD, then the backfilling volume of LD-004 and LD-005 will be approx. 33,200m³ and 33,100m³ respectively.
- 5. Based on the latest schedule, approx. 33,188m³ in total from LD-001 (i.e., 7,190m³), LD-003 (i.e. 8,298m³), LD-004 (i.e. 5,500m³) and LD-005 (i.e. 12,200m³) will be backfilled to LD-004 to reach +5.0mPD.
- 6. Based on the latest schedule, approx. 33,087m³ in total from LD-002 (i.e., 6,446m³), LD-003 (i.e. 800m³), LD-004 (i.e. 18,341m³) and LD-005 (i.e. 7,500m³) will be backfilled to LD-005 and the adjacent area to reach +5.0mPD.
- 7. This table will be finalised in the final RR.
- After confirming all the confirmatory test results indicated in *Table 2-1* complying with the Arsenic RBRG criterion, i.e., contaminated soil confined between -0.36mPD to +1.14mPD recommended in the CAR/RAP and -0.86mPD at LD-002 Area 6, and treated soils complying with the treatment criteria as indicated in *Table 3-3* below, all the treated soils for LD-002 are to be backfilled to the locations shown in *Appendix E.* The photographs are enclosed in *Appendix F*.

Table 3-3: TCLP and UCS Test Results of Mixed Soil

CONTAMINATION ZONE	SAMPLE ID	CEMENT TO SOIL RATIO	CEMENT TO SAND RATIO	TCLP AS ARSENIC, mg/L	TCLP CRITERIA IN THE RAP, mg/L	UCS, MPa	UCS CRITERIA IN THE RAP, MPa
	S1	0.075	0.75	<0.1		2.171	
	S2	0.075	0.75	<0.1		2.755	
	S3	0.075	0.75	<0.1		2.942	
	S4	0.075	0.75	<0.1		1.460	
	S5	0.075	0.75	<0.1		3.164	
	S6	0.075	0.75	<0.1		3.126	
	S7	0.075	0.75	<0.1		1.788	
	S8	0.075	0.75	<0.1		3.355	
LD-002 (ASG10 in CAR)	S9	0.075	0.75	<0.1		3.416	
1 sample was collected per 100m³ of mixed soil after treatment	S10	0.075	0.75	<0.1	5	2.918	1
	S11	0.075	0.75	<0.1		3.346	
	S12	0.075	0.75	<0.1		2.567	
	S13	0.075	0.75	<0.1		2.833	
	S14	0.075	0.75	<0.1		2.932	
	S15	0.075	0.75	<0.1		2.920	
	S16	0.075	0.75	<0.1		2.777	
	S17	0.075	0.75	<0.1		2.967	
	S18	0.075	0.75	<0.1		2.928	

CONTAMINATION ZONE	SAMPLE ID	CEMENT TO SOIL RATIO	CEMENT TO SAND RATIO	TCLP AS ARSENIC, mg/L	TCLP CRITERIA IN THE RAP, mg/L	UCS, MPa	UCS CRITERIA IN THE RAP, MPa
	S19	0.075	0.75	<0.1		2.548	
	S20	0.075	0.75	<0.1		3.514	
	S21	0.075	0.75	<0.1		3.253	
	S22	0.075	0.75	<0.1		1.126	
	S23	0.075	0.75	<0.1		1.707	
	S24	0.075	0.75	<0.1		1.712	
	S25	0.075	0.75	<0.1		2.244	
	S26	0.075	0.75	<0.1		1.747	
LD-002 (ASG10 in CAR)	S27	0.075	0.75	<0.1		1.637	
1 sample was collected per 100m ³ of	S28	0.075	0.75	<0.1	5	2.613	1
mixed soil after treatment	S29	0.075	0.75	<0.1		2.688	
	S30	0.075	0.75	<0.1		2.878	
	S31	0.075	0.75	<0.1		3.003	
	S32	0.075	0.75	<0.1		2.428	
	S33	0.075	0.75	<0.1		2.928	
	S34	0.075	0.75	<0.1		3.325	
	S35	0.075	0.75	<0.1		2.231	
	S36	0.075	0.75	<0.1		1.615	
	S37	0.075	0.75	<0.1		3.013	

CONTAMINATION ZONE	SAMPLE ID	CEMENT TO SOIL RATIO	CEMENT TO SAND RATIO	TCLP AS ARSENIC, mg/L	TCLP CRITERIA IN THE RAP, mg/L	UCS, MPa	UCS CRITERIA IN THE RAP, MPa
	S38	0.075	0.75	<0.1		2.974	
	S39	0.075	0.75	<0.1		2.587	
	S40	0.075	0.75	<0.1		2.774	
	S41	0.075	0.75	<0.1		2.061	
	S42	0.075	0.75	<0.1		1.788	
	S43	0.075	0.75	<0.1		1.269	
	S44	0.075	0.75	<0.1		1.738	
	S45	0.075	0.75	<0.1		1.010	
LD-002 (ASG10 in CAR)	S46	0.075	0.75	<0.1		2.005	
1 sample was collected per 100m ³ of	S47	0.075	0.75	<0.1	5	1.810	1
mixed soil after treatment	S48	0.075	0.75	<0.1		3.061	
	S49	0.075	0.75	<0.1		3.872	
	S50	0.075	0.75	<0.1		3.592	
	S51	0.075	0.75	<0.1		4.521	
	S52	0.075	0.75	<0.1		1.555	
	S53	0.075	0.75	<0.1		1.425	
	S54	0.075	0.75	<0.1		1.114	
	S55	0.075	0.75	<0.1		1.033	
	S56	0.075	0.75	<0.1		1.163	

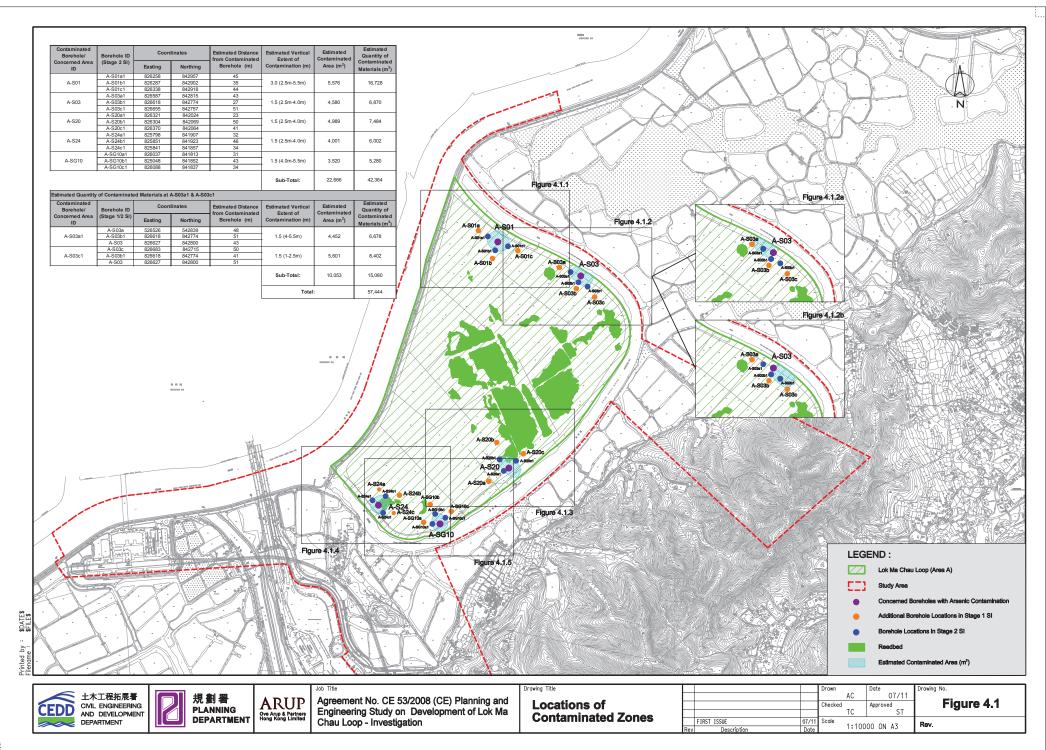
CONTAMINATION ZONE	SAMPLE ID	CEMENT TO SOIL RATIO	CEMENT TO SAND RATIO	TCLP AS ARSENIC, mg/L	TCLP CRITERIA IN THE RAP, mg/L	UCS, MPa	UCS CRITERIA IN THE RAP, MPa
	S57	0.075	0.75	<0.1		1.012	
	S58	0.075	0.75	<0.1		1.558	
	S58 (1)*	0.075	0.75	<0.1		N/A	
	S59	0.075	0.75	<0.1		1.612	
	S60	0.075	0.75	<0.1		1.012	
	S61	0.075	0.75	<0.1		1.856	
LD-002 (ASG10 in CAR)	S62	0.075	0.75	<0.1	5	1.070	1
1 sample was collected per 100m³ of mixed soil after treatment	S63	0.075	0.75	<0.1	3	1.670	-
	S64	0.075	0.75	<0.1		1.908	
	S65	0.075	0.75	<0.1		3.070	
	S66	0.075	0.75	<0.1		2.418	
	Area 6(1)	0.075	0.75	<0.1		2.162	
	Area 6(2)	0.075	0.75	<0.1		1.890	
	Area 6(3)	0.075	0.75	<0.1		1.479	

Remark (*) – The Sample ID "S58 (1)" is the duplicate samples sent to the laboratory for testing TCLP. These samples are taken from the same batch of mixed soil.

4 CONCLUSION

- 4.1.1 Contaminated soil from LD-002 (also named as A-SG10 in the CAR) was excavated for cement solidification/stabilisation in accordance with the approved RAP.
- 4.1.2 According to the laboratory results, the Arsenic concentrations of all confirmatory samples were found to be below the RBRG criterion of 21.8 mg/kg dry soil, except the confirmatory sample of LD-002 at Area 6. Thus, a re-confirmatory of the soil sample at LD-002 Area 6 was then collected and the laboratory test result shown that Arsenic concentration was below 21.8 mg/kg. It is concluded that all contaminated soil has been excavated from LD-002 for further treatment and it is within the area of contaminated zone A-SG10 identified in the SCAR. A total of 5,509m³ of Arsenic-contaminated soil was excavated from LD-002.
- 4.1.3 The contaminated soils were treated by cement solidification/stabilisation. One set of performance samples was collected for every 100m³ of the mixed contaminated soil and tested via TCLP for Arsenic concentration and via UCS to confirm the treatment achieving the remediation targets. Based on the laboratory results of which the last result was obtained on 07 July 2020, the treatment targets of the treated soils have been complied with the treatment standards of UCS and TCLP as recommended in the RAP.
- 4.1.4 All 6,446m³ of treated soil will be temporally stored within the-site and at the locations shown in **Appendix E**, and will be permanently backfilled to Hotspot LD-005 in Aug 2020.
- 4.1.5 In conclusion, all the contaminated soil as located within LD-002 have been excavated and treated in accordance with the approved RAP. Since the land remediation works within LD-002 are completed, construction works at LD-002 may be able to be carried out subject to the approval by the EIAO Authority pursuant to EP Condition 2.16.

Appendix A EXTRACTED FIGURE 4.1 OF THE SUPPLEMENTARY CONTAMINATION ASSESSMENT REPORT FOR AREA A



_ :_

Appendix B	LABORATORY REPORTS OF SOIL CONFIRMATORY AND QA/QC SAMPLING WORKS

ALS Technichem (HK) Pty Ltd

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



Authorised results for

Inorganics

CERTIFICATE OF ANALYSIS

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

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Address

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2017123

TONG, KOWLOON, HONG KONG

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

E-mail : richard.fung@alsglobal.com

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 08-May-2020

Order number : **WO008** : **HKE/2533/2019_V3** Issue Date : **19-May-2020**

number

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

No. of samples analysed : 1

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Signatories

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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.

Lin Wai Yu , Iris

Assistant Manager - Inorganics

Wong Wing , Kenneth Manager - Metals Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017123



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017123

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.

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

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017123

ALS

Analytical Results

Sub-Matrix: SOIL	Client sample ID			LD002-Area 1					
	Client sampling date / time			08-May-2020					
Compound	CAS Number LOR Unit			HK2017123-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	15					

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017123



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report					
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	ggregate Properties (QC Lot: 301	19649)								
HK2017123-001	LD002-Area 1	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00		
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637		
EG: Metals and Major Cations (QC Lot: 3012087)										
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00		

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

Matrix: SOIL			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

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	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

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Work Order

: 1 of 4

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017124



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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: HK2017124

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.

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

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

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

∴ 3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017124

ALS

Analytical Results

Sub-Matrix: SOIL	Client sample ID			LD002-Area 2					
	Client sampling date / time			08-May-2020					
Compound	CAS Number LOR Unit			HK2017124-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.6					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	16					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017124



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report					
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019649)								
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00		
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637		
EG: Metals and Major Cations (QC Lot: 3012087)										
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00		

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	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: 3012	087)										Liiii	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

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	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and Major Cations (QC Lot: 3012087)												
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125				

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

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: 1 of 4

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

Quote

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

number

HKE/2533/2019_V

No. of samples received

: 1 : 1

C-O-C number : ----

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

Pocitio

Authorised results for

10.3

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126



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: HK2017126

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.

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

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126

ALS

Analytical Results

Sub-Matrix: SOIL	Client sample ID			LD002-Area 3					
	Client sampling date / time								
Compound	CAS Number	LOR	Unit	HK2017126-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	17					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report						
Laboratory	Client sample ID	Client sample ID Method: Compound		r LOR Unit		Original Result Duplicate		RPD (%)			
sample ID							Result				
EA/ED: Physical and A	EA/ED: Physical and Aggregate Properties (QC Lot: 3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00			
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637			
EG: Metals and Major C	EG: Metals and Major Cations (QC Lot: 3012087)										
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00			

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	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:	3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

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	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and Major Cations (QC Lot: 3012087)												
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125				

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2017127

TONG, KOWLOON, HONG KONG

Address

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

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

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Address

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Project

E-mail

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Facsimile

: 9686 4575

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: +852 2610 2021

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

Site

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127



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: HK2017127

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.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 4	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	d CAS Number LOR Unit			HK2017127-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	 	
EG: Metals and Major Cations						
G020: Arsenic 7440-38-2 1 mg/kg				16	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fathert Companyed					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Officers accounts ID Mathest Compared CAS No.				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact Address : Richard Fung

Work Order

: HK2017128

TONG, KOWLOON, HONG KONG

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

: richard.fung@alsglobal.com

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

No. of samples received

: 1 : 1 No. of samples analysed

C-O-C number : ----

Site

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017128



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: HK2017128

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.

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

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

3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017128

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 5						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number LOR Unit			HK2017128-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	15						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017128



Laboratory Duplicate (DUP) Report

Matrix: SOIL	rix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot: 30196	149)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fathert Companyed					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSL					
				Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

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Contact : GC

Address

E-mail

Project

Telephone

: GO WAI KIT, VICTOR

Contact Address : Richard Fung : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Work Order

: HK2017130

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

: 9686 4575

Quote number

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

Site : --

No. of samples received

No. of samples analysed : 1

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Signatories

Position

Authorised results for

Lin Wai Yu . Iris

ris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017130



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: HK2017130

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.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017130

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 6						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number LOR Unit			HK2017130-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	22						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017130



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot:	3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major C	ations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fathert Companyed					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSL					
				Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2023302

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN
Address

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

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 22-Jun-2020

Order number : WO008 : HKE/2533/2019_V3 | Issue Date : 26-Jun-2020

number

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

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

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

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.

Chan Siu Ming , Vico Manager - Inorganics Inorganics

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

Wong Wing , Kenneth Manager - Metals Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023302



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: HK2023302

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., if any) is provided by client.

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

∴ 3 of 4

Client : BL Work Order : HK

BLACK & VEATCH HONG KONG LTD HK2023302



Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 6(1)					
	Cli	ent samplii	ng date / time	22-Jun-2020					
Compound	CAS Number LOR Unit			HK2023302-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	12.7					
EG: Metals and Major Cations									
G020: Arsenic 7440-38-2 1 mg/kg				2					

4 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2023302



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	ggregate Properties (QC Lot: 309	5529)									
HK2023156-007	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.2	18.3	0.828			
HK2023156-011	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	16.6	16.8	1.58			
EG: Metals and Major (Cations (QC Lot: 3095570)										
HK2023302-001	LD002-Area 6(1)	EG020: Arsenic	7440-38-2	1	mg/kg	2	2	0.00			

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	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: 3095570)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD)					
	Office to a small of D. Mothest Compared O. A.O. No.			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPE	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3095570)									
HK2023300-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	92.5		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

Contact

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: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Contact Address

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: HK2017124

TONG, KOWLOON, HONG KONG

E-mail

: richard.fung@alsglobal.com

Telephone

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017124



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: HK2017124

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.

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

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

∴ 3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017124

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 2					
	Cli	ient samplii	ng date / time	08-May-2020					
Compound	CAS Number LOR Unit			HK2017124-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.6					
EG: Metals and Major Cations									
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg								

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017124



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

fatrix: SOIL			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
title to Comment					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 30120	087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office to a second of D. Mothant Compound				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

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

Work Order

: HK2017126

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: +852 2610 2021

Facsimile Project

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

Quote

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

number

HKE/2533/2019_V

No. of samples received

: 1 : 1

C-O-C number : ----

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.

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

Signatories

Pocitio

Authorised results for

10.3

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017126

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.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 3					
	Cli	ient samplii	ng date / time	08-May-2020					
Compound	CAS Number LOR Unit			HK2017126-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2					
G: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	17					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017126



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot:	3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major C	ations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fother Communication					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:	3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Sp	ate (MSD) Re	(ISD) Report			
	Olicate accepted D. Mothest Compound			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2017127

TONG, KOWLOON, HONG KONG

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

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: 9686 4575

Facsimile

: +852 2610 2021

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

Site

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127



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: HK2017127

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.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 4	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017127-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	 	
EG: Metals and Major Cations						
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017127



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. (1. 1. 2					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office to a small of D. Mothart Compound				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact Address : Richard Fung

Work Order

: HK2017128

TONG, KOWLOON, HONG KONG

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

No. of samples received

: 1 : 1 No. of samples analysed

C-O-C number : ----

Site

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017128



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: HK2017128

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.

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

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

: 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017128

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 5	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017128-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2	 	
EG: Metals and Major Cations						
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg				 	

Work Order

4 of 4

Client

BLACK & VEATCH HONG KONG LTD

HK2017128



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. (1. 1. 2					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Rep					
	Mothest Comparing			Spike	Spike R	Pecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

E-mail

Project

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: GO WAI KIT, VICTOR

Contact Address : Richard Fung : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Work Order

: HK2017130

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Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

: 9686 4575

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

Site

No. of samples received

: 1 No. of samples analysed

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017130



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017130

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.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017130

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 6					
	Cli	ient samplii	ng date / time	08-May-2020					
Compound	CAS Number LOR Unit			HK2017130-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	22					

4 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017130



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 3	019649)										
HK2017123-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.9	0.00				
HK2017449-005	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.3	17.4	0.637				
EG: Metals and Major (Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. (1. 1. 2					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Rep					
	Mothest Comparing			Spike	Spike R	Pecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

Contact

Address

: 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

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Facsimile

Project

: GO WAI KIT, VICTOR

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

: Richard Fung

Work Order

: HK2023300

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 22-Jun-2020

: 9686 4575

: 26-Jun-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

C-O-C number : ----

Site

No. of samples received : 1

: 1 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

Inorganics

Wong Wing, Kenneth

Manager - Metals

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023300



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 22-Jun-2020 to 26-Jun-2020.

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

Specific Comments for Work Order: HK2023300

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., if any) is provided by client.

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023300

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 6	 	
	Cli	ient samplii	ng date / time	22-Jun-2020	 	
Compound	CAS Number LOR Unit			HK2023300-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	11.7	 	
EG: Metals and Major Cations						
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023300



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	gregate Properties (QC Lot:	3095529)									
HK2023156-007	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.2	18.3	0.828			
HK2023156-011	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	16.6	16.8	1.58			
EG: Metals and Major C	ations (QC Lot: 3095570)										
HK2023302-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	2	2	0.00			

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
44.4					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	LOR Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3095570)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD)					
	ntoni Client comple ID Method Compound CAC No.			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3095570)									
HK2023300-001	LD002-Area 6	EG020: Arsenic	7440-38-2	5 mg/kg	92.5		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2023302

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN
Address

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

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 22-Jun-2020

Order number : WO008 : HKE/2533/2019_V3 | Issue Date : 26-Jun-2020

number

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

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

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

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.

Chan Siu Ming , Vico Manager - Inorganics Inorganics

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

Wong Wing , Kenneth Manager - Metals Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023302



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 22-Jun-2020 to 26-Jun-2020.

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

Specific Comments for Work Order: HK2023302

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., if any) is provided by client.

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

∴ 3 of 4

Client : BL Work Order : HK

BLACK & VEATCH HONG KONG LTD HK2023302



Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 6(1)	 	
	Cli	ent samplii	ng date / time	22-Jun-2020	 	
Compound	CAS Number LOR Unit			HK2023302-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	12.7	 	
EG: Metals and Major Cations						
G020: Arsenic 7440-38-2 1 mg/kg				2	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023302



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	ggregate Properties (QC Lot:	3095529)									
HK2023156-007	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.2	18.3	0.828			
HK2023156-011	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	16.6	16.8	1.58			
EG: Metals and Major	Cations (QC Lot: 3095570)										
HK2023302-001	LD002-Area 6(1)	EG020: Arsenic	7440-38-2	1	mg/kg	2	2	0.00			

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							
fathart Companyed					Spike	Spike Re	covery (%)	Recove	ry Limits(%)	RP	D (%)	
ethod: Compound CAS Numb		er LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3095570)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	nton; Client comple ID Method: Compound CAS No.			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7(%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3095570)										
HK2023300-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	92.5		75.0	125			

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



Authorised results for

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2017132 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact Contact

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

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

: +852 2610 1044 : 9686 4575 Telephone Telephone : +852 2610 2021 Facsimile Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 08-May-2020 Project

: WO008 : HKE/2533/2019 V3 : 19-May-2020 Order number Quote Issue Date

number

C-O-C number : ----No. of samples received : 1 : 1 No. of samples analysed Site

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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. Chan Siu Ming . Vico Manager - Inorganics

Inorganics

Wong Wing, Kenneth Manager - Metals Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017132



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: HK2017132

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.

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

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

3 of 4

Client : BLA

BLACK & VEATCH HONG KONG LTD

Work Order HK2017132

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 7	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017132-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	 	
EG: Metals and Major Cations						
G020: Arsenic 7440-38-2 1 mg/kg				17	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017132



Laboratory Duplicate (DUP) Report

Matrix: SOIL			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	gregate Properties (QC Lot: 3023	165)								
HK2017132-001	LD002-Area 7	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00		
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00		
EG: Metals and Major C	Cations (QC Lot: 3012088)									
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04		

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							
fathert Companyed					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Unit Result		LCS	DCS	Low	High	Value	Control	
EG: Metals and Major Cations (QC Lot: 3012088)											Limit	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	trix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Office Company			Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3012088)									
HK2017132-001	LD002-Area 7	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

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: 1 of 4

Contact

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: GO WAI KIT, VICTOR

: 9686 4575

Contact Address : Richard Fung

Work Order

: HK2017133

TONG, KOWLOON, HONG KONG

E-mail

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Facsimile

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 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.

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017133



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: HK2017133

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.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017133

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 8				
	Cli	ient samplii	ng date / time	08-May-2020				
Compound	CAS Number LOR Unit			HK2017133-001				
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.0				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	16				

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017133



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot:	3023165)										
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00				
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00				
EG: Metals and Major	Cations (QC Lot: 3012088)											
HK2017133-001	LD002-Area 8	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04				

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: 3012088)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Mathod Compound CAC No.			Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3012088)											
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

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

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: 1 of 4

Contact

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Contact : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : Richard Fung

Work Order

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Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received : 1

: 1

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

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017134



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: HK2017134

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017134

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 9	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017134-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	 	
EG: Metals and Major Cations						
EG020: Arsenic	020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017134



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	gregate Properties (QC Lot:	3023165)									
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00			
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00			
EG: Metals and Major C	ations (QC Lot: 3012088)										
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04			

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							
fathart Communia					Spike	Spike Recovery (%)		Recovery Limits(%)		RPD (%)		
Method: Compound	CAS Number	LOR	R Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3012088)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Mathod Compound CAC No.			Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3012088)											
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

TONG, KOWLOON, HONG KONG

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact : GO WAI KIT, VICTOR

: 9686 4575

Contact

: Richard Fung

Work Order

: HK2017138

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Address

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Project

Site

Telephone

Facsimile

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

Quote

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

number

INL/2000/2019_V0

No. of samples analysed

: 1

C-O-C number : ----

No. of samples received : 1

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

Signatories

Docition

Authorised results for

Cha Ain

Chan Siu Ming , Vico

Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017138



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: HK2017138

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.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017138



· ·						
Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 10	 	
	Cli	ent samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017138-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.7	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	17	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017138



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 30	23165)										
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00				
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00				
EG: Metals and Major	Cations (QC Lot: 3012088)											
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04				

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							
title to Comment					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
EG: Metals and Major Cations (QC Lot: 3012088)											Limit	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	of any Office Assemble ID Mother's Comparing			Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3012088)											
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: HK2017136

: GO WAI KIT, VICTOR Contact

: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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Work Order

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: richard.fung@alsglobal.com

: +852 2610 1044 Telephone

Telephone Facsimile

Address

E-mail

Project

Site

: +852 2610 2021 Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

number

No. of samples received

: 1

C-O-C number : ----

: 1 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

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017136



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: HK2017136

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.

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

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

3 of 4

Client : Work Order

BLACK & VEATCH HONG KONG LTD

HK2017136



Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 10 (1)	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017136-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.4	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	18	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017136



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3023165)										
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00				
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00				
EG: Metals and Major	letals and Major Cations (QC Lot: 3012088)											
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04				

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: 3012088)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106		

Matrix: SOIL	atrix: SOIL				port					
				Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012088)									
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address : GO WAI KIT, VICTOR

Contact Address : Richard Fung

Work Order

: HK2017140

TONG, KOWLOON, HONG KONG

: 9686 4575

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

E-mail

E-mail

: richard.fung@alsglobal.com

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: +852 2610 1044

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Facsimile Project

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

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.

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017140



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: HK2017140

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017140

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 11				
	Cli	ient samplii	ng date / time	08-May-2020				
Compound	CAS Number LOR Unit			HK2017140-001				
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.4				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	16				

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017140



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 30	23165)										
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00				
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00				
EG: Metals and Major	Cations (QC Lot: 3012088)											
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Red	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: 3012088)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	trix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012088)									
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address





Authorised results for

: 1 of 4

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: GO WAI KIT, VICTOR : HK2018367 : Richard Fung Work Order Contact Contact

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Address TONG, KOWLOON, HONG KONG Yip Street, Kwai Chung, N.T., Hong Kong

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

: +852 2610 1044 : 9686 4575 Telephone Telephone : +852 2610 2021 Facsimile Facsimile

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

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 15-May-2020 Project

: WO008 : HKE/2533/2019 V3 : 22-May-2020 Order number Quote Issue Date

number

C-O-C number : ----No. of samples received : 1 : 1 No. of samples analysed Site

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Signatories

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. Chan Siu Ming, Vico Manager - Inorganics Inorganics

Leung Chak Cheong, Mike Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018367



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: HK2018367

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018367

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 12	 	
	Cli	ient samplii	ng date / time	15-May-2020	 	
Compound	CAS Number LOR Unit			HK2018367-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.0	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	15	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018367



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot: 30278	379)										
HK2018357-004	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.4	17.3	1.10				
HK2018357-016	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.2	19.8	1.83				
EG: Metals and Major (Cations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL					port	ort				
				Spike	Spike Re	ecovery (%)	Recovery I	Limits (%)	RPD	(%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 3025407)									
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125		
					Determined					

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



Authorised results for

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2018368

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

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 : 9686 4575
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 Facsimile
 : -- : +852 2610 2021

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 15-May-2020

Order number : WO008 : HKE/2533/2019_V3 | Issue Date : 22-May-2020

number

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

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

Mole

Leung Chak Cheong, Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018368



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: HK2018368

Sample(s) was/ were picked up from client by ALS staff . Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018368

•						
Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 13	 	
	Cli	ent sampli	ng date / time	15-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018368-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.3	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	14	 	



4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018368



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot: 30278											
HK2018357-004	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	17.4	17.3	1.10				
HK2018357-016	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	20.2	19.8	1.83				
EG: Metals and Major (Cations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
			Spike	Spike Red	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: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Re	ocovery (%)	Recovery	Limits (%)	RPD) (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3025407)											
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125				
					Determined							

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES







CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address : GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2018369

TONG, KOWLOON, HONG KONG

: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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Project

Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 15-May-2020

: WO008 Order number

Quote

: HKE/2533/2019 V3

Issue Date

: 22-May-2020

number

No. of samples received : 1

No. of samples analysed

C-O-C number : ----

Site

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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

Inorganics

: 1

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018369



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: HK2018369

Sample(s) was/ were picked up from client by ALS staff . Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

Work Order

∴ 3 of 4

Client : BLA

BLACK & VEATCH HONG KONG LTD HK2018369

_						
Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 14	 	
	Clie	ent samplii	ng date / time	15-May-2020	 	
Compound	CAS Number LOR Unit			HK2018369-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	14	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018369



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	gregate Properties (QC Lot:	3030482)									
HK2018369-001	LD002-Area 14	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808			
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48			
EG: Metals and Major (tals and Major Cations (QC Lot: 3025407)										
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96			

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							
Method Communication					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound	CAS Number	LOR	OR Unit Result Cond		Concentration	LCS	DCS	Low	High	Value	Control	
EG: Metals and Major Cations (QC Lot: 3025407)											Limit	
EG: Metals and Major Cations (QC Lot. 3025407)			ı	T.			T	1				
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	: SOIL				Matrix Spi	eate (MSD) Report				
				Spike	Spike Re	ecovery (%)	Recovery I	Limits (%)	RPD	(%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3025407)									
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125		
					Determined					

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2017143 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact Contact

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Address TONG, KOWLOON, HONG KONG Yip Street, Kwai Chung, N.T., Hong Kong

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

: +852 2610 1044 : 9686 4575 Telephone Telephone : +852 2610 2021 Facsimile Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 08-May-2020 Project

: WO008 : HKE/2533/2019 V3 : 19-May-2020 Order number Quote Issue Date

number

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

: 1 No. of samples analysed Site

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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

Manager - Inorganics

Inorganics

Wong Wing, Kenneth Manager - Metals Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017143



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: HK2017143

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.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017143

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 15	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017143-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.3	 	
EG: Metals and Major Cations						
EG020: Arsenic	020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017143



Laboratory Duplicate (DUP) Report

Matrix: SOIL			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	ggregate Properties (QC Lot: 3023	165)								
HK2017132-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	37.8	0.00		
HK2017747-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	13.8	13.9	0.00		
EG: Metals and Major (Cations (QC Lot: 3012088)									
HK2017133-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	16	17	8.04		

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: 3012088)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.8		85.0	106			

Matrix: SOIL	rix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						rt	
	Method: Company			Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EG: Metals and I	Major Cations (QC Lot: 3012088)										
HK2017132-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	88.4		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact : GO WAI KIT, VICTOR

: 9686 4575

Contact

: Richard Fung

Work Order

Date Samples Received

: HK2018371

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN TONG. KOWLOON. HONG KONG

Address

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

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

E-mail : ---

Address

Telephone

Facsimile

Site

E-mail

: richard.fung@alsglobal.com

Telephone :

: +852 2610 1044

Facsimile

: +852 2610 2021

Project : Y

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

....

: 15-May-2020

Order number : WO008

Quote number

: HKE/2533/2019 V3

Issue Date

: 22-May-2020

C-O-C number : ----

No. of samples received : 1

No. of samples analysed : 1

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

Signatories

Docition

Authorised results for

Madi

Chan Siu Ming, Vico

Manager - Inorganics

Inorganics

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018371



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018371

Sample(s) was/ were picked up from client by ALS staff . Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018371

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 16					
	Cli	ient samplii	ng date / time	15-May-2020					
Compound	CAS Number LOR Unit			HK2018371-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.3					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	15					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018371



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot: 30304	82)										
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808				
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48				
EG: Metals and Major (Cations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
			Spike	Spike Red	covery (%)	Recove	ery Limits(%)	RPI	D (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	trix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 3025407)										
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125			
					Determined						

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

Telephone

Facsimile

Project

: GO WAI KIT, VICTOR

Contact Address : Richard Fung

Work Order

: HK2018370

TONG, KOWLOON, HONG KONG

E-mail

Facsimile

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

: +852 2610 2021

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 15-May-2020

: WO008

: 9686 4575

Issue Date

: 22-May-2020

Order number

Quote number : HKE/2533/2019 V3

C-O-C number : ----

Site

No. of samples received : 1

: 1 No. of samples analysed

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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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

Inorganics

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018370



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018370

Sample(s) was/ were picked up from client by ALS staff . Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018370

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 16 (1)	 	
	Cli	ent samplii	ng date / time	15-May-2020	 	
Compound	CAS Number LOR Unit			HK2018370-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.1	 	
EG: Metals and Major Cations						
EG020: Arsenic	020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018370



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and Ag	gregate Properties (QC Lot: 3030-	482)										
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808				
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48				
EG: Metals and Major C	Cations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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							
Anthort Companyed					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery I	Limits (%)	RPD) (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 3025407)										
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125			
					Determined						

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



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

: 1 of 4

Inorganics

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2018372

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN
Address

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

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 15-May-2020

Order number : WO008 : HKE/2533/2019_V3 | Issue Date : 22-May-2020

number

C-O-C number : --- 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

Leung Chak Cheong , Mike Senior Chemist Metals ENV

Mole

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018372



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: HK2018372

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BL

BLACK & VEATCH HONG KONG LTD

Work Order HK2018372

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-Area 17	 	
	Cli	ient samplii	ng date / time	15-May-2020	 	
Compound	CAS Number LOR Unit			HK2018372-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2	 	
EG: Metals and Major Cations						
EG020: Arsenic	020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018372



Laboratory Duplicate (DUP) Report

Matrix: SOIL	rix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3030482)										
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808				
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48				
EG: Metals and Major (Cations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
			Spike	Spike Red	covery (%)	Recove	ery Limits(%)	RPI	D (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	îx: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPL	0 (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3025407)											
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125				
					Determined							

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client Laboratory

: ALS Technichem (HK) Pty Ltd

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2018373

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

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

TONG, KOWLOON, HONG KONG

: 9686 4575

E-mail

Address

: richard.fung@alsglobal.com

: +852 2610 1044

Telephone Facsimile

: +852 2610 2021

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

Date Samples Received

: 15-May-2020

: WO008 Order number

Quote

: HKE/2533/2019 V3

Issue Date

Work Order

: 22-May-2020

C-O-C number : ----

Address

E-mail

Site

Telephone

Facsimile

number

No. of samples received : 1

: 1 No. of samples analysed

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Signatories

Chan Siu Ming, Vico

Manager - Inorganics

Inorganics

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018373



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018373

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : E

BLACK & VEATCH HONG KONG LTD

Work Order HK2018373

ALS

Sub-Matrix: SOIL	Client sample ID			LD002-Area 18	 	
	Cli	ient samplii	ng date / time	15-May-2020	 	
Compound	CAS Number LOR Unit			HK2018373-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2	 	
EG: Metals and Major Cations						
G020: Arsenic 7440-38-2 1 mg/kg				14	 	

4 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2018373



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lot:	3030482)										
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808				
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48				
EG: Metals and Major C	ations (QC Lot: 3025407)											
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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							
fother Communication				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: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	c: SOIL				Matrix Spi	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery I	Limits (%)	RPD) (%)			
Laboratory	Client sample ID Method: Compound		CAS Number	Concentration	MS	MSD	Low	High	Value	Control			
sample ID										Limit			
EG: Metals and M	Major Cations (QC Lot: 3025407)												
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125					
					Determined								

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

: GO WAI KIT, VICTOR

Contact Address : Richard Fung

Work Order

: HK2017103

: 9686 4575

TONG, KOWLOON, HONG KONG

E-mail

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

Facsimile

: +852 2610 2021

Facsimile Project

Telephone

Address

E-mail

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

Site

No. of samples received

Date Samples Received

: 1 No. of samples analysed

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017103



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017103

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017103

ALS

Sub-Matrix: SOIL	Client sample ID			LD002-H1	 	
	Cli	ent samplii	ng date / time	08-May-2020	 	
Compound				HK2017103-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	16	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017103



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019648)										
HK2017103-001	LD002-H1	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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							
Aethort Compound CACA Num					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound CAS Nur.		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Olice to a second ID Method: Compound				Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID									_	Limit		
EG: Metals and M	Major Cations (QC Lot: 3012087)											
HK2017103-001	LD002-H1	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

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: HK2017104

TONG, KOWLOON, HONG KONG

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: richard.fung@alsglobal.com

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: +852 2610 2021

Project : Y

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

LINGINE

: 08-May-2020

: 1

Order number : WO008

Quote number

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

Site : --

No. of samples received

Date Samples Received

No. of samples analysed : 1

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

Signatories

Position

Authorised results for

10,0

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017104



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017104

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017104

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H2	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017104-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	 	
EG: Metals and Major Cations						
G020: Arsenic 7440-38-2 1 mg/kg				15	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017104



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Duplicate	RPD (%)					
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	LD002-H2	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
forthank Communial					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 30120	087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office Company				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

: 9686 4575

Contact

: Richard Fung

Work Order

: HK2017106

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Site

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Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017106



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017106

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.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017106

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H3	 	
	Cli	ent sampli	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017106-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.4	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	16	 	



4 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017106



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 3	019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Mothert Company			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



Authorised results for

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2018374 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact Contact

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

: +852 2610 1044 : 9686 4575 Telephone Telephone : +852 2610 2021 Facsimile Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 15-May-2020 Project

: WO008 : HKE/2533/2019 V3 : 22-May-2020 Order number Quote Issue Date

number

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

: 1 No. of samples analysed Site

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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.

Chan Siu Ming, Vico Manager - Inorganics Inorganics

Mole

Leung Chak Cheong, Mike Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018374



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018374

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018374



Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H4					
	Cli	ient samplii	ng date / time	15-May-2020					
Compound	CAS Number LOR Unit			HK2018374-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.3					
EG: Metals and Major Cations									
G020: Arsenic 7440-38-2 1 mg/kg				15					

4 of 4

Client

: BLACK & VEATCH HONG KONG LTD

Work Order HK2018374



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EA/ED: Physical and A	gregate Properties (QC Lot:	3030482)									
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808			
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48			
EG: Metals and Major C	ations (QC Lot: 3025407)										
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96			

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: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	ix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPL	0 (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3025407)											
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125				
					Determined							

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

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: HK2018375

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 1

: 15-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 22-May-2020

C-O-C number : ----

Site

No. of samples received

: 1 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

Inorganics

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018375



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018375

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018375

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H5						
	Cli	ient samplii	ng date / time	15-May-2020						
Compound	CAS Number LOR Unit			HK2018375-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.4						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	16						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018375



Laboratory Duplicate (DUP) Report

Matrix: SOIL					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 3	030482)										
HK2018369-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.2	36.9	0.808				
HK2018376-003	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	18.0	17.8	1.48				
EG: Metals and Major Cations (QC Lot: 3025407)												
HK2018357-016	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	102	98	3.96				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
			Spike	Spike Red	covery (%)	Recove	ery Limits(%)	RPI	D (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3025407)												
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.4		85.0	106			

Matrix: SOIL	rix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit		
EG: Metals and M	Major Cations (QC Lot: 3025407)											
HK2018357-015	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	# Not		75.0	125				
					Determined							

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD Client

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: 1 of 4

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Address

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017107



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: HK2017107

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017107

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H6	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017107-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	16.1	 	
EG: Metals and Major Cations						
EG020: Arsenic	6020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017107



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Duplicate	RPD (%)					
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fothart Companyed					Spike	Spike Re	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound	CAS Number	LOR	LOR Unit Result Co.		Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 301	2087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
	Of a factor of the state of the			Spike	Spike R	Pecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2017108

TONG, KOWLOON, HONG KONG

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Project

Address

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

Site

No. of samples received

Date Samples Received

: 1 No. of samples analysed

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017108



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: HK2017108

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.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017108

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H7					
	Cli	ient samplii	ng date / time	08-May-2020					
Compound	CAS Number LOR Unit			HK2017108-001					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)		0.1	%	17.8					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	4					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017108



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Duplicate	RPD (%)				
sample ID							Result				
EA/ED: Physical and A	gregate Properties (QC Lot	: 3019648)									
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00			
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363			
EG: Metals and Major C	ations (QC Lot: 3012087)										
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00			

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Anthort Companyed					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound CAS N		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Olizata a annula ID Method: Compound				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: HK2017110

Contact : GO WAI KIT, VICTOR

: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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Address

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Project

Site

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

Quote number

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

No. of samples received

No. of samples analysed : 1

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

Signatories

Positio

Authorised results for

/ 0 .

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017110



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: HK2017110

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.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017110

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H8	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017110-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	14.6	 	
EG: Metals and Major Cations						
EG020: Arsenic	020: Arsenic 7440-38-2 1 mg/kg				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017110



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Duplicate	RPD (%)					
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fothert Compound					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound CAS N		LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Olizata a annula ID Method: Compound				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

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Contact : GO W

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2017114

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Facsimile

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Date Samples Received : 08-May-2020

Order number : WO008

Quote

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

number

HKE/2533/2019_V

No. of samples received

No. of samples analysed : 1

C-O-C number : ----

Site : ---

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Signatories

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Authorised results for

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017114



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: HK2017114

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.

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

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

∴ 3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017114

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H9						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number	LOR	Unit	HK2017114-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.2						
EG: Metals and Major Cations										
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg									

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017114



Laboratory Duplicate (DUP) Report

Matrix: SOIL	rix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lot: 3	019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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	
EG: Metals and Major Cations (QC Lot: 3012087)											Limit	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	utrix: SOIL				Matrix Sp	x Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike	Spike R	Pecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

Site

No. of samples received

Date Samples Received

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017112



General Comments

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Specific Comments for Work Order: HK2017112

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.

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

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

3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017112

ALS

Sub-Matrix: SOIL	Client sample ID			LD002-H9 (1)						
	Cli	ent samplii	ng date / time	08-May-2020						
Compound	ound CAS Number LOR Unit									
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	14						

. 4 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017112



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	ggregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	LD002-H9 (1)	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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							
father Company					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	trix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office Company			Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3012087)											
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



: 1 of 4

Authorised results for

Inorganics

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory

: HK2017115 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact

Contact : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Address Address

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 08-May-2020 Project

: WO008 : HKE/2533/2019 V3 : 19-May-2020 Order number Quote Issue Date

number

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

: 1 No. of samples analysed Site

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Wong Wing, Kenneth Manager - Metals Metals ENV

Page

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Signatories

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017115



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: HK2017115

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.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017115

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H10						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number	LOR	Unit	HK2017115-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	38.4						
EG: Metals and Major Cations										
EG020: Arsenic	G020: Arsenic 7440-38-2 1 mg/kg									

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017115



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Duplicate	RPD (%)					
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL	atrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and M	Major Cations (QC Lot: 3012087)											
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

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Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-May-2020

: 1

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

Address

E-mail

Project

Site

Telephone

No. of samples received

Date Samples Received

: 1 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.

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

Signatories

Authorised results for

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017116



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017116

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.

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

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017116

ALS

Sub-Matrix: SOIL	Client sample ID			LD002-H11						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number LOR Unit			HK2017116-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8						
G: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	16						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017116



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Anthort Companyed					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						ort		
	otom, Client comple ID Method: Compound CAC No.				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7(%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2017117

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E-mail

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

Facsimile

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Project

Telephone

Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

Order number : WO008

Quote number

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

Site : --

No. of samples received

No. of samples analysed : 1

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

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

Signatories

Position

Authorised results for

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017117



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: HK2017117

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.

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

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

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

3 of 4

Client : Work Order

BLACK & VEATCH HONG KONG LTD HK2017117



Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H12	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017117-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.9	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	16	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017117



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fothart Companyed					Spike	Spike Re	covery (%)	Recove	ry Limits(%)	RP	D (%)	
Method: Compound	CAS Number	LOR	LOR Unit Result Con		Concentration	LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 301	2087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						ort		
	otom, Client comple ID Method: Compound CAC No.				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7(%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

Telephone

Project

Site

: GO WAI KIT, VICTOR

Contact Address : Richard Fung

Work Order

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 08-May-2020

: WO008 Order number

Quote number : HKE/2533/2019 V3

Issue Date

: 19-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 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

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017119



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: HK2017119

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.

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

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

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

: 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017119

ALS

Sub-Matrix: SOIL	Client sample ID			LD002-H13						
	Cli	ient samplii	ng date / time	08-May-2020						
Compound	CAS Number LOR Unit			HK2017119-001						
EA/ED: Physical and Aggregate Properties										
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6						
G: Metals and Major Cations										
EG020: Arsenic	7440-38-2	1	mg/kg	15						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017119



Laboratory Duplicate (DUP) Report

Matrix: SOIL	trix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)										
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00				
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363				
EG: Metals and Major	Cations (QC Lot: 3012087)											
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00				

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Anthort Companyed					Spike	Spike Red	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: 3012087)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106			

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office to a small of D. Mothart Compound CAC No.				Spike R	ecovery (%)	Recovery	Limits (%)	RPL	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

Contact

Address

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TONG, KOWLOON, HONG KONG

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Facsimile

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received : (

: 08-May-2020

Order number : WO008

Quote number

: HKE/2533/2019 V3

Issue Date

: 19-May-2020

: 1

C-O-C number : ----

Site : --

No. of samples received

No. of samples analysed : 1

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

Signatories

Positio

Authorised results for

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017120



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 08-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017120

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.

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

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017120

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H14	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2017120-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	36.7	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	15	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017120



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	gregate Properties (QC Lo	t: 3019648)								
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00		
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363		
EG: Metals and Major	Cations (QC Lot: 3012087)									
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00		

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

Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Red	covery (%)	Recove	ry Limits(%)	RPI	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 30120	087)										
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106		

Matrix: SOIL	atrix: SOIL					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
					Spike R	ecovery (%)	Recovery	Limits (%)	RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3012087)										
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client Laboratory

: ALS Technichem (HK) Pty Ltd

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2017121

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

Date Samples Received : 08-May-2020

: WO008 Order number

Quote

Address

: HKE/2533/2019 V3

: 19-May-2020 Issue Date

number

No. of samples received : 1

C-O-C number : ----Site

: 1 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.

Work Order

Signatories

Authorised results for

Lin Wai Yu . Iris

Assistant Manager - Inorganics

Inorganics

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017121



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: HK2017121

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.

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

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017121

ALS

Sub-Matrix: SOIL		Clie	ent sample ID	LD002-H15	 	
	Cli	ient samplii	ng date / time	08-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2017121-001	 	
EA/ED: Physical and Aggregate Properties						
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	1	mg/kg	15	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017121



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)		
sample ID							Result			
EA/ED: Physical and A	ggregate Properties (QC Lot: 30196	148)								
HK2017103-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	38.1	38.0	0.00		
HK2017112-001	Anonymous	EA055: Moisture Content (dried @ 103°C)		0.1	%	37.6	37.7	0.363		
EG: Metals and Major (Cations (QC Lot: 3012087)									
HK2017104-001	Anonymous	EG020: Arsenic	7440-38-2	1	mg/kg	15	15	0.00		

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

Matrix: SOIL	Method Blank (MB) Report			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: 3012087)										
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	99.3		85.0	106		

Matrix: SOIL			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
					Spike R	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 3012087)									
HK2017103-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	87.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2017150

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 : -- : +852 2610 2021

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 08-May-2020

number

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

Site : No. of samples analysed : 1

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

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

Signatories Position Authorised results for

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

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017150



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 08-May-2020.

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

Specific Comments for Work Order: HK2017150

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., if any) is provided by client.

Sample digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2017150

•						
Sub-Matrix: WATER		Client sample ID			 	
				Sample for		
				Equipment Blank		
	Cli	Client sampling date / time			 	
Compound	CAS Number	LOR	Unit	HK2017150-001	 	
EG: Metals and Major Cations - Total						
EG020: Arsenic	7440-38-2	1	μg/L	<1	 	



: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017150



Laboratory Duplicate (DUP) Report

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

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

Matrix: WATER		Method Blank (MB) Report				Laboratory Contr	ol Spike (LCS) and Labo	oratory Control S	pike Duplicate (DCS) Report	port	
			Spike	Spike Recovery (%)		Recove	Recovery Limits(%)		RPD (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations - Total (QC L	.ot: 3010742)											
EG020: Arsenic	7440-38-2	1	μg/L	<1	50 μg/L	98.4		85.0	110			

Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
Mauri Willer				Spike	•	ecovery (%)	Recovery		RPL) (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations - Total (QC Lot: 3010742)									
HK2017150-001	LD002-Water Sample for	EG020: Arsenic	7440-38-2	50 μg/L	96.2		75.0	125		
	Equipment Blank									

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client Laboratory

: ALS Technichem (HK) Pty Ltd

: 1 of 4

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2018406 Work Order

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

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

TONG, KOWLOON, HONG KONG

: richard.fung@alsglobal.com E-mail

: 9686 4575 Telephone

Address

E-mail

Facsimile

Order number

C-O-C number : ----

Project

Site

: +852 2610 1044 Telephone

: +852 2610 2021 Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: S3-SC068 (YL/2017/03) : HKE/1516b/2019_Rev 1_V2

Quote number **Date Samples Received** : 15-May-2020

: 20-May-2020 Issue Date

No. of samples received : 1

: 1 No. of samples analysed

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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.

Page

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

Mole

Signatories

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

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018406



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-May-2020 to 20-May-2020.

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

Specific Comments for Work Order: HK2018406

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., if any) is provided by client.

Sample digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018406

Sub-Matrix: WATER		Client sample ID			 	
				Sample for		
				Equipment Blank		
	Cli	ent sampli	ng date / time	15-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018406-001	 	
EG: Metals and Major Cations - Total						
EG020: Arsenic	7440-38-2	1	μg/L	<1	 	



: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018406



Laboratory Duplicate (DUP) Report

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

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

Matrix: WATER		Method Blank (MB) Report				Laboratory Contr	ol Spike (LCS) and Labo	oratory Control S	Control Spike Duplicate (DCS) Report		
				Spike	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 - Total (QC L	ot: 3025507)										
EG020: Arsenic	7440-38-2	1	μg/L	<1	50 μg/L	96.7		85.0	110		

Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike F	Recovery (%)	Recovery	Limits (%)	RPL	7(%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations - Total (QC Lot: 3025507)									
HK2018406-001	LD002-Water Sample for	EG020: Arsenic	7440-38-2	50 μg/L	95.1		75.0	125		
	Equipment Blank									

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client Laboratory

: ALS Technichem (HK) Pty Ltd

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2023366 Work Order

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

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

TONG, KOWLOON, HONG KONG

E-mail

: richard.fung@alsglobal.com

: 9686 4575 Telephone

: +852 2610 1044 Telephone

Facsimile

Address

E-mail

: +852 2610 2021 Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

Date Samples Received : 22-Jun-2020

: S3-SC068 (YL/2017/03) Order number

Quote

Address

: HKE/1516b/2019_Rev 1_V2

: 26-Jun-2020 Issue Date

number

No. of samples received : 1

: 1 No. of samples analysed

C-O-C number : ----

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

Authorised results for

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023366



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 22-Jun-2020 to 26-Jun-2020.

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

Specific Comments for Work Order: HK2023366

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., if any) is provided by client.

Sample digested by In-house method E-3005 prior to the determination of total metals. The In-house method is developed based on USEPA method 3005.

3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2023366

ALS

•						
Sub-Matrix: WATER		Client sample ID			 	
				Equipment Blank		
	Cli	ent sampli	ing date / time	22-Jun-2020	 	
Compound	CAS Number	LOR	Unit	HK2023366-001	 	
EG: Metals and Major Cations - Total						
EG020: Arsenic	7440-38-2	10	μg/L	<10	 	

4 of 4

Client : BLACK & VEATCH HON

Work Order





Laboratory Duplicate (DUP) Report

HK2023366

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID EG: Metals and Major Cati	ons - Total (QC Lot: 3098377)						Result				
HK2023367-001	Anonymous	EG020: Arsenic	7440-38-2	1	μg/L	<10	<10	0.00			

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

Matrix: WATER		Method Blank (MB) Report				Laboratory Contr	olke Duplicate (DCS) Report					
					Spike S		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 - Total (QC Lot	t: 3098377)											
EG020: Arsenic	7440-38-2	1	μg/L	<1	50 μg/L	95.6		85.0	110			

Matrix: WATER		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPL	D (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations - Total (QC Lot: 3098377)									
HK2023366-001	LD002-Water Sample for	EG020: Arsenic	7440-38-2	50 μg/L	91.3		75.0	125		
	Equipment Blank									

Appendix C	LABORATORY REPORTS OF PILOT TEST	

CONTRACT No. YL/2017/03 Development of Lok Ma Chau Loop: Land Decontamination and Advance **Engineering Works**



生興 - 豐利聯營 Sang Hing – Kuly Joint Venture

Contractor's Submission Form							
To: The Supervisor's Repres		From: Contractor's Representative Signature: Name: Eric Fong (Site Agent)					
CSF No.: SKJV/W56/SO/1118		Date: 28th May 2019					
Title of Submission:	Proposed mixin Stabilisation tre	g ratio for contaminated soil Solidification eatment					
Location of Works:	Land Decontam	ination Hot Spots					
Specification Reference:	P.S 32.09						
Drawing Reference:							
Description of Contents: We would like to propose mixing it	ratio for contamina	ated soil Solidification/Stabilisation treatment at					
below formula: Contaminated soil : Cement : Sand	1 = 1: 0.1: 0.1	ng Procedure(TCLP) and Unconfined Compressive					
Strength (UCS) test report for our	trial mix contamin	ated soil samples for your review and approval.					
Thank you for your kind attention. Attachment: No Yes							
Remarks:							
Purpose of Submission: For	r Comment (if an	y) and Approval D For Reference and Record					
Prepared by: Marshall Chung Checked by: Alex P		Reviewed by:					
C.C.							



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT

: MARSHALL CHUNG

WORK ORDER

HK1919790

CLIENT

: SANG HING - KULY JOINT VENTURE

OFFICE, YUEN LONG, HONG KONG

: P.O. BOX NO. 1051, YUEN LONG DELIVERY

SUB-BATCH

ADDRESS

DATE RECEIVED: 10-MAY-2019

DATE OF ISSUE : 24-MAY-2019

PROJECT

: YL/2017/03 DEVELOPMENT OF LOK MA

CLIENT ORDER

NO. OF SAMPLES: 1

CHAU LOOP - LAND DECONTAMINATION

AND ADVANCE ENGINEERING WORKS

General Comments

- Sample(s) were picked up from client by ALS Technichem (HK) staff in chilled condition.
- Sample(s) analysed and reported on an as received basis.
- UCS was subcontracted to and analysed by Soils & Materials Engineering Co., Ltd.
- UCS test on 15 May, 2019 (7th day).

Signatories

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

Signatories

Position

Kirland Jung. Richard Fung

General Manager

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

WORK ORDER SUB-BATCH

: HK1919790

: 1

CLIENT

: SANG HING - KULY JOINT VENTURE

PROJECT

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION

AND ADVANCE ENGINEERING WORKS



ALS Lab	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
111/4040700 004	20190508-S7 20kg Contaminated		08-May-2019 15:30	19SR051106-4



綜合試驗有限公司 SOILS & MATERIALS ENGINEERING CO., LTD.

香港黄竹坑道37號利建中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



Test Report

On I	Determination	Of The	Unconfined	Compressive	Strength -	Test Results

BS1377:Part 7:Section 7:1990 Tested in Accordance With: Our job no .:

19SR051106-4

W.O.no.:

Report No.: Page: Date of Issue:

19SR051106-4 1 of 2 24/05/2019

TO

Specifier

Contract no .: Project title: Project location: Client: ALS Technichem (HK) Pty Ltd. Contractor: Project engineer: Project MEMO: Ground investigation ref: Details as supplied by client Drillhole/Trial pit no.: U76 Sample type: Client sample no.: HK1919790-001 Sample recovery(%): Sample depth (m): Sample geological origin: Sample visual description Sample mass (kg): Type of test: 20190508-S7 20kg Contaminated Soil:2kg cement:2kg sand Laboratory test results Date sample received: Lab sample no. 11/05/2019 Specimen no. Specimen depth(m): Orientation of the specimen: Specimen selected by Date test(s) commenced: 15/05/2019 15/05/2019 Date test(s) completed: Sample description:

Whether sample disturbance or loss of moisture: Soil signs of the specimen:
 The size of the largest particle does not exceed 1/5 of the diameter of the specimen Particle size assessment before test:

Preparation of specimen: Nominal diameter: Specimen details mm Area Volume Mean diameter mm 77.3 4692.98 mm² 159,6 1354,3 Mean length mm 749.00 cm¹ Wet mass Dry mass Mg/m³ 1092.2 Moisture content **Bulk density** 1.81 Dry density **Test Method** BS1377:Part 7:Section 7:1990 Mg/m3 Compression results Machine no. SR1190 Rate of deformation mm/min 0.5 Force device no Force device factor 0.001 kN/div Dial gauge no. Elasped SR1195 Dial gauge factor mm/div Deformation Compression of Specimen Force Axial Corrected time specimen strain force gauge gauge area min:second reading reading 6% kN mm mm² 0.00 0.00 0 4692.98 0.000 10 0.10 0.06 0.519 4695,92 519

Axial stress σ_i kPa 0.00 110.52 20 0.20 0.13 923 4698.87 0.923 196.43 30 0.30 0.19 1519 1.519 4701.82 323.07 43 0.43 0.27 2726 2.726 4705.66 579.30 54 0.54 0.34 4258 4,258 4708.91 904.24 60 0.60 0,38 5146 4710.69 5.146 1092.41 70 0.70 0.44 6804 6.804 4713,66 1443.47 80 0.80 0.50 7410 7.410 4716.62 1571.04 90 0.90 0.56 7104 7.104 4719,60 1505.21 100 1.00 0.63 6502 6.502 4722,57 1376.79 110 1.10 0.69 5916 5.916 4725,55 1251.92 120 1.20 0.75 5421 5.421 4728.53 1146.44 130 1.30 0.81 5042 5.042 4731.52 1065.62 0.88 140 1.40 4646 4.646 4734.51 981.30 150 1,50 0.94 4245 4.245 4737.51 896.04 160 1.60 1.00 3920 3,920 4740.51 826.92

1571.04 Maximum axial stress Sketch of failure condition Axial strain at failure 0,50 Inclination of shear surface 0 = deg #See attached the photograph Unconfined compressive strength a.. 1571.04

Remarks:

The test ref. no.: UCS 1

Form No. SRRP 017-1/Issue 2/Rev. C/01/11/2007 Soils and Materials Engineering Co Ltd.

z =

Page: 1 of 2 Checked by:

mm

Lau Kam

Approved signatory:

Yeuna Chi San /

kPa

kPa

%



線合試驗有限公司 SOILS & MATERIALS ENGINEERING CO., LTD.

奔港黄竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

19SR051106-4

HK1919790-001

15/05/2019

Tel: (852) 2873 6860 Fax: (852) 2555 7533



Report No .:

Page: Date of Issue:



19SR051106-4

24/05/2019

2 of 2

TO

Specifier

Test Report

On Determination Of The Unconfined Compressive Strength - Stress/Strain Curve

Tested in Accordance With:

BS1377:Part 7:Section 7:1990

ALS Technichem (HK) Pty Ltd.

Our job no .:

Contract no .:

Project title:

Project location:

Customer: Contractor:

Project engineer:

Project MEMO: Ground investigation ref:

Details as supplied by customer

Drillhole/Trial pit no .:

Customer sample no .:

Sample depth (m):

Sample geological origin:

Sample visual description

Laboratory test results

Date sample received:

11/05/2019 Specimen no.:

1 Orientation of the specimen:

Date test(s) commenced:

Sample description:

Whether sample disturbance or loss of moisture: -Particle size assessment before test:

W.O.no.:

Sample type: Sample recovery(%):

Sample mass (kg):

Type of test:

20190508-S7 20kg Contaminated Soil:2kg cement:2kg sand

Lab sample no.: Specimen depth(m):

Specimen selected by:

Date test(s) completed:

U76

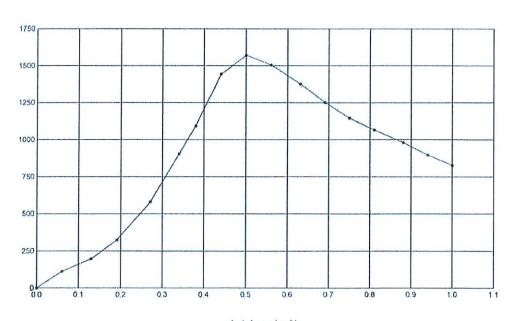
15/05/2019

Soil signs of the specimen:

The size of the largest particle does not exceed 1/5 of the diameter of the specimen

Stress - strain curve





Axial strain, %

From curve

Maximum axial stress

kPa

1571.04

Axial strain at failure

0.50

Remarks:

The test ref. no.: UCS_1

Page: 2 of 2

Form No SRRP 017-2/issue 2/Rev C/01/11/2007 Soils and Materials Engineering Co.Ltd

Toxicity Characteristic Leaching Procedure (TCLP)

ALS Technichem (HK) Pty Ltd

PRELIMINARY REPORT FOR REFERENCE ONLY

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES







CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: 1

Contact

: MARSHALL CHUNG

Contact

: Richard Fung

Work Order

: HK1911442

Address

: 43/F, AIA KOWLOIN TOWER, 100 HOW MING STREET, KWUN TONG, KOWLOON, Address

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

Amendment

HONG KONG

E-mail

Kwai Chung, N.T., Hong Kong

: richard.fung@alsglobal.com

Telephone

Telephone

: +852 2610 1044

Facsimile

E-mail

Facsimile

: +852 2610 2021

Project

Site

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 15-Mar-2019

Order number

: YL201703-0302 (Revised)

Quote number

: HKE/1143c/2019

Issue Date

: 28-May-2019

C-O-C number

No. of samples received

: 1

No. of samples analysed : 1

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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.

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

Mile

Signatories

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals_ENV

Authorised results for

PRELIMINARY REPORT FOR REFERENCE ONLY

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK1911442, Amendment 1



General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 15-Mar-2019 to 25-Mar-2019.

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

Specific Comments for Work Order: HK1911442

Sample(s) were received in ambient condition.

Sample(s) analysed and reported on an as received basis.

TCLP extraction started on 20 March, 2019.

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

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

TCLP extract were filtered prior to the determination of metals.

PRELIMINARY REPORT FOR REFERENCE ONLY

Page Number Client : 3 of 4

. . .

Work Order

: BLACK & VEATCH HONG KONG LTD

HK1911442, Amendment 1



Analytical Results

Sub-Matrix: TCLP LEACHATE		Clie	nt sample ID	T5	_	_	_	_
				2.0kg cement:20kg				
				contaminated				
				soil:2kg sand				
	Clie	Client sampling date / time						
Compound	CAS Number	LOR	Unit	HK1911442-001				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	_	_		
Sample Preparation Method								
E-TCLP: Extraction Fluid Number		1	_	1	_			

PRELIMINARY REPORT FOR REFERENCE ONLY

Page Number

: 4 of 4

: BLACK & VEATCH HONG KONG LTD

Work Order

Client

HK1911442, Amendment 1



Laboratory Duplicate (DUP) Report

Matrix: WATER					Lab	oratory Duplicate (DUP)	Report	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major	Cations (QC Lot: 2254763)							
HK1911438-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER			Method Blank (MB)	Report		Laboratory Contri	ol Splike (LCS) and Lab	oratory Control S	plke Duplicate (I	S) Report			
					Splke	Spike Red	covery (%)	Recove	ory Limits(%)	RP	7 (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit		
EG: Metals and Major Cations (QC Lot: 22547	763)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.9		85	112				

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

latrix: WATER		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Splke	Splka Re	ocovery (%)	Recovery Limits (%)		RPL	7 (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and	Major Cations (QC Lot: 225	4763)								
HK1911438-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.2		75	125		

CONTRACT No. YL/2017/03 Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works



生興 - 豐利聯營 Sang Hing – Kuly Joint Venture

Contractor's Submission Form

To: The Supervisor's Representative Attn: Mr. Victor GO (Senior Resident Engineer)		From : Contractor's Representative Signature :					
CSF No.: SKJV/W56/SO/1560		Date: 16th October 2019					
Title of Submission:	Proposed Alter Stabilisation Tr	native Mixing Ratio for Cement Solidification / reatment					
Location of Works:	Land Decontan	nination Works					
Specification Reference:	P.S 32.05 and 32	2.06					
Drawing Reference:							
for revising mixing ratio of cement Please be informed that this revi Consultant Specialist (LCS) as per Therefore, if no further comment Environmental Consultant by ne	Description of Contents: Further to our previous letter ref. (SKJV/W56/SO/1560) dated 16 th September 2019 regarding our proposal for revising mixing ratio of cement solidification/stabilization. Please be informed that this revised mixing ratio has been endorsed by our Land Decontamination Consultant Specialist (LCS) as per attached signed copy of cover letter ref. SKJV/W56/S0/1560. Therefore, if no further comment received from your side, Environmental Team (ET) and Independent Environmental Consultant by next week, we will proceed to change the cement ratio in cement solidification/stabilization works from 10% to 7.5 % (i.e. new mixing ratio: 7.5% cement & 10% sand by weight) Thank you for your kind attention.						
Remarks:							
	Comment (if any	y) and Approval					
Prepared by: Ronald WONG Checked by: Alex PO Checked by:	- Samuelle (in this	Reviewed by:					
C.C.							

CONTRACT No. YL/2017/03 Development of Lok Ma Chau Loop: Land Decontamination and Advance



Engineering Works	20111120	Sang Ting – Kuly Joint Venture					
Cont	ractor's Si	ubmission Form					
To : The Supervisor's Repres	entative	From : Contractor's Representative					
Attn : Mr. Victor GO (S	enior Resident	Signature :					
Engineer)		Name : Eric FONG (Site Agent)					
CSF No.: SKJV/W56/SO/1560		Date: 16th September 2019					
Title of Submission:	Proposed Alter Stabilisation Tr	rnative Mixing Ratio for Cement Solidification / reatment					
Location of Works:	Land Decontan	nination Works					
Specification Reference:	P.S 32.05 and 3	2.06					
Drawing Reference:							
Description of Contents:							
Further to our previous letter ref. (SKJV/W56/SO/1560) dated 28th May 2019 regarding our proposal for mixing ratio of cement solidification/stabilization. After over a month of learning period for mixing of contaminated soil, most of UCS results are found more larger than 1 MPa, therefore we would like to propose a lower cement content mixing ratio to optimize the cement usage and to minimize the quantity of treated soil generation.							
content and 10% of sand by weight	under your supers than 1 MPa for U	ng 20kg contaminated soil by using 7.5% of cement vision staff witness. The results are found satisfactory ICS test and less than 1 mg for TCLP test. Enclosed s.					
		oval for changing the cement ratio in cement (i.e. new mixing ratio: 7.5% cement & 10% sand by					
Thank you for your kind attention.							
Attachment: No Yes							
Remarks:							
Purpose of Submission: For	Comment (if any	and Approval For Reference and Record					
Prepared by: Kenneth WONG							
Checked by : Alex PO		Reviewed by					
Checked by:							
C.C.							





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0190120 Job No.: SHK190013 Page: 1 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Sample No.#: Trial 1 Depth (m)#: -

Date of Test: 16/8/2019

Actual Depth (m): -

W.O. No.#: -

PT75 Sample Type#:

Sample Origin#: 20 kg contaminated soil mixed with

Date Received: 10/8/2019

7.5% cement and 10% sand

Information provided by Client

Specimen Details

Specimen Details					
Diameter of specimen	mm	77.3	Wet mass of specimen	9	1325.4
Length of specimen	mm	155.2	Dry mass of specimen	g	-
Area of specimen	mm ²	4686.9	Moisture content	%	-
Volume of specimen	cm ³	727.55	Bulk density	Mg/m ³	1.82
Particle density (assumed/measured)*	Ma/m³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Grey sandy SILT/CLAY with Cement

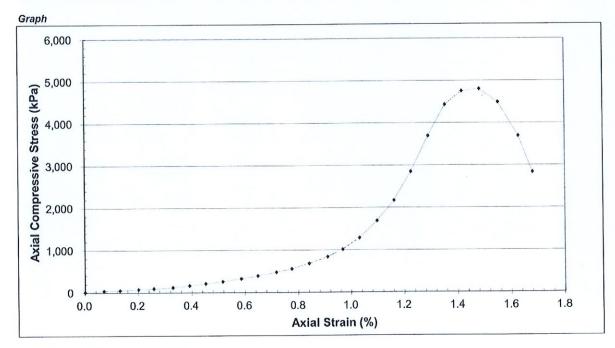
Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	4799	kPa
Axial strain at failure	1.5	%
Unconfined compressive strength, (q _u)	4799	kPa

Sketch of failure conditions Inclination of shear surface





Remarks:

Mixing Date: 9/8/2019

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

Date:

16 August 2019

Date: 16 August 2019



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0190120 Job No.: SHK190013 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Depth (m)#: -

Date of Test: 16/8/2019

Actual Depth (m): -

W.O. No.#: -

Sample No.#: Trial 1 Sample Type#: PT75

Sample Origin#: 20 kg contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 10/8/2019

* Information provided by Client

Machine No.	TM08	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM08-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
3 0	0110 1 0014	Original length (L _o)	mm	155.2
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4686.9

The compression was terminated at 1.7% of axial strain and the peak axial compressive stress is reached at 1.5%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(KN)	(N)	(mm²)	(kPa)
0.00	0.0	· -	0.05	50	4686.9	10.67
0.11	0.1	-	0.18	180	4690.2	38.38
0.20	0.1	-	0.24	240	4693.0	51.14
0.31	0.2	_	0.35	350	4696.3	74.53
0.40	0.3	-	0.44	440	4699.0	93.64
0.51	0.3	_	0.56	560	4702.4	119.09
0.61	0.4	_	0.77	770	4705.3	163.65
0.70	0.5	-	0.99	990	4708.2	210.27
0.80	0.5	-	1.22	1220	4711.2	258.96
0.91	0.6	-	1.54	1540	4714.5	326.65
1.01	0.6	-	1.85	1850	4717.5	392.16
1.11	0.7	-	2.25	2250	4720.7	476.62
1.20	0.8	-	2.63	2630	4723.5	556.80
1.30	0.8	-	3.22	3220	4726.6	681.26
1.41	0.9	-	3.97	3970	4729.9	839.34
1.50	1.0	-	4.79	4790	4732.7	1012.11
1.60	1.0		6.08	6080	4735.7	1283.86
1.70	1.1	-	8.00	8000	4738.9	1688.15
1.80	1.2	-	10.29	10290	4742.0	2169.97
1.90	1.2		13.51	13510	4745.0	2847.19
2.00	1.3		17.54	17540	4748.2	3694.05
2.10	1.4	1 - 1	21.05	21050	4751.3	4430.41
2.20	1.4	-	22.59	22590	4754.3	4751.50
2.30	1.5		22.83	22830	4757.4	4798.81
2.41	1.6		21.38	21380	4760.8	4490.88
2.53	1.6		17.59	17590	4764.4	3691.96
2.61	1.7	-	13.51	13510	4767.0	2834.08



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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0190120 Job No.: SHK190013 Page: 1 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Trial 2

Depth (m)#: -

Date of Test: 16/8/2019

Sample No.#:

Actual Depth (m): -

W.O. No.": -

Sample Type#:

PT75

Sample Origin#: 20 kg contaminated soil mixed with

Date Received: 10/8/2019

7.5% cement and 10% sand

Information provided by Client

- 1 - - - D - 1 - 11 -

Specimen Details					
Diameter of specimen	mm	77.4	Wet mass of specimen	g	1341.0
Length of specimen	mm	156.5	Dry mass of specimen	g	-
Area of specimen	mm ²	4710.0	Moisture content	%	-
Volume of specimen	cm ³	737.26	Bulk density	Mg/m ³	1.82
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	3572	kPa
Axial strain at failure	0.45	%
Unconfined compressive strength, (qu)	3572	kPa

Sketch of failure conditions Inclination of shear surface



Graph 4,000 3,500 Axial Compressive Stress (kPa) 3,000 2,500 2,000 1,500 1,000 500 0 1.0 1.2 0.0 0.2 0.4 0.6 0.8 Axial Strain (%)

Remarks:

Mixing Date: 9/8/2019

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

HUI King Fai

Date:

16 August 2019

Date: 16 August 2019



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0190120 Job No.: SHK190013 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Sample Type#:

Depth (m)#: -

Date of Test: 16/8/2019

Trial 2

PT75

Actual Depth (m): -Sample Origin#: 20 kg contaminated soil mixed with W.O. No.#:

7.5% cement and 10% sand

Date Received: 10/8/2019

Information provided by Client

information provided by Cilent			1	4.00
Machine No.	TM08	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM08-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
	0110 1 0044	Original length (L _o)	mm	156.5
Force Transducer No.	SUC-LC01A	Original area (A _a)	mm ²	4710.0

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.4%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	ε	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(KN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.01	10	4710.0	2.12
0.10	0.1		0.27	270	4713.0	57.29
0.20	0.1	-	0.89	890	4716.1	188.72
0.30	0.2	-	3.97	3970	4719.1	841.27
0.40	0.3	_	8.24	8240	4722.1	1744.99
0.50	0.3	_	11.77	11770	4725.2	2490.93
0.60	0.4	-	14.64	14640	4728.1	3096.37
0.70	0.4	-	16.90	16900	4731.2	3572.04
0.81	0.5		16.26	16260	4734.4	3434.43
0.91	0.6	-	15.39	15390	4737.4	3248.59
1.04	0.7	-	13.27	13270	4741.4	2798.76
1.10	0.7	-	12.37	12370	4743.4	2607.84
1.20	0.8	-	11.77	11770	4746.4	2479.75
1.30	0.8	-	11.24	11240	4749.5	2366.56
1.40	0.9	-	10.73	10730	4752.6	2257.73
1.50	1.0	-	10.16	10160	4755.6	2136.42
1.60	1.0	-	9.48	9480	4758.7	1992.14
1.70	1.1	-	8.93	8930	4761.8	1875.35

Toxicity Characteristic Leaching Procedure (TCLP)

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

7	5	HK1934341				
G	rage	Work Order				
H I VIO CHO modulos CHO CHO		: Richard Fung	: 11/F., Chung Shun Knitting	Centre, 1 - 3 Wing Yip Street,	Kwai Chung, N.T., Hong Kong	: richard.fung@alsglobal.com
-	Laboratory	Contact	Address			E-mail
EGITHEN TING YEAR ON THE SHARE		: KENITH WONG	: P.O. BOX NO. 1051, YUEN LONG DELIVERY	OFFICE, YUEN LONG, HONG KONG		: Kenithwong@skjv.com.hk
i i		Contact	Address			E-mail

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<u>.</u> .

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Facsimile

: 10-Aug-2019	20-Aug-2019		-		-
Date Samples Received :	Issue Date		No. of samples received : 1		No. of samples analysed : 1
CONTAMINATION AND ADVANCE ENGINEERING WORKS	Quote : HKE/2151/2019	number			
: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS	: S3-SC073 (YL/2017/03)		1		1
Project	Order	number	0-0-0	number	Site

at appear on this report and are the authorised signatories.	Authorised results for
This document has been signed by those names th	Signatories
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Signatories	Position	Authorised results fo
Kilsed from.		
Fung Lim Chee, Richard	Managing Director	Metals_ENV

ALS Technichem (HK) Pty Ltd Partoffe ALS Laboratory Group

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



: SANG HING - KULY JOINT VENTURE HK1934341 Page Number Work Order

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 10-Aug-2019 to 20-Aug-2019.

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

Specific Comments for Work Order: HK1934341

Sample(s) were picked up from client by ALS Technichem (HK) staff in chilled condition.

Sample(s) analysed and reported on an as received basis.

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

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

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

TCLP extract were filtered prior to the determination of metals.



Page Number : 3 of 4
Client : SANG HING - KULY JOINT VENTURE
Work Order HK1934341

Analytical Results

Sub-Matrix: TCLP LEACHATE		Clien	Client sample ID	20190809-TCLP-Tr ial 1 20kg contaminated soil mixed with 7.5% cement and	l	l	I	
				DIN SAIIO				
	Clie	Client sampling date / time	date / time	09-Aug-2019	1	1	1	1
Compound	CAS Number LOR	10R	Unit	HK1934341-001				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1	1	1	1
Sample Preparation Method								
E-TCLP: Extraction Fluid Number	I	-	ŀ	_	ı	ı	I	I



. 4 of 4 Page Number Client

: SANG HING - KULY JOINT VENTURE HK1934341 Work Order

Laboratory Duplicate (DUP) Report

Matrix: WATER					Labor	Laboratory Duplicate (DUP) Report	Report	
Laboratory	Client sample ID	Method: Compound	CAS Number LOR	307	Unit	Original Result	Duplicate	RPD (%)
sample ID EG: Metals and Major Ca	sample ID EG: Metals and Major Cations (QC Lot: 2531399)						Kesuit	
HK1934157-001	Anonymous	EG020: Arsenic	7440-38-2 0.1	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Confi	Laboratory Control Splice (LCS) and Laboratory Control Splice Duplicate (DCS) Report	oratory Control Sp	nike Duplicate (1	DCS) Report	
					Spike	Splke Re	Spike Recovery (%)	Кесоия	Recovery Limits(%)	Æ	RPD (%)
Method: Compound	CAS Number LOR	TOR	Unit	Result	Concentration	<i>\$</i> 27	SOO	тот	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 2531399)	ot: 2531399)										
EG020: Arsenic	7440-38-2 0.1	0.1	mg/L	<0.1	1 mg/L	97.3	1	85	112	I	1

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

Matrix: WATER				Matrix Spi	Watrix Spike (MS) and Matrix Spike Duplicate (MSD) Report	x Spike Duplica	ate (MSD) Re	port	
			Spike	Splike Re	Splike Recovery (%)	Recovery Limits (%)	Limits (%)	RPI	RPD (%)
Laboratory Client sample ID sample ID	Method: Compound	CAS Number	Concentration	WS	MSD	ТОМ	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 2531399)	(6								
HK1934157-001 Anonymous	EG020: Arsenic	7440-38-2	7440-38-2 1 mg/L	114	1	75	125	I	1

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: 1 of 4	: HK1934345		
Page	Work Order		
: ALS Technichem (HK) Pty Ltd	: Richard Fung	Centre, 1 - 3 Wing Yip Street,	Kwai Chung, N.T., Hong Kong
Laboratory	Contact	Address	
: SANG HING - KULY JOINT VENTURE	ENITH WONG DO BOX NO 1061 VIEN LONG DELIVEDY	OFFICE, YUEN LONG, HONG KONG	
Client	Contact	Scalpoy	

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	Date Samples Received : 10-Aug-2019	Issue Date : 20-Aug-2019		No. of samples received : 1
Facsimile : +852 2610 2021	OOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS	Quote : HKE/2151/2019	number	
1	: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOO	: S3-SC073 (YL/2017/03)		<u></u>
Facsimile	Project	Order	number	0-0-0

No. of samples analysed	ory. This document has been signed by those names that appear on this report and are the
1	s report may not be reproduced except with prior written approval from the testing laboratc
Site	Ë

number

This document has been sig	ned by those names that appear	This document has been signed by those names that appear on this report and are the authorised signatories.
Signatories	Position	Authorised results for
Richard from.		
Fung Lim Chee, Richard	Managing Director	Metals_ENV

ALS Technichem (HK) Pty Ltd Partoffle ALS Laboratory Group

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: SANG HING - KULY JOINT VENTURE Page Number

HK1934345 Work Order

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 10-Aug-2019 to 20-Aug-2019. Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific Comments for Work Order: HK1934345

Sample(s) were picked up from client by ALS Technichem (HK) staff in chilled condition.

Sample(s) analysed and reported on an as received basis.

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

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

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

TCLP extract were filtered prior to the determination of metals.



Work Order

: 3 of 4 : SANG HING - KULY JOINT VENTURE HK1934345 Page Number Client

Analytical Results

Sub-Matrix: TCLP LEACHATE		Client	Client sample ID	20190809-TCLP-Tr ial 2 20kg contaminated soil mixed with 7.5% cement and 10% sand	I	1	I	l ,
	Clien	Client sampling date / time	date / time	09-Aug-2019	ı	I	I	1
Compound	CAS Number LOR	10R	Unit	HK1934345-001				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1	l	1	1
Sample Preparation Method								
E-TCLP: Extraction Fluid Number	I	-	ı	-	ı	ı	ı	I



Page Number : 4 of 4
Client : SANG HIN
Work Order HK193434

: SANG HING - KULY JOINT VENTURE HK1934345

Laboratory Duplicate (DUP) Report

Matrix: WATER					Tabo	Laboratory Duplicate (DUP) Report	Report	
Laboratory	Client sample ID	Method: Compound	CAS Number LOR	10k	Unit	Original Result	Duplicate	RPD (%)
EG: Metals and Major C	EG: Metals and Major Cations (QC Lot: 2531399)						Result	
HK1934157-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	0.1	40.1	0.00

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

Matrix: WATER			Method Blank (MB) Report	Report		Laboratory Conti	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report	oratory Control S	pike Duplicate (1	DCS) Report	
					Spike	Spike Re	Splke Recovery (%)	Recove	Recovery Limits(%)	Đ.	RPD (%)
Method: Compound	CAS Number LOR	10R	Unit	Result	Concentration	<i>\$</i> 07	DCS	Том	High	Value	0.00
EG: Metals and Major Cations (QC Lot: 2531399)											Limit
EG020: Arsenic	7440-38-2 0.1	0.1	mg/L	<0.1	1 mg/L	97.3	I	82	112	ı	1

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

Matrix: WATER

MS MSD Low High Value				Spike	Spike Re	Spike Recovery (%)	Recovery	Recovery Limits (%)	RPL	RPD (%)
s and Major Cations (QC Lot: 2531399) F-001 Anonymous EG020: Arsenic 7440-38-2 1 mg/L 114 75 125		Method: Compound	CAS Number	Concentration	IMS	MSD	мот	High	Value	
EG020: Arsenic 7440-38-2 1 mg/L 114 75 125	sample ID									Limit
EG020: Arsenic 7440-38-2 1 mg/L 114 75 125	EG: Metals and Major Cations (QC Lot: 25313	(66)								
	HK1934157-001 Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	114	I	75	125	1	I

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

Appendix D	LABORATORY REPORTS OF TREATED SOIL

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014120

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 15-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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

Signatories Position Authorised results for

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

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014120



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-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014120

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014120

ALS

Analytical Results

•						
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S1	 	
	Cli	ient samplii	ng date / time	14-Apr-2020	 	
Compound	CAS Number	LOR	Unit	HK2014120-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

Page Number

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014120



Laboratory Duplicate (DUP) Report

Matrix: WATER					Labora	atory Duplicate (DUP)	Report	
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)
sample ID							Result	
EG: Metals and Major Cati	ons (QC Lot: 2978401)							
HK2013955-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00

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

Matrix: WATER			Method Blank (ME	3) Report		Laboratory Contro	ol Spike (LCS) and Labor	atory Control S	pike Duplicate (i	DCS) Report	
					Spike	Spike Red	covery (%)	Recove	ory Limits(%)	RPI	D (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control
											Limit
EG: Metals and Major Cations (QC Lot: 2978401)											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.8		85.0	112		

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

Matrix: WATER					Matrix Sp.	ike (MS) and Matri	x Spike Duplic	ate (MSD) Re	port	
				Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPL) (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 2978401)									
HK2013955-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.7		75.0	125		

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung Work Order : HK2014245

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Facsimile Project

Telephone

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 16-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 27-Apr-2020

C-O-C number : ----

Site

No. of samples received : 1

: 1 No. of samples analysed

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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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014245



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 16-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014245

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014245

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP S2					
	Cli	ent samplii	ng date / time	15-Apr-2020					
Compound	CAS Number	LOR	Unit	HK2014245-001					
EG: Metals and Major Cations	EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

Page Number

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014245



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	EG: Metals and Major Cations (QC Lot: 2978402)										
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
			·		Spike	Spike Red	Spike Recovery (%)		Recovery Limits(%)		D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

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

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
			Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	EG: Metals and Major Cations (QC Lot: 2978402)										
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014246

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

 Telephone
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 : +852 2610 1044

 Facsimile
 : -- : +852 2610 2021

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 16-Apr-2020

number

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

No. of samples analysed : 1

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

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

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

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

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014246



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 16-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014246

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2014246

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP S3					
	Cli	ient samplii	ng date / time	15-Apr-2020					
Compound	CAS Number	LOR	Unit	HK2014246-001					
EG: Metals and Major Cations	EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

Page Number

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014246



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	EG: Metals and Major Cations (QC Lot: 2978402)										
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
			·		Spike	Spike Red	Spike Recovery (%)		Recovery Limits(%)		D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

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

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
			Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	EG: Metals and Major Cations (QC Lot: 2978402)										
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014460

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Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 17-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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.

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014460



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 17-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014460

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014460

ALS

Sub-Matrix: TCLP LEACHATE		Client sample ID									
	Cli	ient samplii	ng date / time	16-Apr-2020							
Compound	CAS Number	LOR	Unit	HK2014460-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method											
E-TCLP: Extraction Fluid Number		1		1							

: 4 of 4

Client : B

BLACK & VEATCH HONG KONG LTD

Work Order HK2014460



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 2978402)											
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

atrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Spike	Spike Red	covery (%)	Recove	ory Limits(%)	RPI	D (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control	
											Limit	
EG: Metals and Major Cations (QC Lot: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

Matrix: WATER	trix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Matter Communicati			Spike Spike Recovery (%)		Recovery	Limits (%)	RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 2978402)									
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2014461

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 17-Apr-2020

: 1

Project Order number

Telephone

Address

: S3-SC073 (YL/2017/03)

Quote

: HKE/2151/2019

Issue Date

: 28-Apr-2020

C-O-C number : ----

number

No. of samples received

Date Samples Received

: 1 No. of samples analysed

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

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014461



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 17-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014461

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014461

ALS

•						
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S5	 	
	Cli	ient samplii	ng date / time	16-Apr-2020	 	
Compound	CAS Number	LOR	Unit	HK2014461-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : BL

BLACK & VEATCH HONG KONG LTD

Work Order HK2014461



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 2978402)											
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER			Method Blank (ME	3) 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: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

Matrix: WATER	trix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Matter Communicati			Spike Spike Recovery (%)		Recovery	Limits (%)	RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 2978402)									
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014484

Address : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 18-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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.

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014484



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 18-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014484

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014484

ALS

Sub-Matrix: TCLP LEACHATE		Client sample ID			 	
	Cli	ent samplii	ng date / time	17-Apr-2020	 	
Compound	CAS Number	LOR	Unit	HK2014484-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014484



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cat	ions (QC Lot: 2978402)										
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method 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: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

Matrix: WATER	trix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and M	Major Cations (QC Lot: 2978402)									
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2014485

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Project

Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 18-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 28-Apr-2020

: 1

C-O-C number : ----

No. of samples received

No. of samples analysed : 1

0-0-0 Humber

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014485



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 18-Apr-2020 to 22-Apr-2020.

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

Specific Comments for Work Order: HK2014485

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client

: BLACK & VEATCH HONG KONG LTD

Work Order HK2014485

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S7	 	
	Cli	ient samplii	ng date / time	17-Apr-2020	 	
Compound	CAS Number	CAS Number LOR Unit			 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	TCLP: Extraction Fluid Number 1				 	

: 4 of 4

Client : BL

BLACK & VEATCH HONG KONG LTD

Work Order HK2014485



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ons (QC Lot: 2978402)												
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Market Communication					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: 2978402)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.0		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and	Major Cations (QC Lot: 2978402)											
HK2014181-007	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

Contact : GO WAI KIT, VICTOR

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Project : `

Address

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 20-Apr-2020

Order number : S3-SC073 (YL/2017/03)

: 9686 4575

Quote number

: HKE/2151/2019

Issue Date

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

Date Samples Received

: 29-Apr-2020

C-O-C number : ----

Site : --

No. of samples received : 1

No. of samples analysed : 1

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014594



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 20-Apr-2020 to 28-Apr-2020.

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

Specific Comments for Work Order: HK2014594

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014594

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S8	 	
	Cli	ient samplii	ng date / time	18-Apr-2020	 	
Compound	CAS Number LOR Unit			HK2014594-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	-TCLP: Extraction Fluid Number 1				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014594



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cat	ions (QC Lot: 2989233)												
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
6.50 d Communication					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: 2989233)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.9		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 2989233)											
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.7		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014595

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E-mail : richard.fung@alsglobal.com

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 20-Apr-2020

number

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

Site : —- No. of samples analysed : 1

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

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 Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014595



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 20-Apr-2020 to 28-Apr-2020.

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

Specific Comments for Work Order: HK2014595

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014595

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S9	 	
	Cli	ent samplii	ng date / time	18-Apr-2020	 	
Compound	CAS Number LOR Unit			HK2014595-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	-TCLP: Extraction Fluid Number 1				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014595



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cat	ions (QC Lot: 2989233)											
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 2989233)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.9		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD)							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 2989233)											
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.7		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES







CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

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Contact

Address

E-mail

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: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2014769

TONG, KOWLOON, HONG KONG

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Project

Site

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 21-Apr-2020

: 1

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 04-May-2020

C-O-C number : ----

No. of samples received

No. of samples analysed

: 1

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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

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 Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014769



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 21-Apr-2020 to 28-Apr-2020.

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

Specific Comments for Work Order: HK2014769

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014769

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S10							
	Cli	ient sampli	ng date / time	20-Apr-2020							
Compound	CAS Number	LOR	Unit	HK2014769-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method	Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1							

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014769



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 2989233)											
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. W. A. C				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: 2989233)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.9		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD) (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 2989233)										
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.7		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Contact

Address



: 1 of 4



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

: GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2014770

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TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 21-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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.

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014770



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 21-Apr-2020 to 28-Apr-2020.

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

Specific Comments for Work Order: HK2014770

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014770

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S11						
	Cli	ient samplii	ng date / time	20-Apr-2020						
Compound	CAS Number	LOR	Unit	HK2014770-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014770



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ions (QC Lot: 2989233)						Result						
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Matter to Communication					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: 2989233)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.9		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 2989233)										
HK2014590-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.7		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

: Richard Fung Contact

Work Order

: HK2014916

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Facsimile Project

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 22-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

: 9686 4575

Quote number : HKE/2151/2019

Issue Date

: 05-May-2020

: 1

No. of samples received

C-O-C number : ----

Site

: 1 No. of samples analysed

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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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014916



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: HK2014916

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014916

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S12						
	Cli	ient samplii	ng date / time	21-Apr-2020						
Compound	CAS Number	LOR	Unit	HK2014916-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BL

: BLACK & VEATCH HONG KONG LTD

Work Order HK2014916



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID EG: Metals and Major Cati	ons (QC Lot: 2991531)						Result						
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mathetic Company					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: 2991531)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	102		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 2991531)										
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	102		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2014918 Work Order

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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

TONG, KOWLOON, HONG KONG

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

E-mail Telephone

Address

Facsimile

C-O-C number : ----

Project

Site

: richard.fung@alsglobal.com E-mail

: 9686 4575

: +852 2610 1044 Telephone : +852 2610 2021

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received : 22-Apr-2020

: S3-SC073 (YL/2017/03) Order number

: HKE/2151/2019 Quote

: 05-May-2020 Issue Date

number

Facsimile

Address

No. of samples received : 1

: 1 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

Mole

Signatories

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

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014918



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: HK2014918

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2014918

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S13	 	
	Cli	ient samplii	ng date / time	21-Apr-2020	 	
Compound	CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	E-TCLP: Extraction Fluid Number 1				 	

: 4 of 4

Client : BI

BLACK & VEATCH HONG KONG LTD

Work Order HK2014918



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 2991531)											
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 2991531)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	102		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 2991531)										
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	102		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2015129

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 23-Apr-2020

number

C-O-C number : ---
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.

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015129



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: HK2015129

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015129

ALS

•						
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S14	 	
	Cli	ient samplii	ng date / time	22-Apr-2020	 	
Compound	d CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015129



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cat	ions (QC Lot: 2991531)											
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Matter & Commenced				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: 2991531)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	102		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	444.40			Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 2991531)											
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	102		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2015130

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

 Telephone
 : 9686 4575
 Telephone
 : +852 2610 1044

 Facsimile
 : -- : +852 2610 2021

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 23-Apr-2020

number

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

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.

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015130



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: HK2015130

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : E Work Order :

BLACK & VEATCH HONG KONG LTD HK2015130



Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S15	 	
	Cli	ient samplii	ng date / time	22-Apr-2020	 	
Compound	CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	E-TCLP: Extraction Fluid Number 1				 	

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015130



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 2991531)											
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER			Method Blank (ME	3) 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: 2991531)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	102		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Mark Comment			Spike	Spike R	ecovery (%)	Recovery	Limits (%)	RPD) (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 2991531)										
HK2014912-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	102		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2015235

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 24-Apr-2020

number

C-O-C number : ---
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.

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015235



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: HK2015235

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

Work Order

3 of 4

Client : BLA

BLACK & VEATCH HONG KONG LTD HK2015235

ALS

•						
Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S16	 	
	Cli	ent samplii	ng date / time	23-Apr-2020	 	
Compound	CAS Number	LOR	Unit	HK2015235-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015235



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ions (QC Lot: 2991579)												
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fettati Company					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: 2991579)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	103		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ate (MSD) Re	SD) Report			
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 2991579)									
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	101		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2015236

TONG, KOWLOON, HONG KONG

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Address

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

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

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E-mail

: richard.fung@alsglobal.com

: +852 2610 1044 Telephone

Facsimile

: 9686 4575

Facsimile

: +852 2610 2021

Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 24-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 06-May-2020

C-O-C number : ----

Site

No. of samples received

: 1

: 1 No. of samples analysed

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Signatories

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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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015236



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: HK2015236

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2015236

ALS

Sub-Matrix: WATER	Client sample ID			LD002-TCLP-S17	 	
	Cli	ient samplii	ng date / time	23-Apr-2020	 	
Compound	CAS Number LOR Unit			HK2015236-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015236



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Bassiff	RPD (%)					
sample ID EG: Metals and Major Cati	ions (QC Lot: 2991579)						Result						
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
645 t Commund					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: 2991579)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	103		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	ate (MSD) Re	SD) Report			
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 2991579)									
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	101		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2015384

TONG, KOWLOON, HONG KONG

: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Address

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E-mail

E-mail

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Telephone

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Project

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 25-Apr-2020

Order number

Telephone

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 06-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

Site

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

Signatories

Position

Authorised results for

Mole

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

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

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015384



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 25-Apr-2020 to 05-May-2020.

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

Specific Comments for Work Order: HK2015384

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015384

ALS

Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S18	 	
	Cli	ient samplii	ng date / time	24-Apr-2020	 	
Compound	CAS Number LOR Unit			HK2015384-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015384



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ions (QC Lot: 2991579)												
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
fathart Company					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: 2991579)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	103		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 2991579)											
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	101		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2015385

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 25-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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.

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015385



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 25-Apr-2020 to 05-May-2020.

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

Specific Comments for Work Order: HK2015385

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2015385

Sub-Matrix: WATER	Client sample ID			LD002-TCLP-S19	 	
	Cli	ent sampli	ng date / time	24-Apr-2020	 	
Compound	CAS Number	LOR	Unit	HK2015385-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	



: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015385



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ions (QC Lot: 2991579)											
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Matter & Communication				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: 2991579)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	103		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	ate (MSD) Re	D) Report			
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 2991579)									
HK2015232-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	101		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

: Richard Fung Contact

Work Order

: HK2015430

TONG, KOWLOON, HONG KONG

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Project

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 27-Apr-2020

: 1

Order number

: S3-SC073 (YL/2017/03)

: HKE/2151/2019

Issue Date

: 08-May-2020

Quote number

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

C-O-C number : ----

No. of samples received

: 1

No. of samples analysed

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

Signatories

Date Samples Received

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015430



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-Apr-2020 to 08-May-2020.

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

Specific Comments for Work Order: HK2015430

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2015430

ALS

Sub-Matrix: WATER		Client sample ID									
	Cli	ent samplii	ng date / time	25-Apr-2020							
Compound	CAS Number	LOR	Unit	HK2015430-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method											
E-TCLP: Extraction Fluid Number		1		1							

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015430



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3004187)											
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Market Communication				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: 3004187)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	trix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Office to a server to ID Method: Compared			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	0 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 3004187)										
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2015431

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 : -- : +852 2610 2021

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 27-Apr-2020

number

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

Site : — No. of samples analysed : 1

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

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.

Leung Chak Cheong , Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015431



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-Apr-2020 to 08-May-2020.

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

Specific Comments for Work Order: HK2015431

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015431

ALS

Sub-Matrix: WATER		Client sample ID								
	Cli	ent samplii	ng date / time	25-Apr-2020						
Compound	CAS Number	LOR	Unit	HK2015431-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015431



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3004187)											
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Market Communication				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: 3004187)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)				
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control			
sample ID										Limit			
EG: Metals and I	Major Cations (QC Lot: 3004187)												
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.0		75.0	125					

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

TONG, KOWLOON, HONG KONG

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

Work Order

: HK2015573

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Facsimile Project

Site

Telephone

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 28-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 09-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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

Signatories

Position

Authorised results for

Mole

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

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

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015573



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 28-Apr-2020 to 08-May-2020.

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

Specific Comments for Work Order: HK2015573

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015573

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S22						
	Cli	ent samplii	ng date / time	27-Apr-2020						
Compound	CAS Number LOR Unit			HK2015573-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method	Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015573



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3004187)											
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3004187)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	O (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3004187)										
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.0		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

: S3-SC073 (YL/2017/03)

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2015574

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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: 9686 4575

TONG, KOWLOON, HONG KONG

E-mail

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

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: +852 2610 2021

Date Samples Received

: 28-Apr-2020

Project

Site

Order number

Address

E-mail

Telephone

Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Quote number : HKE/2151/2019

Issue Date

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

: 09-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

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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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015574



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 28-Apr-2020 to 08-May-2020.

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

Specific Comments for Work Order: HK2015574

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015574

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S23						
	Cli	ient samplii	ng date / time	27-Apr-2020						
Compound	CAS Number LOR Unit			HK2015574-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method	Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015574



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3004187)											
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3004187)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	ate (MSD) Re	(MSD) Report			
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3004187)									
HK2015428-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.0		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact : GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2015920

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Project : **YL/2017/0**

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 29-Apr-2020

: 1

Order number : S3-SC073 (YL/2017/03)

: 9686 4575

Quote

: HKE/2151/2019

Issue Date

: 12-May-2020

number

No. of samples received

No. of samples analysed : 1

C-O-C number : ----

Site : ----

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.

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

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015920



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 29-Apr-2020 to 12-May-2020.

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

Specific Comments for Work Order: HK2015920

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., if any) is provided by client.

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015920

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S24							
	Cli	ient samplii	ng date / time	28-Apr-2020							
Compound	CAS Number LOR Unit										
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method	Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1							

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015920



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009276)											
HK2015920-001	LD002-TCLP-S24	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3009276)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.8		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3009276)											
HK2015920-001	LD002-TCLP-S24	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

TONG, KOWLOON, HONG KONG

: Richard Fung Contact

Work Order

: HK2015921

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 29-Apr-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 12-May-2020

C-O-C number : ----

No. of samples received

: 1 : 1

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015921



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 29-Apr-2020 to 12-May-2020.

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

Specific Comments for Work Order: HK2015921

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., if any) is provided by client.

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

3 of 4

Client : E

BLACK & VEATCH HONG KONG LTD

Work Order HK2015921

ALS

•											
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S25							
	Cli	ient samplii	ng date / time	28-Apr-2020							
Compound	CAS Number	LOR	Unit	HK2015921-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method	Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1							

Work Order

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

HK2015921



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number LOR		Unit	Original Result Duplicate		RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3009276)										
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method 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: 3009276)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.8		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	te (MSD) Report				
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3009276)									
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2015959

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 02-May-2020

: S3-SC073 (YL/2017/03) Order number

: 9686 4575

Quote

: HKE/2151/2019

Issue Date

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

: 12-May-2020

number

Date Samples Received

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

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

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015959



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-May-2020.

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

Specific Comments for Work Order: HK2015959

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015959

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S26						
	Cli	ient samplii	ng date / time	29-Apr-2020						
Compound	CAS Number	LOR	Unit	HK2015959-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015959



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009276)											
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3009276)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.8		85.0	112			

Matrix: WATER	latrix: WATER				port					
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3009276)									
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2015960

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 02-May-2020

: S3-SC073 (YL/2017/03) Order number

: 9686 4575

Quote number : HKE/2151/2019

Issue Date

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

: 12-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015960



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-May-2020.

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

Specific Comments for Work Order: HK2015960

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015960

ALS

_											
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S27							
	Cli	ient samplii	ng date / time	29-Apr-2020							
Compound	CAS Number	LOR	Unit	HK2015960-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method											
E-TCLP: Extraction Fluid Number		1		1							

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2015960



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009276)											
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3009276)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.8		85.0	112			

Matrix: WATER	latrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3009276)										
HK2015920-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

: 9686 4575

Contact : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN Address : Richard Fung

Work Order

: HK2016122

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Issue Date

: 04-May-2020

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

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

: 13-May-2020

C-O-C number : ----

Site

No. of samples received : 1

Date Samples Received

: 1 No. of samples analysed

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016122



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 04-May-2020 to 12-May-2020.

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

Specific Comments for Work Order: HK2016122

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., if any) is provided by client.

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016122



Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S28	 	
	Cli	ent samplii	ng date / time	02-May-2020	 	
Compound	CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : E

: BLACK & VEATCH HONG KONG LTD

Work Order HK2016122



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009288)											
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3009288)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.3		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	444.4 0			Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3009288)											
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.8		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2016123

TONG, KOWLOON, HONG KONG

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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Project

Site

Telephone

Facsimile

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 04-May-2020

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

Issue Date

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

: 13-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

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

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.

Signatories Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016123



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 04-May-2020 to 12-May-2020.

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

Specific Comments for Work Order: HK2016123

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., if any) is provided by client.

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016123

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S29	 	
	Cli	ient samplii	ng date / time	02-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2016123-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : BLA

: BLACK & VEATCH HONG KONG LTD

Work Order HK2016123



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)				
EG: Metals and Major Cati	ions (QC Lot: 3009288)						Result					
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. W. + C.					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: 3009288)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.3		85.0	112			

Matrix: WATER	trix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Western Ollege Company (c. 10) Matheat Company (c. 10)			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPL	D (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 3009288)										
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.8		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

TONG, KOWLOON, HONG KONG

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2016391

Address

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Project

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 05-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 13-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

Site

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016391



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 05-May-2020.

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

Specific Comments for Work Order: HK2016391

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016391

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S30	 	
	Cli	ient samplii	ng date / time	04-May-2020	 	
Compound	nd CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016391



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009288)											
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W. W. + C.					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: 3009288)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.3		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	Of the Automotive Company			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	(%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3009288)										
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.8		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

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: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2016392

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 05-May-2020

Project Order number

Site

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 13-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

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

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

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016392



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 05-May-2020.

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

Specific Comments for Work Order: HK2016392

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016392

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S31						
	Cli	ent samplii	ng date / time	04-May-2020						
Compound	CAS Number LOR Unit			HK2016392-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method	Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016392



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3009288)											
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3009288)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.3		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	to the total and			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	7 (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3009288)									
HK2016119-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.8		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung Work Order : HK2016467

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Project

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 06-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 15-May-2020

: 1

C-O-C number : ----

Site

No. of samples received

Date Samples Received

: 1 No. of samples analysed

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016467



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 06-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2016467

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : I

BLACK & VEATCH HONG KONG LTD

Work Order HK2016467

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S32					
	Cli	ent sampli	ng date / time	05-May-2020					
Compound	CAS Number LOR Unit			HK2016467-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016467



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Splke	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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

: Richard Fung Contact

: HK2016471

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

Date Samples Received : 06-May-2020

: S3-SC073 (YL/2017/03) Order number

: HKE/2151/2019 Quote

: 15-May-2020 Issue Date

number

No. of samples received : 1

: 1 No. of samples analysed

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

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

Work Order

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

Wong Wing, Kenneth

Manager - Metals

Position

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016471



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 06-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2016471

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016471

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S33							
	Cli	ient samplii	ng date / time	05-May-2020							
Compound	CAS Number	LOR	Unit	HK2016471-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method	Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1							

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016471



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W# 12					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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2016915

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 : -- : +852 2610 2021

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 07-May-2020

number

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

Site : — No. of samples analysed : 1

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

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 Manager - Metals Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016915



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 07-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2016915

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016915

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S34	 	
	Cli	ient samplii	ng date / time	06-May-2020	 	
Compound	CAS Number LOR Unit				 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016915



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER					Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ons (QC Lot: 3017510)												
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method 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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ike (MS) and Matrix	Spike Duplic	Ouplicate (MSD) Report		
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3017510)									
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2016916

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 07-May-2020

number

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

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

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

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 Manager - Metals Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016916



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: HK2016916

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016916

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S35						
	Cli	ient samplii	ng date / time	06-May-2020						
Compound	pound CAS Number LOR Unit									
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2016916



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ike (MS) and Matrix	Spike Duplic	Ouplicate (MSD) Report		
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3017510)									
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2017151

TONG, KOWLOON, HONG KONG

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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

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: 9686 4575

E-mail

: richard.fung@alsglobal.com

Telephone

: +852 2610 1044

Facsimile

: +852 2610 2021 Facsimile

Date Samples Received

: 08-May-2020

: 1

Project

Order number

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS : S3-SC073 (YL/2017/03)

Quote

: HKE/2151/2019

Issue Date

: 19-May-2020

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

Site

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

Signatories

Position

Authorised results for

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.

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017151



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: HK2017151

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : BL

: BLACK & VEATCH HONG KONG LTD

Work Order HK2017151

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S36	 	
	Cli	ient samplii	ng date / time	07-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2017151-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number 1				1	 	

Work Order

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

HK2017151

ALS

Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Splke	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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3017510)										
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

Telephone

Facsimile

: GO WAI KIT, VICTOR

Contact : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : Richard Fung

Work Order

: HK2017152

TONG, KOWLOON, HONG KONG

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

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Project

Site

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received : 08-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 19-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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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.

Signatories

Wong Wing, Kenneth

Position

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017152



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 08-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2017152

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017152

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S37	 	
	Cli	ent samplii	ng date / time	07-May-2020	 	
Compound	CAS Number LOR Unit			HK2017152-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : E

BLACK & VEATCH HONG KONG LTD

Work Order HK2017152



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Author Company					Splke	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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD) (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3017510)										
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES







CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2017164

TONG, KOWLOON, HONG KONG

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Address

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

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Facsimile Project

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 09-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 19-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

Site

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

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

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017164



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 09-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2017164

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017164

ALS

Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S38	 	
	Cli	ent samplii	ng date / time	08-May-2020	 	
Compound	CAS Number LOR Unit			HK2017164-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017164



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W					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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3017510)										
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





: HK2017165

CERTIFICATE OF ANALYSIS

: Richard Fung

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory

: 1 of 4 Page

: GO WAI KIT, VICTOR Contact

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C-O-C number : ----

Address

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Site

: +852 2610 1044 Telephone : +852 2610 2021

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

Date Samples Received : 09-May-2020

: S3-SC073 (YL/2017/03) Order number

: HKE/2151/2019 Quote

: 19-May-2020 Issue Date

number

Facsimile

Contact

No. of samples received : 1

: 1 No. of samples analysed

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Work Order

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

Wong Wing, Kenneth

Manager - Metals

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017165



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 09-May-2020 to 14-May-2020.

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

Specific Comments for Work Order: HK2017165

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017165

ALS

-									
Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S39					
	Cli	ient samplii	ng date / time	08-May-2020					
Compound	CAS Number LOR Unit			HK2017165-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017165



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cat	ions (QC Lot: 3017510)											
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Author Company					Splke	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: 3017510)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	ate (MSD) Re	Report			
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3017510)									
HK2016463-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.7		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact : GO

: GO WAI KIT, VICTOR : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Contact : F

: Richard Fung

Work Order

: HK2017418

TONG, KOWLOON, HONG KONG

Address

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

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

E-mail

: richard.fung@alsglobal.com

Telephone : +852 2610 1044

Facsimile

: +852 2610 2021

Project

Address

E-mail

Telephone

Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received : 11-May-2020

Order number : S

: S3-SC073 (YL/2017/03)

: 9686 4575

Quote number

: HKE/2151/2019

Issue Date

: 20-May-2020

C-O-C number : ----

No. of samples received : 1

No. of samples analysed : 1

Site : ----

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

Signatories

Position

Authorised results for

Mile

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

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

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017418



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 11-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017418

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client :

BLACK & VEATCH HONG KONG LTD

Work Order HK2017418

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S40						
	Cli	ent samplii	ng date / time	09-May-2020						
Compound	CAS Number	LOR	Unit	HK2017418-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BL

: BLACK & VEATCH HONG KONG LTD

Work Order HK2017418



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3022723)										
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER			Method 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: 3022723)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.5		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3022723)									
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES







CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

: Richard Fung Contact

Work Order

: HK2017419

TONG, KOWLOON, HONG KONG

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 11-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 20-May-2020

C-O-C number : ----

Site

No. of samples received : 1

: 1 No. of samples analysed

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: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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.

Signatories Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017419



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: HK2017419

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017419

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S41					
	Cli	ient samplii	ng date / time	09-May-2020					
Compound	CAS Number	LOR	Unit	HK2017419-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017419



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3022723)										
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method 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: 3022723)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.5		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3022723)											
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.6		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2017742 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact Contact

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Address TONG, KOWLOON, HONG KONG

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

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

: +852 2610 1044 : 9686 4575 Telephone Telephone : +852 2610 2021 Facsimile Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 12-May-2020 Project

: S3-SC073 (YL/2017/03) : HKE/2151/2019 : 20-May-2020 Order number Quote Issue Date

number

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

: 1 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 Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017742



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: HK2017742

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017742

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S42						
	Cli	ient samplii	ng date / time	11-May-2020						
Compound	CAS Number	LOR	Unit	HK2017742-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017742



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3022723)										
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W					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: 3022723)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.5		85.0	112			

Matrix: WATER	latrix: WATER				eport					
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 3022723)									
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact : GO WAI KIT, VICTOR

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

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Project : Y

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

. –

: 12-May-2020

: 1

Order number : S3-SC073 (YL/2017/03)

: 9686 4575

Quote number

: HKE/2151/2019

Issue Date

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

: 20-May-2020

C-O-C number : ----

DCI -

No. of samples received

Date Samples Received

No. of samples analysed : 1

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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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017744



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-May-2020 to 19-May-2020.

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

Specific Comments for Work Order: HK2017744

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017744

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S43						
	Cli	ient samplii	ng date / time	11-May-2020						
Compound	CAS Number	CAS Number LOR Unit								
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method	Sample Preparation Method									
-TCLP: Extraction Fluid Number 1				1						

: 4 of 4

Client : BL

: BLACK & VEATCH HONG KONG LTD

Work Order HK2017744



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ons (QC Lot: 3022723)												
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W# 12					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: 3022723)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.5		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3022723)											
HK2017413-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.6		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2017754

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Address

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

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: 9686 4575

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 13-May-2020

: S3-SC073 (YL/2017/03) Order number

Quote

: HKE/2151/2019

Issue Date

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

: 22-May-2020

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

Site

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Signatories

Authorised results for

: 1

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

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017754



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: HK2017754

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017754

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S44						
	Cli	ient samplii	ng date / time	12-May-2020						
Compound	CAS Number	LOR	Unit	HK2017754-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017754



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ons (QC Lot: 3031884)						7,555						
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Splike (LCS) and Laboratory Control Splike Duplicate (DCS) Report							
W# 12					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3031884)									
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



: 1 of 4

CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2017755

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 13-May-2020

number

C-O-C number : ——

No. of samples received : 1

Site : — No. of samples analysed : 1

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

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

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

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017755



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: HK2017755

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017755

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S45					
	Cli	ient samplii	ng date / time	12-May-2020					
Compound	CAS Number	CAS Number LOR Unit							
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2017755



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ons (QC Lot: 3031884)						7,555						
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Splike (LCS) and Laboratory Control Splike Duplicate (DCS) Report							
W# 12					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ate (MSD) Re) Report			
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3031884)									
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2018171

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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Project

Telephone

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 14-May-2020

: S3-SC073 (YL/2017/03) Order number

: 9686 4575

Quote

: HKE/2151/2019

Issue Date

: 22-May-2020

: 1

number

No. of samples received

: 1 No. of samples analysed

C-O-C number : ----

Site

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Signatories

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018171



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: HK2018171

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : E

BLACK & VEATCH HONG KONG LTD

Work Order HK2018171

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S46					
	Cli	ent samplii	ng date / time	13-May-2020					
Compound	CAS Number	LOR	Unit	HK2018171-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018171



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				eport					
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3031884)									
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address





: 1 of 4

CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: HK2018176 : GO WAI KIT, VICTOR : Richard Fung Work Order Contact Contact

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 14-May-2020 Project

: S3-SC073 (YL/2017/03) : HKE/2151/2019 : 22-May-2020 Order number Quote Issue Date

number

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

Facsimile

: 1 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 Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018176



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: HK2018176

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018176

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S47					
	Cli	ent samplii	ng date / time	13-May-2020					
Compound	CAS Number LOR Unit			HK2018176-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018176



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ate (MSD) Re	Report			
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3031884)									
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

TONG, KOWLOON, HONG KONG

Address



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: GO WAI KIT, VICTOR : HK2018361 : Richard Fung Work Order Contact Contact

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 15-May-2020 Project

: S3-SC073 (YL/2017/03) : HKE/2151/2019 : 22-May-2020 Order number Quote Issue Date

number

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

: 1 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 Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018361



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-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018361

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018361

ALS

•											
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S48							
	Cli	ient samplii	ng date / time	14-May-2020							
Compound	CAS Number LOR Unit			HK2018361-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method	Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1							

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018361



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2018362

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Project

Site

Address

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 15-May-2020

Order number

Telephone

Facsimile

: S3-SC073 (YL/2017/03)

Quote

: HKE/2151/2019

Issue Date

: 22-May-2020

C-O-C number : ----

No. of samples received : 1

: 1

number

No. of samples analysed

Date Samples Received

: 9686 4575

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

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

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

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018362



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: HK2018362

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018362

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S49	 	
	Cli	ient samplii	ng date / time	14-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018362-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018362



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3031884)											
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Matheat Compayed					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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3031884)											
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

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: GO WAI KIT, VICTOR

TONG, KOWLOON, HONG KONG

Contact

: Richard Fung

Work Order

: HK2018409

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: richard.fung@alsglobal.com

Telephone

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: +852 2610 2021

Date Samples Received : 16-May-2020

: 1

Project

Order number

Telephone

: S3-SC073 (YL/2017/03)

Quote number

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: HKE/2151/2019

Issue Date

: 22-May-2020

C-O-C number : ----

No. of samples received

No. of samples analysed : 1

_ .

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.

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018409



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 16-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018409

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018409

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S50	 	
	Cli	ent samplii	ng date / time	15-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018409-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018409



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3031884)											
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mathadi Company				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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	And the second s			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	7 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: Richard Fung

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

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Facsimile : +852 2610 2021

Project

Site

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 16-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number

: HKE/2151/2019

Issue Date

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

: 22-May-2020

No. of samples received

es received : 1

C-O-C number : ----

: ---

No. of samples analysed : 1

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018410



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 16-May-2020 to 22-May-2020.

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

Specific Comments for Work Order: HK2018410

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018410

ALS

Sub-Matrix: TCLP LEACHATE		Client sample ID			 	
	Cli	ient samplii	ng date / time	15-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018410-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	E-TCLP: Extraction Fluid Number 1				 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018410



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ions (QC Lot: 3031884)						Result						
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mathadi Company				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: 3031884)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.1		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	And the second s			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD	7 (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3031884)										
HK2017752-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	96.4		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2018556

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received : 18-May-2020

: 1

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

Issue Date

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

: 27-May-2020

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018556



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 18-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018556

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018556

ALS

-						
Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S52	 	
	Cli	ient samplii	ng date / time	16-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2018556-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018556



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ons (QC Lot: 3037440)						7.004.1						
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
44.4					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: 3037440)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.5		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3037440)											
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

TONG, KOWLOON, HONG KONG

Laboratory

Contact

Address

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

: Richard Fung

Work Order

: HK2018557

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 18-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 27-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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

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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.

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018557



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 18-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018557

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018557

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S53	 	
	Cli	ent samplii	ng date / time	16-May-2020	 	
Compound	CAS Number LOR Unit			HK2018557-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BL

: BLACK & VEATCH HONG KONG LTD

Work Order HK2018557



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ons (QC Lot: 3037440)												
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method 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: 3037440)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.5		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3037440)											
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Address

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: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2018638

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 19-May-2020

Order number :

: S3-SC073 (YL/2017/03)

Quote number

: HKE/2151/2019

Issue Date

: 27-May-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1

No. of samples analysed : 1

0-0-0 Hamber

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.

Signatories
Mile

Leung Chak Cheong , Mike

Senior Chemist

Position

Metals ENV

Authorised results for

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018638



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-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018638

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2018638

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S54	 	
	Cli	ent samplii	ng date / time	18-May-2020	 	
Compound	CAS Number	CAS Number LOR Unit			 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018638



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3037440)											
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3037440)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.5		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3037440)										
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD : 1 of 4 : ALS Technichem (HK) Pty Ltd Client Laboratory Page

: GO WAI KIT, VICTOR : HK2018639 : Richard Fung Work Order Contact Contact

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS **Date Samples Received** : 19-May-2020 Project

: S3-SC073 (YL/2017/03) : HKE/2151/2019 : 27-May-2020 Order number Quote Issue Date

number

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

: 1 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 Senior Chemist Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018639



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-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018639

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BL

BLACK & VEATCH HONG KONG LTD

Work Order HK2018639

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S55	 	
	Cli	ient samplii	ng date / time	18-May-2020	 	
Compound	CAS Number LOR Unit			HK2018639-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018639



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cat	ions (QC Lot: 3037440)										
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
W# 12					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: 3037440)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.5		85.0	112			

Matrix: WATER	Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3037440)										
HK2018554-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	100		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

TONG, KOWLOON, HONG KONG

: Richard Fung Contact

Work Order

: HK2018982

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 20-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 29-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

Site

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

Signatories

Position

Authorised results for

Mole

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

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

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018982



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 20-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018982

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018982

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S56					
	Cli	ient samplii	ng date / time	19-May-2020					
Compound	CAS Number LOR Unit			HK2018982-001					
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1					
Sample Preparation Method									
E-TCLP: Extraction Fluid Number		1		1					

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018982



Laboratory Duplicate (DUP) Report

Matrix: WATER	fatrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3037471)											
HK2018982-001	LD002-TCLP-S56	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method: Company					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: 3037471)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.9		85.0	112			

Matrix: WATER	Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 3037471)									
HK2018982-001	LD002-TCLP-S56	EG020: Arsenic	7440-38-2	1 mg/L	99.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG 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

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Work Order

: HK2018985

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 20-May-2020

: S3-SC073 (YL/2017/03) Order number

: 9686 4575

Quote number : HKE/2151/2019

Issue Date

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

: 29-May-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

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

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.

Signatories Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018985



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 20-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2018985

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018985

ALS

Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S57						
	Cli	ent samplii	ng date / time	19-May-2020						
Compound	mpound CAS Number LOR Uni									
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2018985



Laboratory Duplicate (DUP) Report

Matrix: WATER	atrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number LOR		Unit	Original Result Duplicate		RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3037471)										
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method 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: 3037471)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.9		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ate (MSD) Re	(MSD) Report			
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3037471)									
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	99.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

TONG, KOWLOON, HONG KONG

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

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: Richard Fung

Work Order

: HK2019020

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number

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 21-May-2020

Project

Site

Order number

Telephone

: S3-SC073 (YL/2017/03)

Quote

: HKE/2151/2019

Issue Date

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

: 29-May-2020

C-O-C number : ----

No. of samples received : 1

: 1 No. of samples analysed

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019020



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 21-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2019020

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2019020

ALS

Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S58						
	Cli	ient samplii	ng date / time	20-May-2020						
Compound	CAS Number	LOR	Unit	HK2019020-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019020



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3037471)											
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3037471)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.9		85.0	112			

Matrix: WATER	Matrix: WATER				eport					
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3037471)									
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	99.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

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: HK2019021

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: 21-May-2020

: 1

Project Order number

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS : S3-SC073 (YL/2017/03)

Quote

number

: HKE/2151/2019

Issue Date

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

: 29-May-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1 No. of samples analysed

Site

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019021



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 21-May-2020 to 26-May-2020.

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

Specific Comments for Work Order: HK2019021

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019021



_						
Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S58	 	
				(1)		
	Client sampling date / time			20-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2019021-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019021



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3037471)											
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3037471)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.9		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spi	ike (MS) and Matrix	x Spike Duplic	licate (MSD) Report		
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3037471)									
HK2018982-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	99.6		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2019331

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 22-May-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 02-Jun-2020

No. of samples received

: 1

C-O-C number : ----

Site

: 1 No. of samples analysed

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019331



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 22-May-2020 to 02-Jun-2020.

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

Specific Comments for Work Order: HK2019331

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019331

ALS

Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S59							
	Cli	ient samplii	ng date / time	21-May-2020							
Compound	CAS Number	LOR	Unit	HK2019331-001							
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1							
Sample Preparation Method											
E-TCLP: Extraction Fluid Number		1		1							

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019331



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3047133)											
HK2019331-001	LD002-TCLP-S59	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3047133)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	94.7		85.0	112			

Matrix: WATER	Matrix: WATER				Matrix Spi	ate (MSD) Re)) Report			
				Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)	
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and	Major Cations (QC Lot: 3047133)									
HK2019331-001	LD002-TCLP-S59	EG020: Arsenic	7440-38-2	1 mg/L	94.2		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

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

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: 1 of 4

Contact : GO V

: GO WAI KIT, VICTOR : 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN Contact : Richard Fung

Work Order

: HK2019507

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 25-May-2020

Order number : S3-SC073 (YL/2017/03)

Quote number

: HKE/2151/2019

Issue Date

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

: 02-Jun-2020

C-O-C number : ----

No. of samples received : 1

No. of samples analysed : 1

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

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019507



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 25-May-2020 to 02-Jun-2020.

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

Specific Comments for Work Order: HK2019507

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019507



Sub-Matrix: TCLP LEACHATE		Clie	ent sample ID	LD002-TCLP-S60	 	
	Cli	ent samplii	ng date / time	23-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2019507-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number	E-TCLP: Extraction Fluid Number 1				 	

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019507



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cat	ions (QC Lot: 3047133)											
HK2019331-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
					Splke	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: 3047133)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	94.7		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and M	Major Cations (QC Lot: 3047133)										
HK2019331-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	94.2		75.0	125			

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

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: 1 of 4

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: HK2019702

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 26-May-2020

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

Issue Date

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

: 03-Jun-2020

C-O-C number : ----

Site

No. of samples received : 1

: 1 No. of samples analysed

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

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.

Signatories Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019702



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 26-May-2020 to 02-Jun-2020.

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

Specific Comments for Work Order: HK2019702

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : I

BLACK & VEATCH HONG KONG LTD

Work Order HK2019702

Sub-Matrix: WATER	Client sample ID			LD002-TCLP-S61	 	
	Cli	ent sampli	ng date / time	25-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2019702-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	



4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019702



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ons (QC Lot: 3047271)										
HK2019700-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mather's Company					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: 3047271)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	92.8		85.0	112			

Matrix: WATER	atrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	1			Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and I	Major Cations (QC Lot: 3047271)											
HK2019700-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	94.1		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

Address

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address

Telephone

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2019883

TONG, KOWLOON, HONG KONG

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 27-May-2020

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

Issue Date

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

: 05-Jun-2020

: 1

No. of samples received

No. of samples analysed

: 1

C-O-C number : ----

Site

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

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

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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

Signatories Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019883



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 27-May-2020 to 05-Jun-2020.

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

Specific Comments for Work Order: HK2019883

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019883

ALS

Sub-Matrix: WATER		Client sample ID			 	
	Cli	ent samplii	ng date / time	25-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2019883-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019883



Laboratory Duplicate (DUP) Report

Matrix: WATER	/latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3057617)											
HK2019883-001	LD002-TCLP-S62	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER			Method Blank (ME	3) Report	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mathest Company					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: 3057617)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	95.0		85.0	112			

Matrix: WATER	atrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	Of the total Company			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD) (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3057617)									
HK2019883-001	LD002-TCLP-S62	EG020: Arsenic	7440-38-2	1 mg/L	95.3		75.0	125		

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

Work Order

: 1 of 4

: GO WAI KIT, VICTOR Contact

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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Project

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Facsimile

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 27-May-2020

: 1

: S3-SC073 (YL/2017/03) Order number

: 9686 4575

Quote

: HKE/2151/2019

Issue Date

: 05-Jun-2020

number

No. of samples received

Date Samples Received

: 1 No. of samples analysed

C-O-C number : ----

Site

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.

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

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019884



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 27-May-2020 to 05-Jun-2020.

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

Specific Comments for Work Order: HK2019884

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019884

ALS

Sub-Matrix: WATER		Clie	ent sample ID	LD002-TCLP-S63	 	
	Cli	ent samplii	ng date / time	26-May-2020	 	
Compound	CAS Number	LOR	Unit	HK2019884-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2019884



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ons (QC Lot: 3057617)												
HK2019883-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
With the Comment					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: 3057617)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	95.0		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and	Major Cations (QC Lot: 3057617)											
HK2019883-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.3		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

Telephone

Facsimile

: GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2021477

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Project

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

: 08-Jun-2020

: 1

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 17-Jun-2020

C-O-C number : ----

No. of samples received

Date Samples Received

: 1 No. of samples analysed

Site

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

Signatories

Position

Authorised results for

Mole

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

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

Leung Chak Cheong, Mike

Senior Chemist

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021477



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 08-Jun-2020 to 17-Jun-2020.

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

Specific Comments for Work Order: HK2021477

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021477

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S64	 	
	Cli	ient samplii	ng date / time	03-Jun-2020	 	
Compound	CAS Number	LOR	Unit	HK2021477-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021477



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3070160)											
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Mithed Communication					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: 3070160)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.0		85.0	112			

Matrix: WATER	latrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control		
sample ID										Limit		
EG: Metals and	Major Cations (QC Lot: 3070160)											
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.4		75.0	125				

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

Address



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



CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 4

Contact : GO WAI KIT, VICTOR Contact : Richard Fung Work Order : HK2021478

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing

TONG, KOWLOON, HONG KONG

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

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

Project : YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP – LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Date Samples Received : 08-Jun-2020

Order number : \$3-\$C073 (YL/2017/03) | Saue Date : 17-Jun-2020

number

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

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

Site : --
No. of samples analysed : 1

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.

Leung Chak Cheong , Mike Senior Chemist Metals_ENV

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021478



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 08-Jun-2020 to 17-Jun-2020.

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

Specific Comments for Work Order: HK2021478

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021478

ALS

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S65	 	
	Cli	ient samplii	ng date / time	04-Jun-2020	 	
Compound	CAS Number	LOR	Unit	HK2021478-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021478



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)					
sample ID							Result						
EG: Metals and Major Cati	ons (QC Lot: 3070160)												
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method Company					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: 3070160)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.0		85.0	112			

Matrix: WATER	latrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
	444.4 0			Spike	Spike Re	ecovery (%)	Recovery	Limits (%)	RPD) (%)
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	Major Cations (QC Lot: 3070160)									
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.4		75.0	125		

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES

TONG, KOWLOON, HONG KONG





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

: GO WAI KIT, VICTOR Contact

Contact

: Richard Fung

Work Order

: HK2021480

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS Project

: 9686 4575

Quote

Date Samples Received

: 08-Jun-2020

: S3-SC073 (YL/2017/03) Order number

number

: HKE/2151/2019

Issue Date

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

: 17-Jun-2020

C-O-C number : ----

No. of samples received

: 1

: 1 No. of samples analysed

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

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.

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021480



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 08-Jun-2020 to 17-Jun-2020.

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

Specific Comments for Work Order: HK2021480

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

: 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021480

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE	Client sample ID			LD002-TCLP-S66						
	Cli	ient samplii	ng date / time	05-Jun-2020						
Compound	CAS Number	LOR	Unit	HK2021480-001						
EG: Metals and Major Cations										
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1						
Sample Preparation Method										
E-TCLP: Extraction Fluid Number		1		1						

Page Number

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2021480



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)				
sample ID							Result					
EG: Metals and Major Cati	ons (QC Lot: 3070160)											
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00				

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

Matrix: WATER		Method 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: 3070160)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	96.0		85.0	112			

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

Matrix: WATER	itrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
	1			Spike	Spike Re	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and	Major Cations (QC Lot: 3070160)										
HK2021458-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	97.4		75.0	125			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

Client : BLACK & VEATCH HONG KONG LTD

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address : GO WAI KIT, VICTOR

....

: Richard Fung

Work Order

: HK2023170

TONG, KOWLOON, HONG KONG

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET, KWUN

Contact Address

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

E-mail : ----

E-mail

: richard.fung@alsglobal.com

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: 9686 4575 : ----

Facsimile : +852 2610 2021

Facsimile Project

Site

Telephone

: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 20-Jun-2020

Order number :

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

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

: 02-Jul-2020

: 1

C-O-C number : ----

No. of samples received

No. of samples analysed : 1

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

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.

Signatories
Mile

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023170



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 20-Jun-2020 to 30-Jun-2020.

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

Specific Comments for Work Order: HK2023170

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number :

∴ 3 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023170

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE		Client sample ID			 	
				6(1)		
	Client sampling date / time			19-Jun-2020	 	
Compound	CAS Number	LOR	Unit	HK2023170-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

Page Number

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023170



Laboratory Duplicate (DUP) Report

Matrix: WATER	latrix: WATER			Laboratory Duplicate (DUP) Report							
Laboratory	Client sample ID	Method: Compound	CAS Number LOR		Unit	Original Result	Duplicate	RPD (%)			
sample ID							Result				
EG: Metals and Major Cati	ions (QC Lot: 3096677)										
HK2022880-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00			

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

Matrix: WATER		Method 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: 3096677)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	95.0		85.0	112			

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

Matrix: WATER	Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Ré	ecovery (%)	Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3096677)										
HK2022880-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.2		75.0	125			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact

: GO WAI KIT, VICTOR

TONG, KOWLOON, HONG KONG

: Richard Fung Contact

Work Order

: HK2023172

Address

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

Address

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

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

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: 9686 4575

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Project

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 20-Jun-2020

: S3-SC073 (YL/2017/03) Order number

Quote number : HKE/2151/2019

Issue Date

: 02-Jul-2020

: 1

C-O-C number : ----

No. of samples received

: 1

No. of samples analysed

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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.

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

Mole

Leung Chak Cheong, Mike

Senior Chemist

Position

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023172



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 20-Jun-2020 to 30-Jun-2020.

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

Specific Comments for Work Order: HK2023172

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

∴ 3 of 4

Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2023172

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE		Client sample ID			 	
				6(2)		
	Client sampling date / time			19-Jun-2020	 	
Compound	CAS Number	LOR	Unit	HK2023172-001	 	
EG: Metals and Major Cations						
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	 	
Sample Preparation Method						
E-TCLP: Extraction Fluid Number		1		1	 	

Page Number

: 4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023172



Laboratory Duplicate (DUP) Report

Matrix: WATER	Matrix: WATER				Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)					
EG: Metals and Major Cati	ions (QC Lot: 3096677)						Nooun						
HK2022880-001	Anonymous	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00					

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

Matrix: WATER		Method 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: 3096677)												
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	95.0		85.0	112			

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

Matrix: WATER	Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control	
sample ID										Limit	
EG: Metals and I	Major Cations (QC Lot: 3096677)										
HK2022880-001	Anonymous	EG020: Arsenic	7440-38-2	1 mg/L	95.2		75.0	125			

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYICAL CHEMISTRY & TESTING SERVICES





CERTIFICATE OF ANALYSIS

: BLACK & VEATCH HONG KONG LTD Client

Laboratory

: ALS Technichem (HK) Pty Ltd

Page

: 1 of 4

Contact Address : GO WAI KIT, VICTOR

Contact

: Richard Fung

Work Order

: HK2023679

TONG, KOWLOON, HONG KONG

: 9686 4575

: 43/F, AIA KOWLOON TOWER, 100 HOW MING STREET. KWUN

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: YL/2017/03 DEVELOPMENT OF LOK MA CHAU LOOP - LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

Date Samples Received

: 24-Jun-2020

Order number

: S3-SC073 (YL/2017/03)

Quote number : HKE/2151/2019

Issue Date

: 07-Jul-2020

: 1

C-O-C number : ----

No. of samples received

: 1 No. of samples analysed

Site

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

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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.

Signatories

Position

Authorised results for

Mole

Leung Chak Cheong, Mike

Senior Chemist

Metals ENV

Page Number : 2 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023679



General Comments

This report supersedes any previous report(s) with this reference. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 24-Jun-2020 to 07-Jul-2020.

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

Specific Comments for Work Order: HK2023679

Sample(s) was/ were picked up from client by ALS staff. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

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

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

TCLP extract were filtered prior to the determination of metals.

Page Number

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Client

BLACK & VEATCH HONG KONG LTD

Work Order HK2023679

ALS

Analytical Results

Sub-Matrix: TCLP LEACHATE	Client sample ID		LD002-TCLP-Area					
			6(3)					
Client sampling date / time			22-Jun-2020					
Compound	CAS Number	LOR	Unit	HK2023679-001				
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1				
Sample Preparation Method								
E-TCLP: Extraction Fluid Number		1		1				

Page Number

4 of 4

Client : BLACK & VEATCH HONG KONG LTD

Work Order HK2023679



Laboratory Duplicate (DUP) Report

Matrix: WATER			Laboratory Duplicate (DUP) Report						
Laboratory	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate	RPD (%)	
sample ID							Result		
EG: Metals and Major Cati	EG: Metals and Major Cations (QC Lot: 3118193)								
HK2023679-001	LD002-TCLP-Area 6(3)	EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	

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

Matrix: WATER		Method 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: 3118193)											
EG020: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	91.1		85.0	112		

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

Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
		Spike	Spike Recovery (%)		Recovery Limits (%)		RPD (%)			
Laboratory	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control
sample ID										Limit
EG: Metals and I	EG: Metals and Major Cations (QC Lot: 3118193)									
HK2023679-001	LD002-TCLP-Area 6(3)	EG020: Arsenic	7440-38-2	1 mg/L	91.9		75.0	125		



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Depth (m)#: -

Hole No.#: Sample No.#:

Sample Type#:

S3-SC074A 18/04/2020 Actual Depth (m): - Date of Test: 20/4/2020

Report No.: SLST0200060 Job No.: SHK200015

Page: 1 of 2

W.O. No.#: -

LD002 S1

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 18/4/2020

Information provided by Client

Specimen Details					
Diameter of specimen	mm	75.8	Wet mass of specimen	g	1129.9
Length of specimen	mm	151.4	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	-
Volume of specimen	cm ³	683.21	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

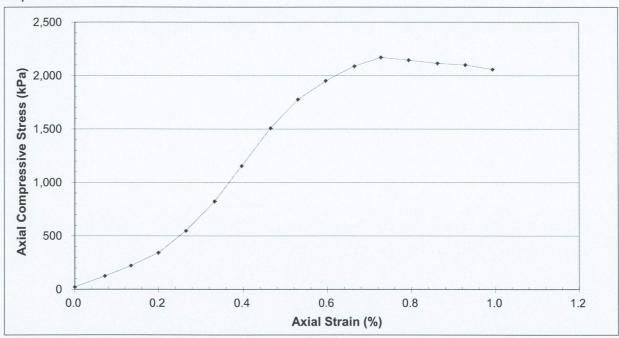
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure	2171 0.73	kPa	Sketch of failure conditions	
Unconfined compressive strength, (q _u)	2171	kPa	Inclination of shear surface	5.1

Graph



Mixing Date: 14/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

20 April 2020

Date: 22 April 2020



: +852 2463 0100 Unit 04 & 10, 13/F, Luen Cheong Can Centre, : +852 2463 0609 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong. E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200060 Job No.: SHK200015 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Depth (m)#: -

Date of Test: 20/4/2020

Sample No.#:

S3-SC074A 18/04/2020

Actual Depth (m): -

W.O. No.#: -

LD002 S1

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	011010044	Original length (L _o)	mm	151.4
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4512.6

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4512.6	22.16
0.11	0.1	-	0.56	560	4515.8	124.01
0.20	0.1	-	1.00	1000	4518.7	221.30
0.30	0.2	_	1.55	1550	4521.6	342.80
0.40	0.3	-	2.48	2480	4524.6	548.11
0.50	0.3	-	3.73	3730	4527.7	823.82
0.60	0.4		5.23	5230	4530.6	1154.38
0.70	0.5		6.84	6840	4533.7	1508.71
0.80	0.5	-	8.06	8060	4536.6	1776.64
0.90	0.6		8.86	8860	4539.7	1951.67
1.01	0.7	-	9.49	9490	4542.8	2089.02
1.10	0.7	-	9.87	9870	4545.7	2171.28
1.20	0.8	-	9.76	9760	4548.7	2145.65
1.31	0.9	-	9.63	9630	4551.9	2115.62
1.41	0.9	-	9.57	9570	4554.9	2101.04
1.50	1.0	-	9.38	9380	4557.9	2057.97

Report No.: SLST0200060 Job No.: SHK200015





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

: +852 2463 0609 E-mail: sst@soilservices.com.hk

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200060 Job No.: SHK200015 Page: 1 of 2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Date of Test: 20/4/2020 Hole No.#: Depth (m)#: -

S3-SC074A 18/04/2020 Actual Depth (m): -LD002 S2

W.O. No.#: -

Sample Origin#: Contaminated soil mixed with 7.5% Date Received: 18/4/2020 PT75 Sample Type#:

cement and 10% sand

Specimen Details

Sample No.#:

Specimen Details					
Diameter of specimen	mm	75.2	Wet mass of specimen	g	1191.3
Length of specimen	mm	153.6	Dry mass of specimen	g	-
Area of specimen	mm ²	4441.5	Moisture content	%	-
Volume of specimen	cm ³	682.21	Bulk density	Mg/m ³	1.75
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

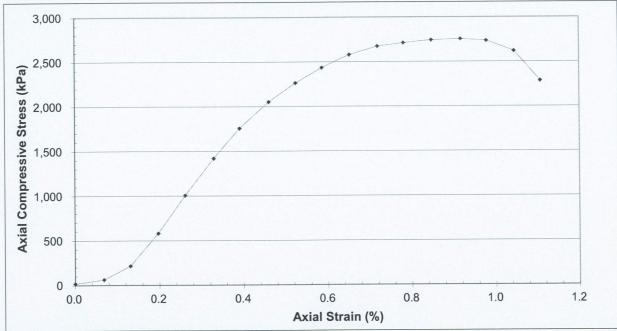
Light brownish grey sandy SILT/CLAY with Cement Visual Description:

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure Unconfined compressive strength, (q _u)	2755 0.92 2755	kPa % kPa	Sketch of failure conditions Inclination of shear surface	{ \
---	----------------------	-----------------	---	-----

Graph



Mixing Date: 15/4/2020

Note: The results relate only to the tested sample as received.

Certified by: Checked by: LAU Chun Ming HUI King Fai

Date: 22 April 2020 20 April 2020 Date:

[#] Information provided by Client



Client#:

Soil Services Testing Company Limited

Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

: +852 2463 0609 E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: S3-SC074A Sample No.#:

PT75

18/04/2020

Actual Depth (m): -

Date of Test: 20/4/2020

Report No.: SLST0200060

Page: 2 of 2

Job No.: SHK200015

W.O. No.#: -

LD002 S2 Sample Origin#: Contaminated soil mixed with 7.5%

Depth (m)#: -

Date Received: 18/4/2020

Information provided by Client

Sample Type#:

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	SUC-LC01A	Original length (L _o)	mm	153.6
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4441.5

cement and 10% sand

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4441.5	18.01
0.11	0.1	-	0.28	280	4444.5	63.00
0.20	0.1	-	0.96	960	4447.3	215.86
0.30	0.2	-	2.59	2590	4450.2	581.99
0.40	0.3	-	4.48	4480	4453.1	1006.04
0.51	0.3	-	6.33	6330	4456.1	1420.52
0.60	0.4	-	7.83	7830	4458.9	1756.05
0.71	0.5	-	9.16	9160	4462.0	2052.89
0.81	0.5	-	10.11	10110	4464.9	2264.35
0.90	0.6	-	10.88	10880	4467.7	2435.28
1.00	0.7	-	11.53	11530	4470.6	2579.08
1.11	0.7	-	11.96	11960	4473.6	2673.44
1.20	0.8	-	12.14	12140	4476.4	2711.98
1.30	0.8	-	12.29	12290	4479.4	2743.65
1.41	0.9	-	12.35	12350	4482.6	2755.11
1.50	1.0	-	12.27	12270	4485.3	2735.57
1.60	1.0	-	11.76	11760	4488.3	2620.13
1.70	1.1	•	10.27	10270	4491.2	2286.70

Report No.: SLST0200060 Job No.: SHK200015





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Report No.: SLST0200060

Job No.: SHK200015

Page: 1 of 2

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Date of Test: 20/4/2020 Hole No.#: Depth (m)#: -

S3-SC074A 18/04/2020 Actual Depth (m): -W.O. No.#: -Sample No.#: LD002 S3

Sample Origin#: Contaminated soil mixed with 7.5% Date Received: 18/4/2020 PT75 Sample Type#:

cement and 10% sand

Specimen Details

Client#:

opcomici zotane					
Diameter of specimen	mm	75.9	Wet mass of specimen	g	1206.3
Length of specimen	mm	153.9	Dry mass of specimen	g	-
Area of specimen	mm ²	4524.5	Moisture content	%	-
Volume of specimen	cm ³	696.33	Bulk density	Mg/m ³	1.73
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

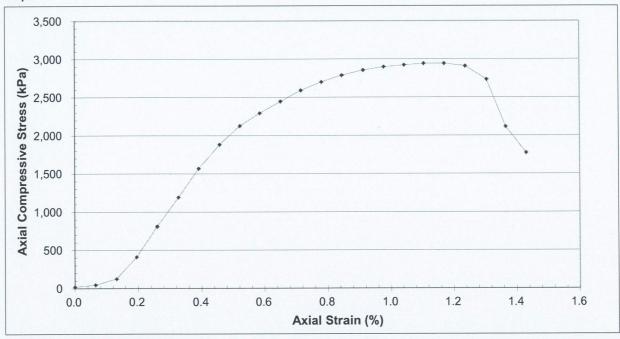
Light brownish grey sandy SILT/CLAY with Cement Visual Description:

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure Unconfined compressive strength, (q _u)	2942 1.2 2942	kPa % kPa	Sketch of failure conditions Inclination of shear surface	
---	---------------------	-----------------	---	--

Graph



Mixing Date: 15/4/2020

Note: The results relate only to the tested sample as received.

Certified by: Checked by: LAU Chun Ming HUI King Fai

Date: 22 April 2020 Date: 20 April 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200060 Job No.: SHK200015 Page: 2 of 2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 18/04/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 20/4/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

LD002 S3

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	153.9
	SUC-LCUTA	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1.4% of axial strain and the peak axial compressive stress is reached at 1.2%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4524.5	19.89
0.10	0.1	-	0.21	210	4527.5	46.38
0.20	0.1	-	0.57	570	4530.5	125.81
0.30	0.2	-	1.86	1860	4533.4	410.29
0.40	0.3	-	3.67	3670	4536.3	809.03
0.50	0.3	-	5.41	5410	4539.3	1191.80
0.60	0.4		7.12	7120	4542.3	1567.50
0.70	0.5	-	8.55	8550	4545.3	1881.07
0.80	0.5	-	9.67	9670	4548.3	2126.09
0.90	0.6	-	10.43	10430	4551.2	2291.72
1.00	0.7	-	11.14	11140	4554.2	2446.10
1.10	0.7	-	11.81	11810	4557.1	2591.54
1.20	0.8	-	12.32	12320	4560.1	2701.67
1.30	0.8	-	12.72	12720	4563.1	2787.58
1.40	0.9	-	13.04	13040	4566.2	2855.78
1.50	1.0		13.24	13240	4569.2	2897.67
1.61	1.0	-	13.36	13360	4572.2	2922.00
1.70	1.1		13.46	13460	4575.1	2942.01
1.80	1.2	-	13.47	13470	4578.1	2942.27
1.90	1.2	-	13.33	13330	4581.2	2909.71
2.01	1.3	-	12.53	12530	4584.4	2733.20
2.10	1.4	-	9.70	9700	4587.2	2114.59
2.20	1.4	-	8.14	8140	4590.2	1773.35

Report No.: SLST0200060 Job No.: SHK200015





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 18/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 21/4/2020

Report No.: SLST0200060

Job No.: SHK200015

Page: 1 of 2

W.O. No.#: -

LD002 S4 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Diameter of specimen	mm	76.2	Wet mass of specimen	g	1172.6
Length of specimen	mm	151.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	692.26	Bulk density	Mg/m ³	1.69
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

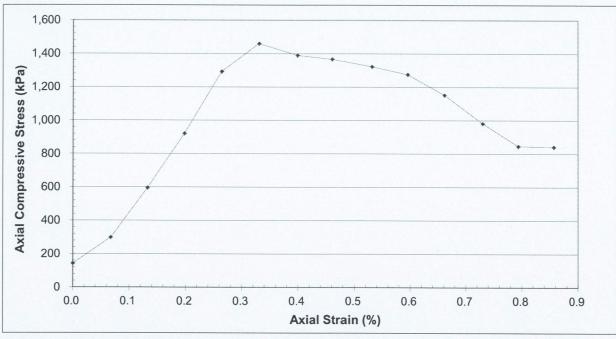
Dark greyish brown sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1460	kPa	
Axial strain at failure	0.33	%	Sketch of failure conditions Inclination of shear surface
Unconfined compressive strength, (q _u)	1460	kPa	inclination of shear surface

Graph



Mixing Date : 16/4/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date: 21 April 2020 Date: 22 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

Client#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 21/4/2020

Report No.: SLST0200060

Job No.: SHK200015

Page: 2 of 2

W.O. No.#: -

18/04/2020

LD002 S4 Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

illioithation provided by client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.8
	JOC-LCOTA	Original area (A _o)	mm ²	4560.4

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.3%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ ₁
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.65	650	4560.4	142.53
0.10	0.1	-	1.36	1360	4563.4	298.02
0.20	0.1	-	2.72	2720	4566.4	595.65
0.30	0.2	-	4.21	4210	4569.4	921.35
0.40	0.3	-	5.91	5910	4572.4	1292.52
0.50	0.3	-	6.68	6680	4575.5	1459.95
0.61	0.4	-	6.36	6360	4578.6	1389.06
0.70	0.5	-	6.26	6260	4581.5	1366.37
0.81	0.5	-	6.06	6060	4584.7	1321.78
0.90	0.6	-	5.85	5850	4587.7	1275.15
1.00	0.7	-	5.29	5290	4590.7	1152.32
1.11	0.7	-	4.51	4510	4593.9	981.74
1.21	0.8	-	3.89	3890	4596.9	846.23
1.30	0.9	-	3.87	3870	4599.8	841.34

Report No.: SLST0200060 Job No.: SHK200015





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Job No.: SHK200015 Page: 1 of 2

Report No.: SLST0200060

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 18/04/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 21/4/2020

W.O. No.#: -

Sample No.#: LD002 S5

Date Received: 18/4/2020

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Information provided by Client

Specimen Details

opcomien zotane					
Diameter of specimen	mm	76.2	Wet mass of specimen	g	1182.5
Length of specimen	mm	150.0	Dry mass of specimen	g	_
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	684.06	Bulk density	Mg/m ³	1.73
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

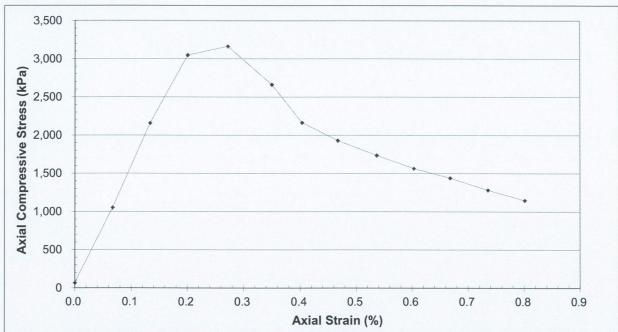
Compression Results

Maximum axial stress	3164	kPa	
Axial strain at failure	0.27	%	
Unconfined compressive strength, (qu)	3164	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 16/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

21 April 2020

Date: 22 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 21/4/2020

Report No.: SLST0200060

Job No.: SHK200015

Page: 2 of 2

W.O. No.#: -

18/04/2020 LD002 S5

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.0
- oros manoacon no.	SOC-LCOTA	Original area (A _o)	mm ²	4560.4

The compression was terminated at 0.8% of axial strain and the peak axial compressive stress is reached at 0.3%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.30	300	4560.4	65.78
0.10	0.1	-	4.80	4800	4563.4	1051.85
0.20	0.1	-	9.85	9850	4566.5	2157.03
0.30	0.2	-	13.93	13930	4569.5	3048.45
0.41	0.3	-	14.47	14470	4572.8	3164.36
0.53	0.4	-	12.19	12190	4576.4	2663.67
0.61	0.4	-	9.91	9910	4578.8	2164.31
0.70	0.5	-	8.84	8840	4581.8	1929.38
0.81	0.5	-	7.96	7960	4585.0	1736.11
0.91	0.6	-	7.18	7180	4588.0	1564.94
1.00	0.7	-	6.61	6610	4591.0	1439.76
1.10	0.7	-	5.89	5890	4594.1	1282.07
1.20	0.8	-	5.27	5270	4597.2	1146.35

Report No.: SLST0200060 Job No.: SHK200015





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client# Sang Hing - Kuly Joint Venture

> LD002 S6 PT75

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Sample Type#:

S3-SC074A 18/04/2020

Depth (m)#: -Date of Test: 21/4/2020 W.O. No.#: -

Actual Depth (m): -

Date Received: 18/4/2020

Report No.: SLST0200060

Job No.: SHK200015

Page: 1 of 2

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Information provided by Client

ocimon Dotails

Specimen Details					
Diameter of specimen	mm	75.6	Wet mass of specimen	g	1187.0
Length of specimen	mm	150.3	Dry mass of specimen	g	-
Area of specimen	mm ²	4488.8	Moisture content	%	-
Volume of specimen	cm ³	674.67	Bulk density	Mg/m ³	1.76
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

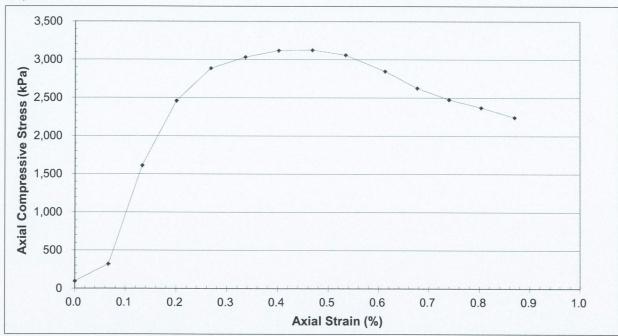
Compression Results

Maximum axial stress	3126	kPa
Axial strain at failure	0.47	%
Unconfined compressive strength, (qu)	3126	kPa
그 마음 사람들이 살아보고 있다면 하는 것이 없는 것이다.		

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 17/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date:

21 April 2020

Date: 22 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200060 Job No.: SHK200015 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 21/4/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

18/04/2020

LD002 S6

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 18/4/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.3
	000-E001A	Original area (A _o)	mm ²	4488.8

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.5%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.43	430	4488.8	95.79
0.10	0.1	-	1.44	1440	4491.8	320.58
0.20	0.1	-	7.24	7240	4494.8	1610.75
0.30	0.2	-	11.06	11060	4497.8	2458.96
0.40	0.3	-	12.99	12990	4500.9	2886.09
0.51	0.3	-	13.66	13660	4504.0	3032.88
0.60	0.4		14.06	14060	4506.9	3119.63
0.70	0.5		14.10	14100	4510.0	3126.42
0.80	0.5	-	13.81	13810	4512.9	3060.09
0.92	0.6		12.86	12860	4516.5	2847.33
1.02	0.7	-	11.87	11870	4519.4	2626.45
1.11	0.7	-	11.20	11200	4522.3	2476.62
1.21	8.0	-	10.73	10730	4525.2	2371.18
1.31	0.9	- 1	10.16	10160	4528.2	2243.71

Report No.: SLST0200060 Job No.: SHK200015





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Sample Type#:

- Depth (m)*: - S3-SC074A 18/04/2020 Actual Depth (m): -

Date of Test: 21/4/2020

Report No.: SLST0200060

Page: 1 of 2

Job No.: SHK200015

W.O. No.#: -

Sample No.#: S3-SC074A LD002 S7

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 18/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Diameter of specimen	mm	75.9	Wet mass of specimen	g	1174.7
Length of specimen	mm	149.4	Dry mass of specimen	q	-
Area of specimen	mm ²	4524.5	Moisture content	%	
Volume of specimen	cm ³	675.96	Bulk density	Mg/m ³	1.74
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

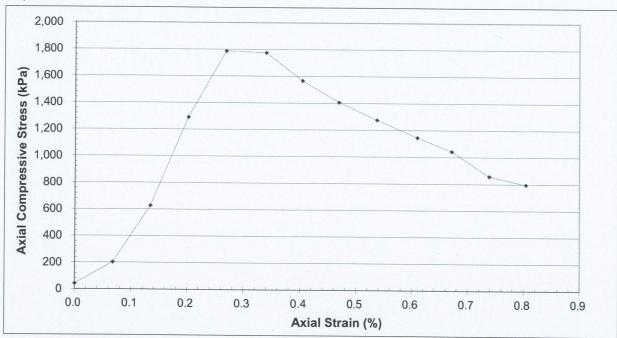
Compression Results

Maximum axial stress	1788	kPa
Axial strain at failure	0.27	%
Unconfined compressive strength, (qu)	1788	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks: Mixing Date: 17/4/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by :

Date: 21 April 2020

Date: 22 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 21/4/2020

Report No.: SLST0200060

Job No.: SHK200015

Page: 2 of 2

W.O. No.#: -

18/04/2020 LD002 S7

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 18/4/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.4
	000-2001A	Original area (A _o)	mm ²	4524.5

The compression was terminated at 0.8% of axial strain and the peak axial compressive stress is reached at 0.3%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ ₁
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.19	190	4524.5	41.99
0.10	0.1	-	0.92	920	4527.6	203.20
0.20	0.1	-	2.84	2840	4530.6	626.85
0.30	0.2	-	5.85	5850	4533.7	1290.35
0.40	0.3	-	8.11	8110	4536.7	1787.64
0.51	0.3	-	8.06	8060	4539.9	1775.36
0.60	0.4	-	7.12	7120	4542.9	1567.29
0.70	0.5	-	6.39	6390	4545.9	1405.67
0.80	0.5	-	5.80	5800	4548.9	1275.02
0.91	0.6	-	5.21	5210	4552.3	1144.48
1.00	0.7	-	4.75	4750	4555.1	1042.78
1.10	0.7	-	3.91	3910	4558.2	857.80
1.20	0.8	-	3.63	3630	4561.2	795.84

Report No.: SLST0200060 Job No.: SHK200015





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.# Sample No.#:

Sample Type#:

Client#:

S3-SC074A 21/04/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 23/4/2020

Report No.: SLST0200062

Job No.: SHK200016

Page: 1 of 2

W.O. No.#: -

LD002 S8 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 21/4/2020

Information provided by Client

Specimen Details

optomion Detaile					
Diameter of specimen	mm	75.6	Wet mass of specimen	g	1227.5
Length of specimen	mm	153.6	Dry mass of specimen	g	-
Area of specimen	mm ²	4488.8	Moisture content	%	-
Volume of specimen	cm ³	689.48	Bulk density	Mg/m ³	1.78
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

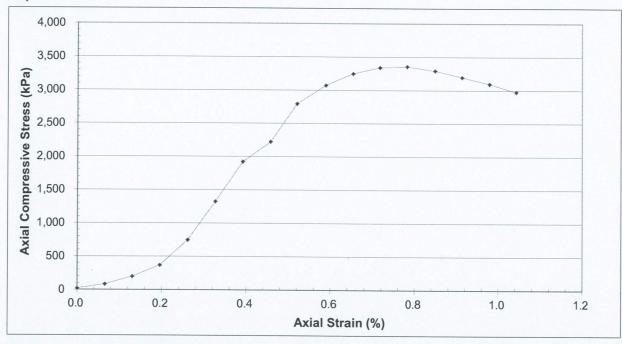
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

	R THE RESERVENCE	BOAT BUT SEE THE SE		
Maximum axial stress	3355	kPa		
Axial strain at failure	0.78	%	Sketch of failure conditions	
Unconfined compressive strength, (qu)	3355	kPa	Inclination of shear surface	1

Graph



Remarks: Mixing Date: 18/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

23 April 2020

Date: 24 April 2020



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New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture
YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#: S3-SC074A

PT75

21/04/2020 LD002 S8 Actual Depth (m): -

Depth (m)#: -

Date of Test: 23/4/2020

Report No.: SLST0200062

Job No.: SHK200016 Page: 2 of 2

W.O. No.#: -

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 21/4/2020

Information provided by Client

Project#:

Sample Type#:

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
ŭ ŭ	011010044	Original length (L _o)	mm	153.6
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4488.8

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.8%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4488.8	20.05
0.10	0.1	-	0.37	370	4491.8	82.37
0.20	0.1	-	0.89	890	4494.7	198.01
0.30	0.2	-	1.66	1660	4497.6	369.08
0.40	0.3	-	3.36	3360	4500.6	746.57
0.50	0.3	-	5.97	5970	4503.5	1325.63
0.60	0.4	-	8.66	8660	4506.5	1921.68
0.70	0.5	-	10.02	10020	4509.5	2221.99
0.80	0.5	-	12.61	12610	4512.3	2794.56
0.90	0.6	-	13.87	13870	4515.4	3071.70
1.00	0.7	-	14.68	14680	4518.3	3248.98
1.10	0.7	-	15.10	15100	4521.2	3339.79
1.20	0.8	-	15.18	15180	4524.2	3355.31
1.30	0.8	-	14.91	14910	4527.2	3293.40
1.40	0.9		14.48	14480	4530.2	3196.34
1.50	1.0	-	14.04	14040	4533.2	3097.16
1.60	1.0	-	13.50	13500	4536.1	2976.12

Report No.: SLST0200062 Job No.: SHK200016





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 21/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 23/4/2020

Report No.: SLST0200062

Job No.: SHK200016

Page: 1 of 2

W.O. No.#: -

LD002 S9 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opcomion Botane					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1204.7
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	679.11	Bulk density	Mg/m ³	1.77
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

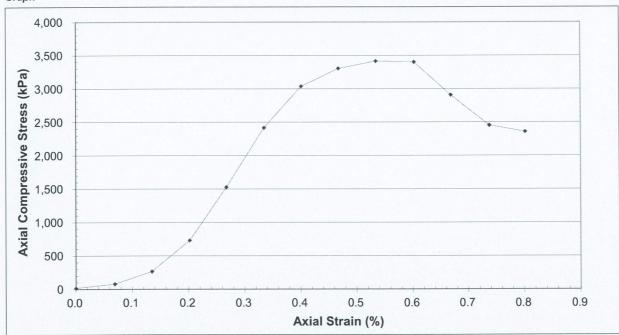
Compression Results

6 kPa
3 %
6 kPa
3

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 18/4/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

23 April 2020 Date: 24 April 2020 Date:



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200062 Job No.: SHK200016 Page: 2 of 2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 23/4/2020

W.O. No.#: -

Sample No.#:

21/04/2020

LD002 S9

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/4/2020

Sample Type#: PT75

cement and 10% sand

Information provided by Client	TM10	Rate of deformation	mm/min	1.00
Machine No. Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
0 0	21121224	Original length (L _o)	mm	149.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 0.8% of axial strain and the peak axial compressive stress is reached at 0.5%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial Deformation	Axial Strain	Proving Ring Gauge	Load Cell	Axial Force	Cross- section Area	Axial Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4536.5	17.63
0.10	0.1	_	0.36	360	4539.6	79.30
0.20	0.1	_	1.21	1210	4542.6	266.37
0.30	0.2		3.32	3320	4545.6	730.37
0.40	0.3	-	6.95	6950	4548.6	1527.94
0.50	0.3		10.99	10990	4551.7	2414.49
0.60	0.4		13.84	13840	4554.7	3038.59
0.70	0.5	_	15.06	15060	4557.8	3304.22
0.80	0.5		15.58	15580	4560.8	3416.04
0.90	0.6	_	15.53	15530	4564.0	3402.75
1.00	0.7	_	13.28	13280	4567.0	2907.82
1.10	0.7		11.21	11210	4570.2	2452.87
1.20	0.8	-	10.78	10780	4573.1	2357.25

Report No.: SLST0200062 Job No.: SHK200016





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 21/04/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 24/4/2020

Report No.: SLST0200062

Page: 1 of 2

Job No.: SHK200016

W.O. No.#: -

LD002 S10

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/4/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.1	Wet mass of specimen	g	1221.3
Length of specimen	mm	153.0	Dry mass of specimen	g	-
Area of specimen	mm ²	4548.4	Moisture content	%	-
Volume of specimen	cm ³	695.91	Bulk density	Mg/m ³	1.75
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

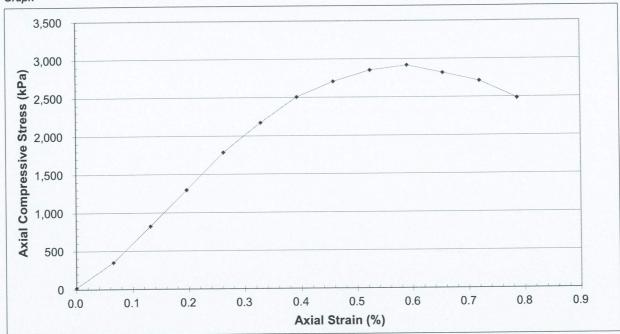
Compression Results

2918	kPa
0.59	%
2918	kPa
	0.59

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date : 20/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

24 April 2020

Date: 24 April 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200062 Job No.: SHK200016 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -

Date of Test: 24/4/2020

W.O. No.#: -

Sample No.#:

21/04/2020

Actual Depth (m): -

LD002 S10

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 21/4/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	0110110014	Original length (L _o)	mm	153.0
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4548.4

The compression was terminated at 0.8% of axial strain and the peak axial compressive stress is reached at 0.6%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4548.4	19.79
0.10	0.1	-	1.60	1600	4551.4	351.54
0.20	0.1	_	3.75	3750	4554.4	823.38
0.30	0.2		5.91	5910	4557.3	1296.81
0.40	0.3		8.14	8140	4560.4	1784.95
0.50	0.3		9.91	9910	4563.4	2171.62
0.60	0.4		11.44	11440	4566.4	2505.27
0.70	0.5	_	12.37	12370	4569.4	2707.16
0.80	0.5	_	13.05	13050	4572.4	2854.10
0.90	0.6		13.35	13350	4575.4	2917.75
1.00	0.7	_	12.90	12900	4578.4	2817.58
1.10	0.7	_	12.42	12420	4581.4	2710.96
1.21	0.8	-	11.39	11390	4584.5	2484.45

Report No.: SLST0200062 Job No.: SHK200016





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 24/4/2020

Report No.: SLST0200062

Job No.: SHK200016 Page: 1 of 2

W.O. No.#: -

S3-SC074A 21/04/2020 Sample No.#: LD002 S11

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/4/2020

cement and 10% sand

Information provided by Client

--!--- D-4-!l-

Sample Type#:

Specimen Details					
Diameter of specimen	mm 76.4 Wet mass of specimen		g	1236.1	
Length of specimen	mm	154.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4584.3	Moisture content	%	-
Volume of specimen	cm ³	706.45	Bulk density	Mg/m ³	1.75
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

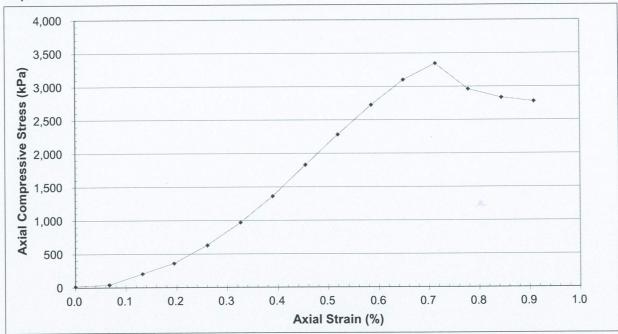
Compression Results

Maximum axial stress	3346	kPa
Axial strain at failure	0.71	%
Unconfined compressive strength, (qu)	3346	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 20/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

24 April 2020

Date: 24 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200062 Job No.: SHK200016 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 24/4/2020

W.O. No.#: -

Sample No.#:

21/04/2020

LD002 S11

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
0 0	CHC C01A	Original length (L _o)	mm	154.1
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4584.3

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4584.3	17.45
0.10	0.1	-	0.19	190	4587.4	41.42
0.20	0.1	-	0.94	940	4590.4	204.77
0.30	0.2	-	1.66	1660	4593.3	361.40
0.40	0.3	-	2.90	2900	4596.3	630.94
0.50	0.3	-	4.46	4460	4599.4	969.70
0.60	0.4	_	6.27	6270	4602.3	1362.37
0.70	0.5	-	8.43	8430	4605.3	1830.50
0.80	0.5	-	10.52	10520	4608.3	2282.84
0.90	0.6	-	12.57	12570	4611.3	2725.90
1.00	0.6	-	14.31	14310	4614.3	3101.22
1.10	0.7	-	15.45	15450	4617.3	3346.11
1.20	0.8	-	13.68	13680	4620.3	2960.84
1.30	0.8	-	13.10	13100	4623.4	2833.41
1.40	0.9	-	12.85	12850	4626.4	2777.54

Report No.: SLST0200062 Job No.: SHK200016





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#

Sample Type#:

Depth (m)#: -S3-SC074A 25/04/2020 Actual Depth (m): -

Date of Test: 25/4/2020

W.O. No.#: -

LD002 S12 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

Report No.: SLST0200064

Page: 1 of 2

Job No.: SHK200017

cement and 10% sand

Information provided by Client

Specimen Details

-p					
Diameter of specimen	mm 76.5 Wet mass of specimen		g	1211.2	
Length of specimen	mm	150.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4596.3	Moisture content	%	-
Volume of specimen	cm ³	693.13	Bulk density	Mg/m ³	1.75
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

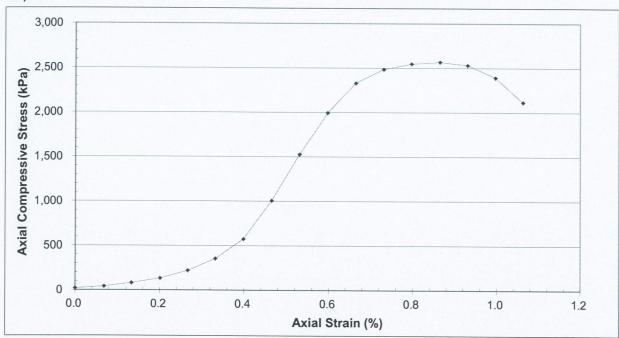
Compression Results

aximum axial stress	2567	kPa
tial strain at failure	0.86	%
aconfined compressive strength, (q_u)	2567	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 21/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

25 April 2020

Date: 28 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200064 Job No.: SHK200017 Page: 2 of 2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 25/4/2020

W.O. No.#: -

25/04/2020

LD002 S12

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.8
Force transducer No.	30C-LCUIA	Original area (A _o)	mm ²	4596.3

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4596.3	19.58
0.10	0.1	-	0.19	190	4599.5	41.31
0.20	0.1	-	0.37	370	4602.5	80.39
0.30	0.2	-	0.61	610	4605.6	132.45
0.40	0.3	-	1.01	1010	4608.6	219.15
0.50	0.3	-	1.63	1630	4611.7	353.45
0.60	0.4	-	2.65	2650	4614.7	574.25
0.70	0.5	-	4.65	4650	4617.8	1006.96
0.80	0.5	-	7.06	7060	4620.9	1527.84
0.90	0.6	-	9.22	9220	4624.0	1993.96
1.00	0.7	-	10.78	10780	4627.1	2329.76
1.10	0.7	-	11.51	11510	4630.2	2485.86
1.20	0.8	-	11.80	11800	4633.3	2546.79
1.30	0.9	-	11.90	11900	4636.4	2566.63
1.40	0.9	-	11.75	11750	4639.5	2532.59
1.50	1.0	-	11.11	11110	4642.6	2393.05
1.60	1.1	-	9.83	9830	4645.7	2115.94

Report No.: SLST0200064 Job No.: SHK200017





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 25/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 25/4/2020

Report No.: SLST0200064

Page: 1 of 2

Job No.: SHK200017

W.O. No.#: -

I D002 S13 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opeomier zotane					
Diameter of specimen	mm 76.2 Wet mass of specimen		g	1209.4	
Length of specimen	mm	151.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	689.07	Bulk density	Mg/m ³	1.76
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

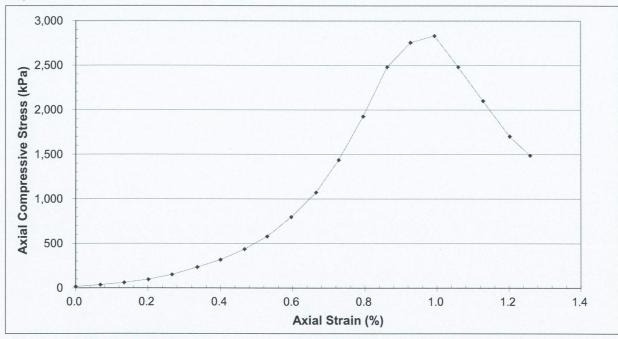
Compression Results

Maximum axial stress	283	33 kPa	
Axial strain at failure	0.9	9 %	
Unconfined compressive strength, (qu)	283	33 kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 21/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

25 April 2020

Date: 28 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Client#:

Project#:

Depth (m)#: -S3-SC074A Actual Depth (m): -

Date of Test: 25/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 2 of 2

W.O. No.#: -

Sample No.#:

25/04/2020

LD002 S13 Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

inionnation provided by offerit				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.1
Force Transducer No.	SUC-LCUTA	Original area (A _a)	mm ²	4560.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.07	70	4560.4	15.35
0.10	0.1	-	0.16	160	4563.5	35.06
0.20	0.1	-	0.28	280	4566.5	61.32
0.30	0.2	-	0.44	440	4569.6	96.29
0.40	0.3	-	0.69	690	4572.5	150.90
0.51	0.3	-	1.07	1070	4575.7	233.84
0.60	0.4	-	1.45	1450	4578.7	316.69
0.71	0.5	-	2.00	2000	4581.7	436.51
0.80	0.5	-	2.66	2660	4584.6	580.20
0.90	0.6	-	3.66	3660	4587.7	797.78
1.00	0.7	-	4.93	4930	4590.9	1073.87
1.10	0.7	-	6.60	6600	4593.8	1436.72
1.20	0.8	-	8.86	8860	4596.9	1927.38
1.30	0.9	-	11.42	11420	4600.0	2482.61
1.40	0.9	-	12.69	12690	4603.0	2756.87
1.50	1.0	-	13.05	13050	4606.1	2833.18
1.60	1.1	-	11.44	11440	4609.2	2482.01
1.70	1.1	-	9.69	9690	4612.4	2100.87
1.82	1.2	-	7.86	7860	4615.8	1702.83
1.90	1.3	-	6.88	6880	4618.5	1489.66

Report No.: SLST0200064 Job No.: SHK200017





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 25/04/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 27/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 1 of 2

W.O. No.#: -

LD005 S14

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Specimen Details

Sample Type#:

Client#:

opecimen betans						
Diameter of specimen	mm 76.4 Wet mass of specimen		g	1231.1		
Length of specimen	mm	153.9	Dry mass of specimen	g	-	
Area of specimen	mm ²	4584.3	Moisture content	%	-	
Volume of specimen	cm ³	705.53	Bulk density	Mg/m ³	1.74	
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

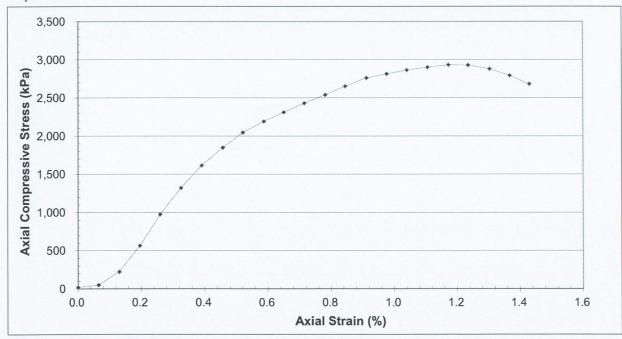
Compression Results

Maximum axial stress	2932	kPa
Axial strain at failure	1.2	%
Unconfined compressive strength, (qu)	2932	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 22/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : _

Date:

27 April 2020

Date: 28 April 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client[#]: Sang Hing - Kuly Joint Venture

Project[#]: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)[#]: -Actual Depth (m): - Date of Test: 27/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 2 of 2

W.O. No.#: -

25/04/2020

LD005 S14

S14

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	153.9
Total Transaction Tto.	000-E001A	Original area (A _o)	mm ²	4584.3

The compression was terminated at 1.4% of axial strain and the peak axial compressive stress is reached at 1.2%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4584.3	19.63
0.10	0.1	-	0.23	230	4587.3	50.14
0.20	0.1	-	1.03	1030	4590.3	224.38
0.30	0.2	-	2.59	2590	4593.3	563.86
0.40	0.3	-	4.48	4480	4596.3	974.70
0.50	0.3	-	6.07	6070	4599.3	1319.76
0.60	0.4		7.43	7430	4602.3	1614.41
0.70	0.5	-	8.51	8510	4605.4	1847.84
0.80	0.5	-	9.43	9430	4608.3	2046.30
0.90	0.6	-	10.11	10110	4611.4	2192.38
1.00	0.7	-	10.67	10670	4614.4	2312.35
1.10	0.7		11.22	11220	4617.4	2429.95
1.20	0.8	-	11.74	11740	4620.5	2540.88
1.30	0.8	-	12.26	12260	4623.4	2651.72
1.40	0.9	-	12.78	12780	4626.5	2762.32
1.50	1.0	-	13.03	13030	4629.5	2814.55
1.60	1.0	-	13.27	13270	4632.5	2864.53
1.70	1.1	-	13.45	13450	4635.6	2901.44
1.81	1.2	-	13.60	13600	4638.7	2931.83
1.90	1.2	-	13.60	13600	4641.7	2929.98
2.01	1.3	-	13.38	13380	4644.9	2880.59
2.11	1.4	-	12.98	12980	4647.9	2792.65
2.20	1.4	-	12.47	12470	4650.9	2681.23

Report No.: SLST0200064 Job No.: SHK200017





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 25/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 27/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 1 of 2

W.O. No.#: -

LD005 S15 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm 75.7 Wet mass of specimen		g	1232.1	
Length of specimen	mm	153.8	Dry mass of specimen	g	
Area of specimen	mm ²	4500.7	Moisture content	%	-
Volume of specimen	cm ³	692.21	Bulk density	Mg/m ³	1.78
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

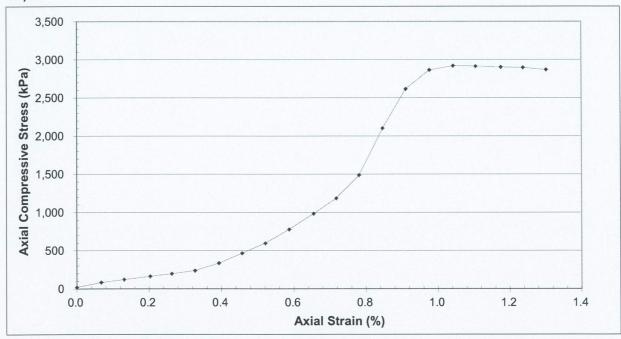
Compression Results

Maximum axial stress	2920	kPa
Axial strain at failure	1.0	%
Unconfined compressive strength, (qu)	2920	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 22/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

27 April 2020

Date: 28 April 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200064 Job No.: SHK200017 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 27/4/2020

W.O. No.#: -

Sample No.#: S

25/04/2020 LD005 S15

VV.O. NO. .

Sample Type#: PT75

LD000 O

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

illioithation provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	153.8
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4500.7

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4500.7	20.00
0.10	0.1	-	0.38	380	4503.7	84.37
0.20	0.1	-	0.55	550	4506.6	122.04
0.31	0.2	-	0.74	740	4509.9	164.08
0.40	0.3	-	0.89	890	4512.6	197.23
0.50	0.3	-	1.08	1080	4515.5	239.18
0.60	0.4	-	1.52	1520	4518.5	336.40
0.70	0.5	-	2.10	2100	4521.4	464.46
0.80	0.5	-	2.70	2700	4524.3	596.78
0.90	0.6	-	3.52	3520	4527.3	777.51
1.01	0.7	-	4.46	4460	4530.3	984.47
1.10	0.7	-	5.37	5370	4533.3	1184.58
1.20	0.8	-	6.75	6750	4536.1	1488.05
1.30	0.8	-	9.54	9540	4539.1	2101.72
1.40	0.9	-	11.88	11880	4542.1	2615.54
1.50	1.0	-	13.02	13020	4545.1	2864.62
1.60	1.0	-	13.28	13280	4548.1	2919.89
1.70	1.1	-	13.26	13260	4551.0	2913.63
1.81	1.2	-	13.22	13220	4554.3	2902.78
1.90	1.2	-	13.20	13200	4557.1	2896.58
2.00	1.3	-	13.08	13080	4560.1	2868.37

Report No.: SLST0200064 Job No.: SHK200017





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 25/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 27/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 1 of 2

W.O. No.#: -

LD005 S16 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opecimen betans					
Diameter of specimen	mm 75.7 Wet mass of specimen		g	1261.5	
Length of specimen	mm	157.5	Dry mass of specimen	g	-
Area of specimen	mm ²	4500.7	Moisture content	%	-
Volume of specimen	cm ³	708.86	Bulk density	Mg/m ³	1.78
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

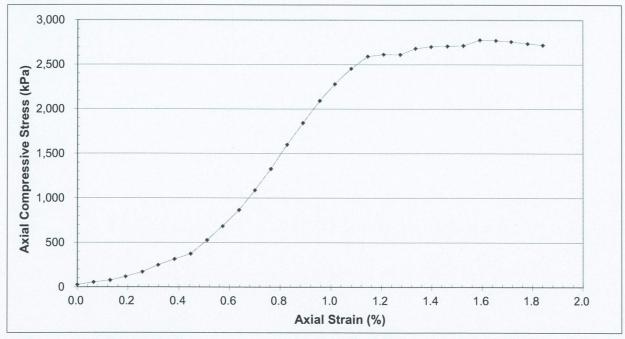
Compression Results

Maximum axial stress	2777	kPa	
Axial strain at failure	1.6	%	
Unconfined compressive strength, (qu)	2777	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 23/4/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by: HUI King Fai

Date: 27 April 2020 Date: 28 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200064 Job No.: SHK200017 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No #.

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 27/4/2020

W.O. No.#: -

Sample No.#: 25/04/2020

Sample Type#: PT75

LD005 S16

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 25/4/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	157.5
Torce Transducer No.	30C-LC01A	Original area (A _o)	mm ²	4500.7

The compression was terminated at 1.8% of axial strain and the peak axial compressive stress is reached at 1.6%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.12	120	4500.7	26.66
0.10	0.1	-	0.25	250	4503.6	55.51
0.21	0.1	-	0.35	350	4506.6	77.66
0.30	0.2	-	0.53	530	4509.3	117.53
0.40	0.3	_	0.77	770	4512.3	170.65
0.50	0.3		1.12	1120	4515.1	248.06
0.60	0.4	_	1.42	1420	4518.0	314.30
0.70	0.4	_	1.69	1690	4520.8	373.82
0.80	0.5	-	2.38	2380	4523.8	526.11
0.90	0.6	-	3.10	3100	4526.6	684.84
1.00	0.6	-	3.92	3920	4529.6	865.43
1.10	0.7	-	4.93	4930	4532.4	1087.72
1.20	0.8	-	6.02	6020	4535.3	1327.36
1.30	0.8	-	7.26	7260	4538.3	1599.73
1.40	0.9	<u>-</u>	8.37	8370	4541.1	1843.15
1.51	1.0	-	9.51	9510	4544.1	2092.81
1.60	1.0	-	10.37	10370	4546.9	2280.67
1.70	1.1	-	11.17	11170	4549.9	2455.02
1.81	1.1	-	11.80	11800	4552.9	2591.76
1.90	1.2	-	11.91	11910	4555.8	2614.26
2.01	1.3	-	11.91	11910	4558.8	2612.51
2.10	1.3	-	12.23	12230	4561.7	2681.04
2.20	1.4	-	12.33	12330	4564.5	2701.28
2.30	1.5	-	12.37	12370	4567.5	2708.26
2.40	1.5	-	12.40	12400	4570.4	2713.08
2.51	1.6	-	12.70	12700	4573.5	2776.88
2.61	1.7	-	12.68	12680	4576.4	2770.73
2.70	1.7	-	12.63	12630	4579.2	2758.10
2.80	1.8		12.54	12540	4582.3	2736.62
2.90	1.8	-	12.47	12470	4585.1	2719.65

Report No.: SLST0200064 Job No.: SHK200017





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 25/04/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 27/4/2020

Report No.: SLST0200064

Job No.: SHK200017

Page: 1 of 2

W.O. No.#: -

LD005 S17

Date Received: 25/4/2020

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Diameter of specimen	mm	75.9	Wet mass of specimen	g	1250.9
Length of specimen	mm	156.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4524.5	Moisture content	%	-
Volume of specimen	cm ³	709.45	Bulk density	Mg/m ³	1.76
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

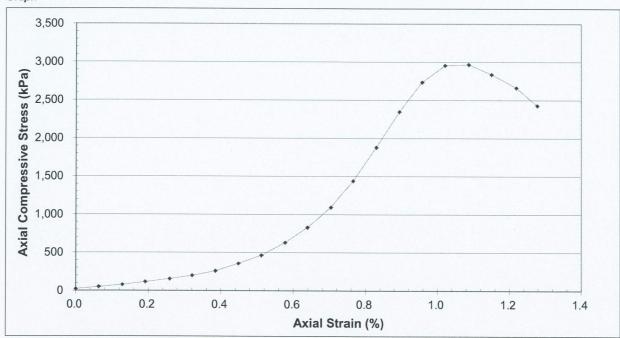
Compression Results

		STATE OF THE STATE
Maximum axial stress	2967	kPa
xial strain at failure	1.1	%
Inconfined compressive strength, (q_u)	2967	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 23/4/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date: 28 April 2020

Date:

27 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, Fax New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Depth (m)#: -

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200064 Job No.: SHK200017 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Actual Depth (m): -

Date of Test: 27/4/2020

W.O. No.#: -

Sample No.#:

25/04/2020

LD005 S17

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 25/4/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	156.8
	30C-ECUIA	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.1%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4524.5	22.10
0.10	0.1	-	0.23	230	4527.4	50.80
0.20	0.1	-	0.35	350	4530.3	77.26
0.30	0.2	-	0.52	520	4533.2	114.71
0.41	0.3	-	0.70	700	4536.3	154.31
0.50	0.3	-	0.90	900	4539.1	198.28
0.60	0.4	-	1.17	1170	4542.0	257.60
0.70	0.4	-	1.62	1620	4544.9	356.44
0.80	0.5	-	2.11	2110	4547.8	463.96
0.91	0.6	-	2.87	2870	4550.8	630.66
1.00	0.6	-	3.78	3780	4553.6	830.11
1.10	0.7	-	4.98	4980	4556.6	1092.92
1.20	0.8	-	6.57	6570	4559.4	1440.97
1.30	0.8	-	8.58	8580	4562.4	1880.60
1.40	0.9	-	10.71	10710	4565.3	2345.93
1.50	1.0	-	12.49	12490	4568.3	2734.08
1.60	1.0	-	13.51	13510	4571.2	2955.46
1.70	1.1	-	13.57	13570	4574.2	2966.61
1.80	1.1	-	12.99	12990	4577.2	2838.00
1.91	1.2	-	12.20	12200	4580.4	2663.55
2.00	1.3	-	11.13	11130	4583.1	2428.50

Report No.: SLST0200064 Job No.: SHK200017





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Project#:

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Sample Type#:

Client#:

S3-SC074A 27/04/2020

Depth (m)#: -

Date of Test: 28/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 1 of 2

W.O. No.#: -

Sample No.#: LD002 S18

PT75

Actual Depth (m): -

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 27/4/2020

Information provided by Client

Cassimon Dotails

Specimen Details					
Diameter of specimen	mm	75.3	Wet mass of specimen	g	1237.1
Length of specimen	mm	151.3	Dry mass of specimen	g	-
Area of specimen	mm ²	4453.3	Moisture content	%	-
Volume of specimen	cm ³	673.78	Bulk density	Mg/m ³	1.84
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

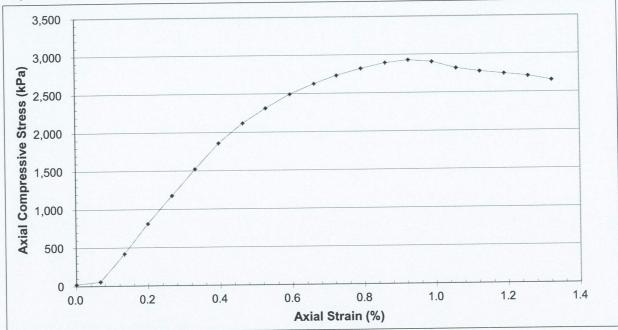
Compression Results

Maximum axial stress	2928	kPa
Axial strain at failure	0.93	%
Unconfined compressive strength, (qu)	2928	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 24/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

28 April 2020

Date: 29 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 28/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 2 of 2

W.O. No.#: -

27/04/2020 LD002 S18

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.3
		Original area (A _o)	mm ²	4453.3

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 0.9%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4453.3	22.46
0.10	0.1	-	0.25	250	4456.2	56.10
0.20	0.1	-	1.87	1870	4459.2	419.35
0.30	0.2		3.62	3620	4462.2	811.26
0.40	0.3		5.25	5250	4465.2	1175.76
0.50	0.3		6.80	6800	4468.1	1521.91
0.60	0.4	-	8.31	8310	4471.0	1858.63
0.70	0.5	-	9.48	9480	4474.1	2118.86
0.80	0.5	-	10.35	10350	4477.0	2311.84
0.90	0.6	-	11.17	11170	4480.0	2493.31
1.00	0.7	-	11.78	11780	4483.0	2627.71
1.10	0.7		12.26	12260	4485.9	2733.01
1.20	0.8		12.67	12670	4488.9	2822.51
1.30	0.9	-	13.00	13000	4492.0	2894.06
1.40	0.9	-	13.16	13160	4494.9	2927.76
1.50	1.0	-	13.06	13060	4497.9	2903.58
1.60	1.1	-	12.68	12680	4501.0	2817.15
1.70	1.1	-	12.49	12490	4503.9	2773.13
1.80	1.2		12.36	12360	4507.0	2742.39
1.91	1.3	-	12.22	12220	4510.1	2709.50
2.00	1.3	-	11.98	11980	4513.0	2654.54

Report No. : SLST0200065 Job No. : SHK200018





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

S3-SC074A 27/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 28/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 1 of 2

W.O. No.#: -

LD002 S19 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/4/2020

cement and 10% sand

Information provided by Client

Specimen Details

Hole No.#:

Sample Type#:

operation Detaile					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1259.5
Length of specimen	mm	154.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	_
Volume of specimen	cm ³	702.24	Bulk density	Mg/m ³	1.79
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

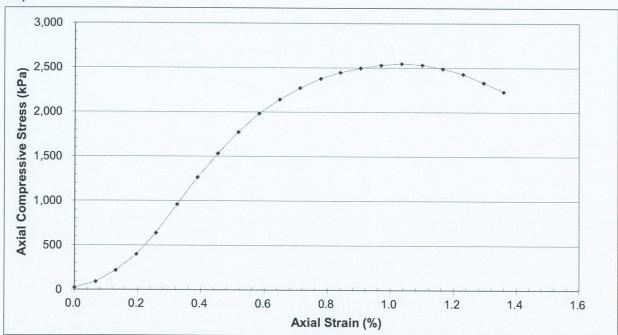
Compression Results

Maximum axial stress	2548	kPa	
Axial strain at failure	1.0	%	
Unconfined compressive strength, (qu)	2548	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks: Mixing Date: 24/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

28 April 2020

Date: 29 April 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200065 Job No.: SHK200018 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 28/4/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

27/04/2020

LD002 S19

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/4/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	154.8
Force Transducer No.	300-LCOTA	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.4% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.11	110	4536.5	24.25
0.10	0.1	-	0.41	410	4539.5	90.32
0.20	0.1	-	0.99	990	4542.4	217.95
0.30	0.2	-	1.81	1810	4545.4	398.21
0.40	0.3	-	2.91	2910	4548.2	639.81
0.50	0.3	-	4.37	4370	4551.2	960.18
0.60	0.4	-	5.76	5760	4554.2	1264.77
0.70	0.5	-	6.99	6990	4557.1	1533.87
0.80	0.5	-	8.09	8090	4560.0	1774.11
0.90	0.6	-	9.05	9050	4563.0	1983.32
1.00	0.6	-	9.78	9780	4566.0	2141.90
1.10	0.7	-	10.38	10380	4569.0	2271.82
1.20	0.8	-	10.87	10870	4572.0	2377.50
1.30	0.8	-	11.19	11190	4574.9	2445.93
1.40	0.9	-	11.43	11430	4577.9	2496.78
1.50	1.0	-	11.59	11590	4580.9	2530.07
1.60	1.0	-	11.68	11680	4583.9	2548.05
1.70	1.1	-	11.62	11620	4586.9	2533.29
1.80	1.2	-	11.43	11430	4589.9	2490.24
1.90	1.2	-	11.16	11160	4593.0	2429.81
2.01	1.3	-	10.72	10720	4596.0	2332.47
2.10	1.4	-	10.26	10260	4598.9	2230.95

Report No. : SLST0200065 Job No. : SHK200018





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 27/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 29/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 1 of 2

W.O. No.#: -

LD002 S20 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/4/2020

cement and 10% sand

Specimen Details

Sample Type#:

Diameter of specimen	mm	75.6	Wet mass of specimen	0	1247.1
				y	1247.1
Length of specimen	mm	153.2	Dry mass of specimen	g	-
Area of specimen	mm ²	4488.8	Moisture content	%	
Volume of specimen	cm ³	687.69	Bulk density	Mg/m ³	1.81
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

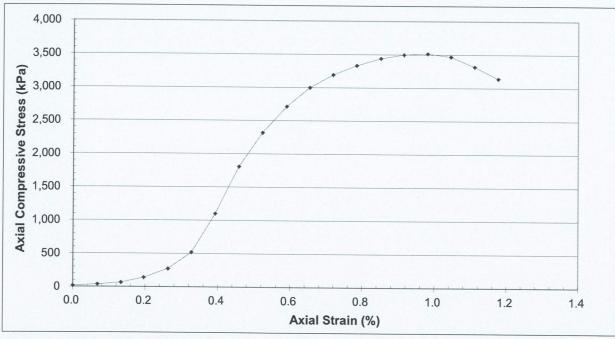
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	3514	kPa	
Axial strain at failure	0.98	%	Sketch of failure conditions
Unconfined compressive strength, (qu)	3514	kPa	Inclination of shear surface

Graph



Remarks: Mixing Date: 25/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

29 April 2020

Date: 29 April 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 29/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 2 of 2

W.O. No.#: -

27/04/2020

LD002 S20

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/4/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	153.2
	000-E001A	Original area (A _o)	mm ²	4488.8

The compression was terminated at 1.2% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm²)	(kPa)
0.00	0.0	-	0.08	80	4488.8	17.82
0.10	0.1	-	0.16	160	4491.9	35.62
0.20	0.1		0.29	290	4494.8	64.52
0.30	0.2	-	0.63	630	4497.6	140.07
0.40	0.3	_	1.23	1230	4500.7	273.29
0.50	0.3	-	2.34	2340	4503.6	519.59
0.60	0.4	-	4.96	4960	4506.5	1100.63
0.70	0.5		8.15	8150	4509.5	1807.31
0.80	0.5		10.46	10460	4512.4	2318.04
0.90	0.6		12.25	12250	4515.4	2712.91
1.00	0.7		13.55	13550	4518.4	2998.88
1.10	0.7		14.43	14430	4521.3	3191.54
1.20	0.8		15.08	15080	4524.3	3333.11
1.30	0.9	1	15.57	15570	4527.3	3439.11
1.40	0.9	_	15.85	15850	4530.3	3498.69
1.50	1.0	-	15.93	15930	4533.2	3514.04
1.60	1.0		15.73	15730	4536.2	3467.65
1.70	1.1	_	15.06	15060	4539.2	3317.74
1.80	1.2	-	14.26	14260	4542.3	3139.41

Report No.: SLST0200065 Job No.: SHK200018





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: S3-SC074A 27/04/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 29/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 1 of 2

W.O. No.#: -

LD002 S21 PT75

Date Received: 27/4/2020

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opcomici betails					
Diameter of specimen	mm	76.2	Wet mass of specimen	g	1249.0
Length of specimen	mm	152.7	Dry mass of specimen	g	
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	696.37	Bulk density	Mg/m ³	1.79
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

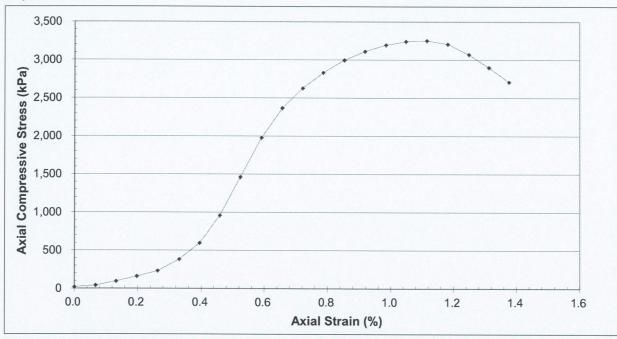
Compression Results

		In a little carrette
Maximum axial stress	3253	kPa
Axial strain at failure	1.1	%
Unconfined compressive strength, (qu)	3253	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 25/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date:

29 April 2020

Date: 29 April 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: Sample No.*: S3-SC07

Client#:

Project#:

- Depth (m)[#]: -S3-SC074A Actual Depth (m): -27/04/2020 Date of Test: 29/4/2020

Report No.: SLST0200065

Job No.: SHK200018

Page: 2 of 2

W.O. No.#: -

LD002 S21

Sample Type#: PT75 Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 27/4/2020

Information provided by Client

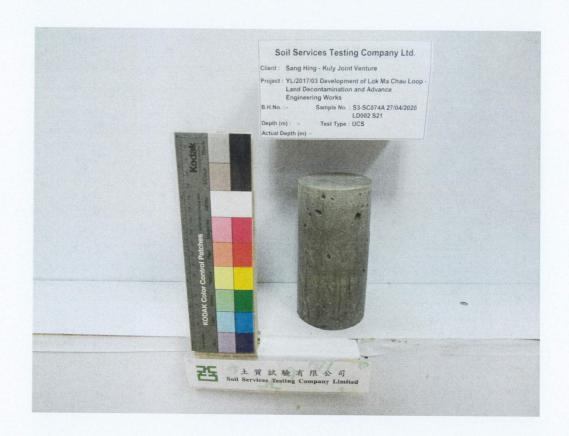
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	152.7
. or oo Transaucor Tto:	000-2001A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1.4% of axial strain and the peak axial compressive stress is reached at 1.1%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4560.4	19.74
0.10	0.1	-	0.19	190	4563.5	41.63
0.20	0.1		0.44	440	4566.4	96.36
0.30	0.2	-	0.73	730	4569.4	159.76
0.40	0.3	-	1.06	1060	4572.4	231.83
0.50	0.3	-	1.75	1750	4575.5	382.47
0.60	0.4	-	2.73	2730	4578.4	596.28
0.70	0.5	-	4.39	4390	4581.4	958.22
0.80	0.5	-	6.70	6700	4584.4	1461.48
0.90	0.6	-	9.07	9070	4587.5	1977.11
1.00	0.7	-	10.86	10860	4590.5	2365.75
1.10	0.7	-	12.07	12070	4593.5	2627.62
1.20	8.0	-	13.01	13010	4596.5	2830.40
1.30	0.9		13.78	13780	4599.6	2995.90
1.40	0.9	-	14.32	14320	4602.6	3111.29
1.50	1.0		14.72	14720	4605.7	3196.04
1.60	1.0		14.94	14940	4608.7	3241.68
1.70	1.1	-	15.00	15000	4611.8	3252.53
1.80	1.2	-	14.80	14800	4614.9	3207.01
1.91	1.2	-	14.18	14180	4618.0	3070.57
2.00	1.3	-	13.40	13400	4621.0	2899.80
2.10	1.4		12.53	12530	4624.0	2709.78

Report No. : SLST0200065 Job No. : SHK200018





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

Sample Type#:

S3-SC074A 2/5/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 2/5/2020

Report No.: SLST0200067

Job No.: SHK200019 Page: 1 of 2

W.O. No.#: -

Sample No.#: LD002 S22

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Information provided by Client

-i--- Dotaile

Specimen Details					
Diameter of specimen	mm	75.9	Wet mass of specimen	g	1130.4
Length of specimen	mm	150.1	Dry mass of specimen	g	_
Area of specimen	mm ²	4524.5	Moisture content	%	-
Volume of specimen	cm ³	679.13	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

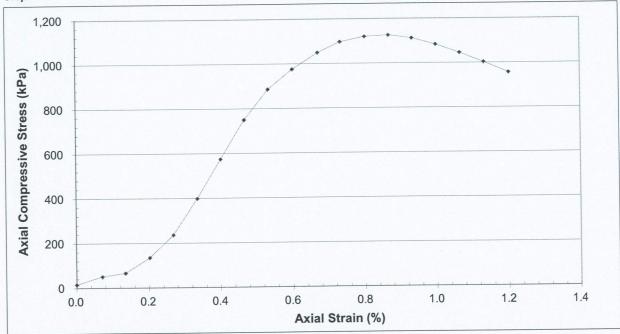
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Compression Results				
Maximum axial stress	1126	kPa	Sketch of failure conditions	
Axial strain at failure	0.87	%	Inclination of shear surface	1
Unconfined compressive strength, (qu)	1126	kPa	monitation of official carriage	110

Graph



Remarks:

Mixing Date : 27/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date:

2 May 2020

Date: 5 May 2020



Client#:

Project#:

Sample Type#:

Soil Services Testing Company Limited

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: S3-SC074A Sample No.#:

2/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 2/5/2020

Report No.: SLST0200067

Job No.: SHK200019 Page: 2 of 2

W.O. No.#: -

S22

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 2/5/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
0	0110 1 0044	Original length (L _o)	mm	150.1
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1.2% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.07	70	4524.5	15.47
0.11	0.1	-	0.23	230	4527.7	50.80
0.20	0.1	-	0.30	300	4530.6	66.22
0.30	0.2	-	0.61	610	4533.7	134.55
0.40	0.3	-	1.07	1070	4536.7	235.86
0.50	0.3	-	1.81	1810	4539.7	398.70
0.60	0.4	-	2.61	2610	4542.7	574.55
0.70	0.5	-	3.41	3410	4545.8	750.15
0.80	0.5	-	4.03	4030	4548.8	885.95
0.90	0.6	-	4.44	4440	4551.9	975.42
1.01	0.7	-	4.78	4780	4555.1	1049.38
1.10	0.7	-	5.00	5000	4558.0	1096.98
1.20	0.8	_	5.11	5110	4561.1	1120.35
1.30	0.9	-	5.14	5140	4564.2	1126.17
1.40	0.9	-	5.08	5080	4567.2	1112.28
1.50	1.0	-	4.95	4950	4570.2	1083.10
1.60	1.1	-	4.78	4780	4573.3	1045.19
1.70	1.1	-	4.59	4590	4576.4	1002.98
1.80	1.2	-	4.38	4380	4579.6	956.42

Report No.: SLST0200067 Job No.: SHK200019





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 2/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 2/5/2020

Report No.: SLST0200067

Job No.: SHK200019 Page: 1 of 2

W.O. No.#: -

LD002 S23 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1128.8
Length of specimen	mm	150.5	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	682.74	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

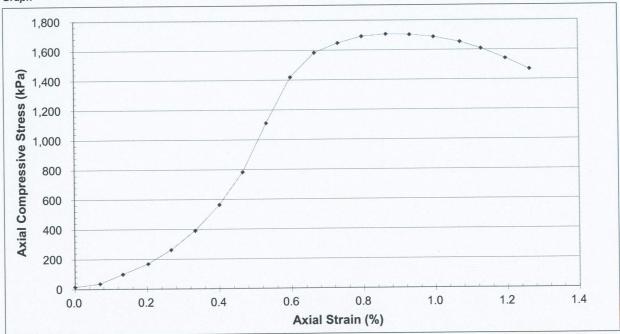
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

V VIII SA A A A SA			
1707	kPa	Skatab of failure conditions	
0.87	%		
1707	kPa	momadon or oriodi carrace	
	0.87	0.87 %	0.87 % Sketch of failure conditions Inclination of shear surface

Graph



Mixing Date: 27/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

2 May 2020

Date: 5 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200067 Job No.: SHK200019 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 2/5/2020

W.O. No.#: -

Sample No.#: 2/5/2020 LD002

S23

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC LOSTA	Original length (L _o)	mm	150.5
	SUC-LC01A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	•	0.07	70	4536.5	15.43
0.10	0.1	-	0.16	160	4539.6	35.25
0.20	0.1	-	0.45	450	4542.5	99.06
0.31	0.2	-	0.77	770	4545.7	169.39
0.40	0.3	-	1.19	1190	4548.5	261.62
0.50	0.3	-	1.78	1780	4551.6	391.07
0.60	0.4	-	2.57	2570	4554.7	564.25
0.70	0.5	-	3.57	3570	4557.7	783.29
0.80	0.5	-	5.07	5070	4560.7	1111.67
0.90	0.6	-	6.48	6480	4563.8	1419.87
1.00	0.7	-	7.23	7230	4566.9	1583.14
1.10	0.7	-	7.53	7530	4569.9	1647.73
1.20	0.8	-	7.74	7740	4573.0	1692.56
1.30	0.9	-	7.81	7810	4576.0	1706.71
1.40	0.9	-	7.80	7800	4579.1	1703.39
1.50	1.0	-	7.73	7730	4582.2	1686.97
1.61	1.1	-	7.58	7580	4585.6	1653.00
1.70	1.1	-	7.38	7380	4588.3	1608.44
1.80	1.2	-	7.08	7080	4591.4	1542.00
1.90	1.3	-	6.75	6750	4594.6	1469.13

Report No.: SLST0200067 Job No.: SHK200019





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Job No.: SHK200019 Page: 1 of 2

Report No.: SLST0200067

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 2/5/2020

Depth (m)#: -

Date of Test: 4/5/2020

W.O. No.#: -

Sample No.#:

LD002 S24

Actual Depth (m): -

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 2/5/2020

Information provided by Client

Specimen Details					
Diameter of specimen	mm	75.8	Wet mass of specimen	g	1128.4
Length of specimen	mm	150.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	-
Volume of specimen	cm ³	677.34	Bulk density	Mg/m ³	1.67
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

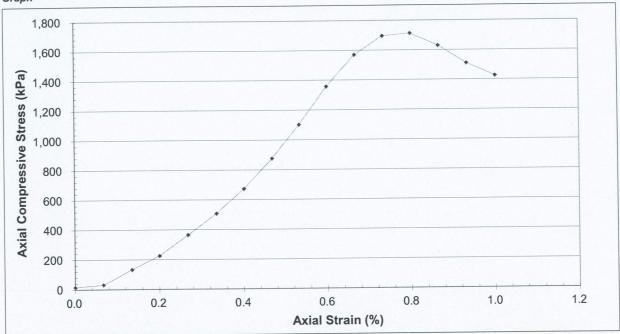
Compression Results

Maximum axial stress	1712	kPa
Axial strain at failure	0.80	%
Unconfined compressive strength, (qu)	1712	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 28/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

4 May 2020

Date: 5 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200067 Job No.: SHK200019 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

W.O. No.#: -

Sample No.#:

2/5/2020 LD002

S24

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 2/5/2020

"Information provided by Client	TM10	Rate of deformation	mm/min	1.00
Machine No.		71010	mm/digit	0.001
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	0	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	21121221	Original length (L _o)	mm	150.1
Force Transducer No.	SUC-LC01A	Original area (A _a)	mm ²	4512.6

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.8%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load Cell	Axial Force	Cross- section Area	Axial Compressive Stress
Deformation	Strain	Ring Gauge		P	A	σ_1
Reading	3	Reading	Reading			· ·
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.07	70	4512.6	15.51
0.10	0.1	-	0.14	140	4515.7	31.00
0.20	0.1		0.60	600	4518.7	132.78
0.30	0.2		1.02	1020	4521.7	225.58
0.40	0.3		1.65	1650	4524.7	364.66
0.50	0.3		2.30	2300	4527.8	507.97
0.60	0.4		3.05	3050	4530.8	673.17
	0.5		3.97	3970	4533.8	875.64
0.70	0.5		5.00	5000	4536.8	1102.09
0.80			6.16	6160	4539.9	1356.87
0.90	0.6	-			4542.9	1569.48
1.00	0.7		7.13	7130		
1.10	0.7	-	7.71	7710	4546.0	1696.01
1.20	0.8	-	7.79	7790	4549.0	1712.46
1.30	0.9		7.42	7420	4552.1	1630.03
1.40	0.9	_	6.88	6880	4555.1	1510.38
1.50	1.0	-	6.50	6500	4558.3	1425.97

Report No.: SLST0200067 Job No.: SHK200019





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 2/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

Report No.: SLST0200067

Page: 1 of 2

Job No.: SHK200019

W.O. No.#: -

LD002 S25

Date Received: 2/5/2020

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.6	Wet mass of specimen	g	1137.9
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4488.8	Moisture content	%	-
Volume of specimen	cm ³	671.98	Bulk density	Mg/m ³	1.69
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

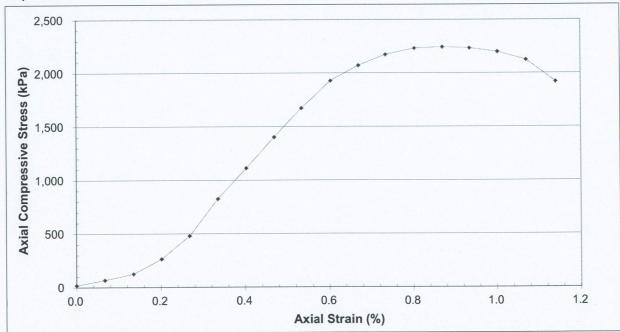
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Compression researce				
Maximum axial stress	2244	kPa	Cleately of failure conditions	
Axial strain at failure	0.87	%	Sketch of failure conditions Inclination of shear surface	11
Unconfined compressive strength, (qu)	2244	kPa	mountation of shear surface	

Graph



Mixing Date: 28/4/2020 Remarks:

Checked by: LAU Chun Ming

Note: The results relate only to the tested sample as received.

Certified by:

HUI King Fai

Date:

4 May 2020

Date: 5 May 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200067 Job No.: SHK200019 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

2/5/2020 LD002

S25

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	2112 1 224 4	Original length (L _o)	mm	149.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4488.8

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial Compressive Stress
Deformation	Strain	Ring Gauge	Cell	Force	section Area	
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4488.8	17.82
0.10	0.1	-	0.30	300	4491.8	66.79
0.20	0.1	-	0.56	560	4494.9	124.59
0.30	0.2	-	1.19	1190	4497.9	264.57
0.40	0.3	-	2.16	2160	4500.9	479.91
0.50	0.3	- 10 m	3.72	3720	4503.9	825.95
0.60	0.4		5.01	5010	4507.0	1111.61
0.70	0.5	-	6.32	6320	4510.0	1401.34
0.80	0.5	-	7.55	7550	4513.0	1672.96
0.90	0.6	_	8.71	8710	4516.1	1928.65
1.00	0.7	-	9.36	9360	4519.1	2071.20
1.10	0.7	-	9.83	9830	4522.1	2173.79
1.20	0.8	_	10.10	10100	4525.2	2231.95
1.30	0.9		10.16	10160	4528.2	2243.69
1.40	0.9		10.12	10120	4531.2	2233.38
1.50	1.0	-	9.97	9970	4534.3	2198.80
1.60	1.1		9.64	9640	4537.4	2124.56
1.71	1.1	-	8.72	8720	4540.6	1920.43

Report No.: SLST0200067 Job No.: SHK200019





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 2/5/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

Report No.: SLST0200067

Job No.: SHK200019 Page: 1 of 2

W.O. No.#: -

Sample No.#:

LD002 S26

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Specimen Details					
Diameter of specimen	mm	75.8	Wet mass of specimen	g	1141.4
Length of specimen	mm	150.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	-
Volume of specimen	cm ³	680.05	Bulk density	Mg/m ³	1.68
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

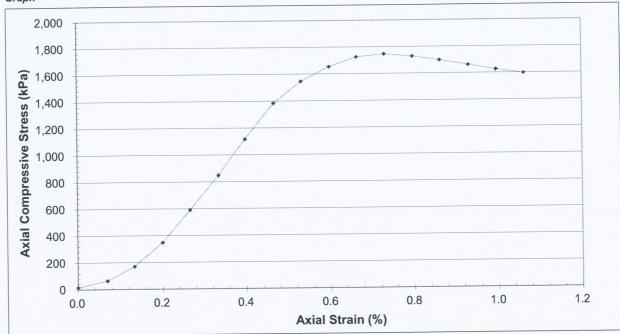
Compression Results

Maximum axial stress	1747	kPa
Axial strain at failure	0.73	%
Unconfined compressive strength, (qu)	1747	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 29/4/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

4 May 2020

Date: 5 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200067 Job No.: SHK200019 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 2/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

W.O. No.#: -

Sample No.#:

S26

Date Received: 2/5/2020

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

"Information provided by Client		I= : () ()	mana/main	1.00
Machine No.	TM10	Rate of deformation	mm/min	
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	0110110014	Original length (L _o)	mm	150.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4512.6

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.7%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.07	70	4512.6	15.51
0.10	0.1	-	0.29	290	4515.7	64.22
0.20	0.1		0.77	770	4518.6	170.41
0.30	0.2		1.57	1570	4521.6	347.22
0.40	0.3	-	2.67	2670	4524.6	590.10
0.50	0.3	<u>-</u>	3.84	3840	4527.7	848.11
0.60	0.4	_	5.06	5060	4530.7	1116.84
0.70	0.5	_	6.27	6270	4533.8	1382.96
0.80	0.5	_	7.01	7010	4536.7	1545.17
0.90	0.6	_	7.51	7510	4539.8	1654.25
1.00	0.7	_	7.84	7840	4542.8	1725.81
1.10	0.7	_	7.94	7940	4545.8	1746.67
1.20	0.8		7.86	7860	4548.9	1727.89
1.30	0.9	_	7.73	7730	4551.9	1698.19
1.40	0.9	-	7.57	7570	4555.0	1661.90
1.50	1.0		7.41	7410	4558.0	1625.70
1.60	1.1	-	7.29	7290	4561.1	1598.31

Report No.: SLST0200067 Job No.: SHK200019





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 2/5/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 4/5/2020

Report No.: SLST0200067

Job No.: SHK200019

Page: 1 of 2

W.O. No.#: -

Sample No.#: LD002 S27 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opecimen betans						
Diameter of specimen	mm 76.1 Wet mass of specimen		Wet mass of specimen	g	1132.3	
Length of specimen	mm	150.0	Dry mass of specimen	g	-	
Area of specimen	mm ²	4548.4	Moisture content	%	-	
Volume of specimen	cm ³	682.26	Bulk density	Mg/m ³	1.66	
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³		

^{*} Delete whichever is inappropriate

Visual Description:

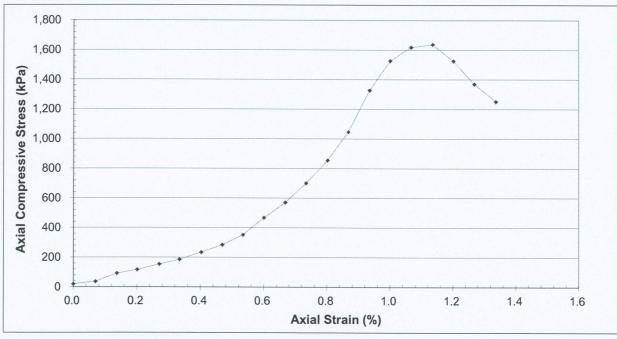
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1637	kPa	
Axial strain at failure	1.1	%	Sketch of failure conditions Inclination of shear surface
Unconfined compressive strength, (qu)	1637	kPa	inclination of shear surface

Graph



Mixing Date : 29/4/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by: HUI King Fai

Date: 4 May 2020 Date: 5 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200067 Job No.: SHK200019 Page: 2 of 2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

cement and 10% sand

Hole No.#: Sample No.#:

S3-SC074A 2/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 4/5/2020

W.O. No.#: -

Sample Type#: PT75

S27

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 2/5/2020

Information provided by Client

inionnation provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.0
	30C-ECOTA	Original area (A _o)	mm ²	4548.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.1%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4548.4	19.79
0.11	0.1	-	0.17	170	4551.6	37.35
0.21	0.1		0.42	420	4554.6	92.21
0.30	0.2		0.53	530	4557.6	116.29
0.41	0.3	-	0.70	700	4560.8	153.48
0.50	0.3	-	0.85	850	4563.7	186.25
0.60	0.4	-	1.07	1070	4566.8	234.30
0.70	0.5	-	1.30	1300	4569.8	284.47
0.80	0.5	-	1.61	1610	4572.8	352.08
0.90	0.6	-	2.14	2140	4575.9	467.67
1.00	0.7	-	2.61	2610	4579.0	569.99
1.10	0.7	-	3.21	3210	4582.0	700.57
1.20	8.0	-	3.92	3920	4585.2	854.93
1.30	0.9	-	4.80	4800	4588.2	1046.16
1.40	0.9		6.09	6090	4591.3	1326.42
1.50	1.0	-	7.01	7010	4594.4	1525.78
1.60	1.1	-	7.44	7440	4597.4	1618.29
1.70	1.1	-	7.53	7530	4600.6	1636.74
1.80	1.2	-	7.02	7020	4603.7	1524.87
1.90	1.3	-	6.31	6310	4606.8	1369.71
2.01	1.3	-	5.77	5770	4610.0	1251.62

Report No.: SLST0200067 Job No.: SHK200019





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Sample Type#:

S3-SC074A 05/05/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 6/5/2020

Report No.: SLST0200070

Page: 1 of 2

Job No.: SHK200020

W.O. No.#: -

LD002 S28

PT75

Actual Depth (III). -

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 5/5/2020

Information provided by Client

Specimen Details

Diameter of specimen	mm	76.4	Wet mass of specimen	0	1104.1
Length of specimen	mm	149.8	Dry mass of specimen	g	1104.1
Area of specimen	mm ²	4584.3	Moisture content	%	-
Volume of specimen	cm ³	686.73	Bulk density	Mg/m ³	1.61
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

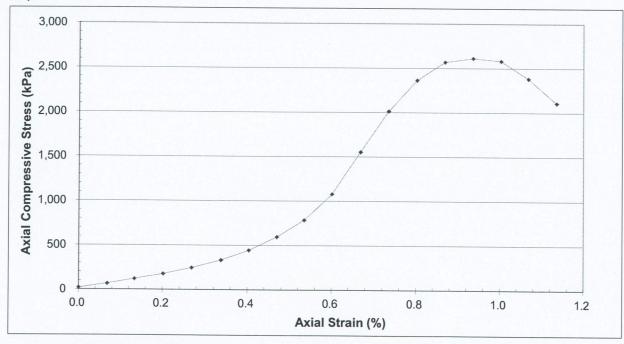
Compression Results

Maximum axial stress	2613	kPa	
Axial strain at failure	0.94	%	
Unconfined compressive strength, (qu)	2613	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks: Mixing Date: 2/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : HUI King Fai

Date: 9 May 2020

Date:

6 May 2020

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200070 Job No.: SHK200020 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/5/2020

W.O. No.#: -

Sample No.#:

05/05/2020

LD002 S28

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/5/2020

cement and 10% sand

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	0110 1 0044	Original length (L _o)	mm	149.8
	SUC-LC01A	Original area (A _o)	mm ²	4584.3

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4584.3	19.63
0.10	0.1	-	0.30	300	4587.5	65.40
0.20	0.1	-	0.55	550	4590.5	119.81
0.30	0.2	_	0.81	810	4593.6	176.33
0.40	0.3	-	1.13	1130	4596.7	245.83
0.51	0.3	-	1.53	1530	4599.9	332.62
0.60	0.4	-	2.04	2040	4602.9	443.20
0.70	0.5	-	2.74	2740	4606.0	594.88
0.80	0.5	-	3.62	3620	4609.0	785.42
0.90	0.6	-	4.98	4980	4612.1	1079.77
1.00	0.7	-	7.17	7170	4615.2	1553.57
1.10	0.7	-	9.30	9300	4618.3	2013.75
1.20	0.8	-	10.92	10920	4621.4	2362.93
1.30	0.9	-	11.88	11880	4624.5	2568.93
1.40	0.9	-	12.09	12090	4627.6	2612.58
1.50	1.0	-	11.95	11950	4630.7	2580.58
1.60	1.1	-	11.04	11040	4633.8	2382.48
1.70	1.1	-	9.77	9770	4637.0	2106.97

Report No.: SLST0200070 Job No.: SHK200020





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

PT75

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Sample Type#:

S3-SC074A 05/05/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 6/5/2020

Report No.: SLST0200070

Job No.: SHK200020

Page: 1 of 2

W.O. No.#: -

Sample No.#: S3-SC074A LD002 S29

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 5/5/2020

Information provided by Client

Specimen Details

oposimon solume					
Diameter of specimen	mm	76.5	Wet mass of specimen	g	1120.3
Length of specimen	mm	149.9	Dry mass of specimen	g	
Area of specimen	mm ²	4596.3	Moisture content	%	-
Volume of specimen	cm ³	688.99	Bulk density	Mg/m ³	1.63
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

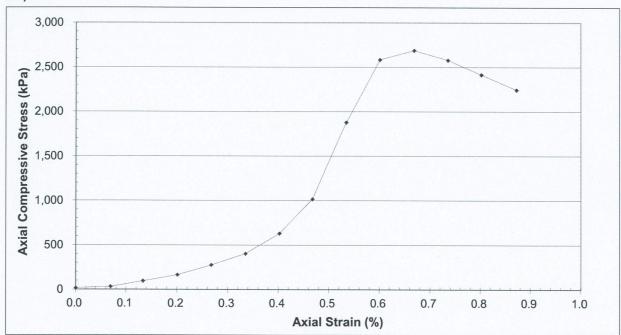
Compression Results

Maximum axial stress	2688	kPa
Axial strain at failure	0.67	%
Unconfined compressive strength, (qu)	2688	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks : Mixing Date : 2/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : HUI King Fai

Date: 9 May 2020

Date:

6 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 6/5/2020

Report No.: SLST0200070

Job No.: SHK200020

Page: 2 of 2

W.O. No.#: -

Sample No.#: 05/05/2020

LD002 S29

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Data of defermention		1 400
		Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.9
	000 200 1/1	Original area (A _o)	mm ²	4596.3

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	A	σ ₁
(mm)	(%)	(mm)	(kN)	(N)	(mm²)	(kPa)
0.00	0.0	-	0.08	80	4596.3	17.41
0.10	0.1	-	0.15	150	4599.5	32.61
0.20	0.1	-	0.44	440	4602.5	95.60
0.30	0.2	-	0.76	760	4605.6	165.02
0.40	0.3	-	1.27	1270	4608.7	275.57
0.50	0.3	-	1.86	1860	4611.8	403.31
0.60	0.4	-	2.91	2910	4614.9	630.56
0.70	0.5	-	4.70	4700	4617.9	1017.77
0.80	0.5	-	8.68	8680	4621.0	1878.37
0.90	0.6	-	11.95	11950	4624.1	2584.26
1.00	0.7	-	12.44	12440	4627.3	2688.41
1.10	0.7	-	11.94	11940	4630.4	2578.62
1.20	8.0	-	11.19	11190	4633.5	2415.02
1.31	0.9	-	10.41	10410	4636.8	2245.08

Report No.: SLST0200070 Job No.: SHK200020





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

Fax : +852 2463 0609 E-mail : sst@soilservices.com.hk HIS 264

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client*: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#: S3-SC074.

- Depth (m)[#]: - S3-SC074A 05/05/2020 Actual Depth (m): -

Date of Test: 8/5/2020

Report No.: SLST0200070

Page: 1 of 2

Job No.: SHK200020

W.O. No.#: -

LD002 S30

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.8	Wet mass of specimen	g	1120.6
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	
Volume of specimen	cm ³	675.54	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

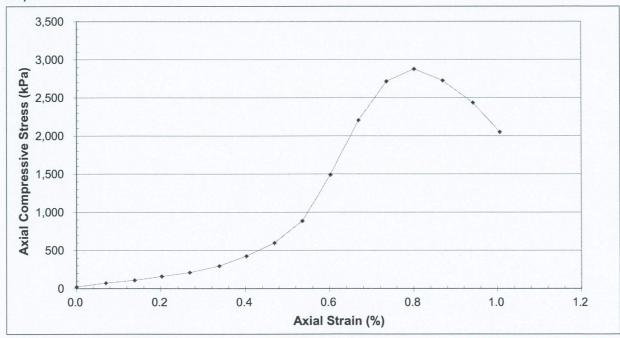
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	2878	kPa	Objects to a fife the second difference	1
Axial strain at failure	0.80	%	Sketch of failure conditions Inclination of shear surface	4
Unconfined compressive strength, (q,,)	2878	kPa	inclination of shear surface	,

Graph



Remarks: Mixing Date: 4/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : HUI King Fai

Date: 8 May 2020

Date: 9 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200070 Job No.: SHK200020 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

05/05/2020

LD002 S30

Sample Type#: PT75

Depth (m)#: -

Actual Depth (m): -

Date of Test: 8/5/2020

W.O. No.#: -

Date Received: 5/5/2020

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.7
	SUC-LCUTA	Original area (A _o)	mm ²	4512.6

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.8%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.10	100	4512.6	22.16
0.11	0.1	-	0.33	330	4515.8	73.08
0.21	0.1	-	0.49	490	4518.9	108.43
0.30	0.2	-	0.72	720	4521.8	159.23
0.40	0.3	-	0.95	950	4524.7	209.96
0.51	0.3	-	1.34	1340	4527.9	295.94
0.60	0.4	-	1.93	1930	4530.8	425.97
0.70	0.5	-	2.71	2710	4533.9	597.72
0.80	0.5	-	4.02	4020	4536.9	886.06
0.90	0.6	-	6.77	6770	4540.0	1491.20
1.00	0.7	-	10.02	10020	4543.0	2205.59
1.10	0.7	-	12.35	12350	4546.0	2716.64
1.20	0.8	-	13.09	13090	4549.1	2877.50
1.30	0.9	-	12.41	12410	4552.2	2726.17
1.41	0.9	-	11.09	11090	4555.5	2434.41
1.51	1.0	-	9.35	9350	4558.5	2051.13

Report No.: SLST0200070 Job No.: SHK200020





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, Fax : +852 2463 0609 New Territories, Hong Kong. E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200070 Job No.: SHK200020 Page: 1 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 05/05/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 8/5/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

LD002 S31

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 5/5/2020

Information provided by Client

Specimen Details

Diameter of specimen	mm	75.6	Wet mass of specimen	g	1110.1
Length of specimen	mm	150.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4488.8	Moisture content	%	-
Volume of specimen	cm ³	673.77	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

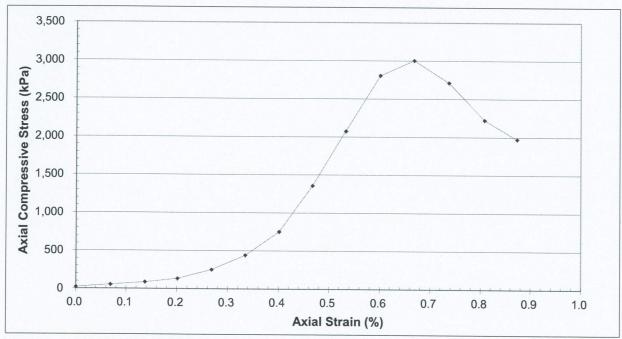
Compression Results

Maximum axial stress	3003	kPa	
Axial strain at failure	0.67	%	Sketch of fa Inclination of
Unconfined compressive strength, (qu)	3003	kPa	inclination o

ailure conditions of shear surface



Graph



Remarks:

Mixing Date: 4/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

HUI King Fai

Date:

8 May 2020

Date: 9 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200070 Job No.: SHK200020 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Depth (m)#: -

Date of Test: 8/5/2020

W.O. No.#: -

Sample No.#:

S3-SC074A 05/05/2020

LD002 S31

Actual Depth (m): -

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 5/5/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.1
orde Transdador 140.	300-E001A	Original area (A _o)	mm ²	4488.8

 $\label{thm:compression} The \ \underline{compression} \ was \ terminated \ at \ 0.9\% \ of \ axial \ strain \ and \ the \ peak \ axial \ compressive \ stress \ is \ reached \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.7\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \ was \ terminated \ at \ 0.9\% \ or \ axial \ compression \$

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4488.8	22.28
0.10	0.1	-	0.24	240	4491.9	53.43
0.21	0.1	-	0.39	390	4495.0	86.76
0.30	0.2	-	0.60	600	4497.9	133.40
0.40	0.3	-	1.13	1130	4500.9	251.06
0.50	0.3	-	1.99	1990	4503.9	441.84
0.60	0.4		3.38	3380	4506.9	749.96
0.70	0.5	-	6.12	6120	4509.9	1357.02
0.80	0.5	-	9.36	9360	4512.9	2074.06
0.90	0.6	-	12.67	12670	4515.9	2805.62
1.00	0.7	-	13.57	13570	4519.0	3002.88
1.11	0.7	-	12.27	12270	4522.1	2713.33
1.21	0.8	-	10.06	10060	4525.4	2223.02
1.31	0.9	-	8.93	8930	4528.4	1972.02

Report No. : SLST0200070 Job No. : SHK200020





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 9/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

LD002 S32

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.8	Wet mass of specimen	g	1147.6
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	-
Volume of specimen	cm ³	675.54	Bulk density	Mg/m ³	1.70
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

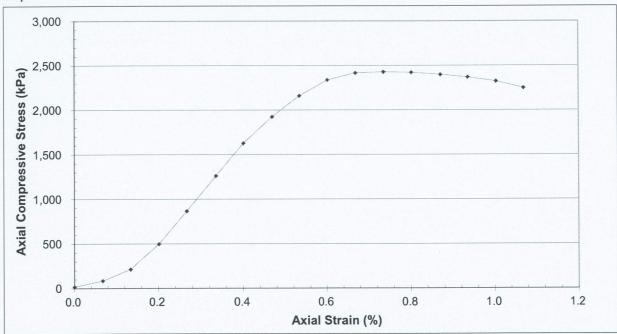
Compression Results

		EFGNIFERE
Maximum axial stress	2428	kPa
Axial strain at failure	0.74	%
Unconfined compressive strength, (qu)	2428	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 5/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

Date:

11 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200072 Job No.: SHK200021 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

9/5/2020 LD002

S32

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	
N-	0110 1 0014	Original length (L _o)	mm	149.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4512.6

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.7%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4512.6	17.73
0.10	0.1	-	0.38	380	4515.7	84.15
0.20	0.1	-	0.96	960	4518.7	212.45
0.30	0.2	-	2.25	2250	4521.7	497.60
0.40	0.3	-	3.92	3920	4524.7	866.35
0.50	0.3	-	5.71	5710	4527.8	1261.09
0.60	0.4	-	7.37	7370	4530.8	1626.65
0.70	0.5	-	8.72	8720	4533.9	1923.30
0.80	0.5	-	9.80	9800	4536.9	2160.08
0.90	0.6		10.61	10610	4539.9	2337.04
1.00	0.7	-	10.98	10980	4543.0	2416.91
1.10	0.7	-	11.04	11040	4546.0	2428.48
1.20	0.8	-	11.02	11020	4549.1	2422.47
1.30	0.9	-	10.92	10920	4552.2	2398.82
1.40	0.9	-	10.79	10790	4555.2	2368.70
1.50	1.0	-	10.59	10590	4558.4	2323.21
1.60	1.1	-	10.26	10260	4561.4	2249.31

Report No.: SLST0200072 Job No.: SHK200021





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

S3-SC074A 9/5/2020 Sample No.#: LD002 S33 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Diameter of specimen	mm	76.4	Wet mass of specimen	g	1134.3
Length of specimen	mm	150.4	Dry mass of specimen	g	-
Area of specimen	mm ²	4584.3	Moisture content	%	-
Volume of specimen	cm ³	689.48	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

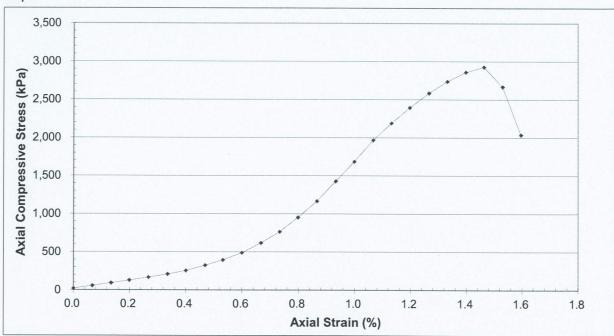
Compression Results

Maximum axial stress	2928	kPa
Axial strain at failure	1.5	%
Unconfined compressive strength, (qu)	2928	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date : 5/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

11 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

S3-SC074A Sample No.#:

S33

9/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 2 of 2

W.O. No.#: -

PT75 Sample Type#:

Hole No.#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.4
l orde fransuder No.	300-LC01A	Original area (A _o)	mm ²	4584.3

The compression was terminated at 1.6% of axial strain and the peak axial compressive stress is reached at 1.5%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4584.3	19.63
0.10	0.1	-	0.26	260	4587.4	56.68
0.20	0.1	-	0.42	420	4590.5	91.49
0.30	0.2	-	0.59	590	4593.5	128.44
0.40	0.3	-	0.76	760	4596.6	165.34
0.50	0.3	-	0.96	960	4599.8	208.71
0.60	0.4	-	1.17	1170	4602.8	254.20
0.70	0.5	-	1.49	1490	4605.9	323.50
0.80	0.5	-	1.82	1820	4608.9	394.89
0.90	0.6	-	2.25	2250	4612.0	487.86
1.00	0.7	-	2.85	2850	4615.1	617.54
1.10	0.7	-	3.53	3530	4618.2	764.37
1.20	0.8	-	4.40	4400	4621.2	952.13
1.30	0.9	-	5.39	5390	4624.4	1165.56
1.40	0.9	-	6.60	6600	4627.5	1426.24
1.50	1.0	-	7.80	7800	4630.6	1684.45
1.60	1.1	-	9.11	9110	4633.7	1966.02
1.70	1.1	-	10.15	10150	4636.8	2189.02
1.80	1.2	-	11.10	11100	4639.9	2392.29
1.90	1.3	-	12.00	12000	4643.1	2584.47
2.00	1.3	-	12.72	12720	4646.2	2737.73
2.10	1.4	-	13.30	13300	4649.3	2860.64
2.20	1.5	-	13.62	13620	4652.4	2927.53
2.30	1.5	-	12.42	12420	4655.6	2667.78
2.40	1.6	-	9.49	9490	4658.7	2037.06

Report No.: SLST0200072 Job No.: SHK200021





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 9/5/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

Report No.: SLST0200072 Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

LD002 S34

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 9/5/2020

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.1	Wet mass of specimen	g	1152.9
Length of specimen	mm	149.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4429.7	Moisture content	%	-
Volume of specimen	cm ³	663.56	Bulk density	Mg/m ³	1.74
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

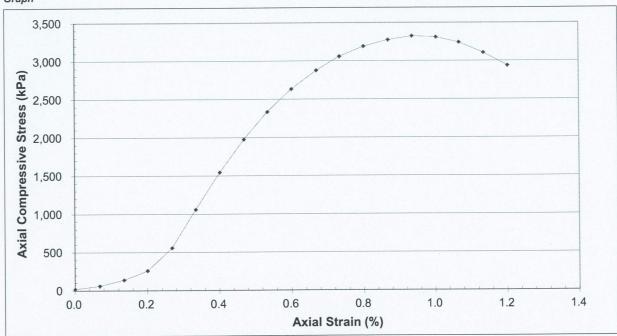
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure	3325 0.94	kPa %	Sketch of failure conditions Inclination of shear surface	
Unconfined compressive strength, (q _u)	3325	kPa	inclination of shear surface	

Graph



Mixing Date: 6/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

11 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200072 Job No.: SHK200021 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 9/5/2020 LD002

Depth (m)#: -Actual Depth (m): - Date of Test: 11/5/2020

W.O. No.#: -

Sample No.#:

S34

Date Received: 9/5/2020

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
	000-E001A	Original area (A _o)	mm ²	4429.7

The compression was terminated at 1.2% of axial strain and the peak axial compressive stress is reached at 0.9%.

Axial Axial Proving Load Axial Cross Deformation Strain Ring Gauge Cell Force section A Reading ε Reading Reading P A	Area Compressive Stress
Reading Reading P	σ_1
A Trodding	01
(mm) (%) (mm) (kN) (N) (mm ²	(kPa)
0.00 0.0 - 0.09 90 4429.	
0.10 0.1 - 0.27 270 4432.	
0.20 0.1 - 0.62 620 4435.	
0.30 0.2 - 1.15 1150 4438.	
0.40 0.3 - 2.48 2480 4441,	
0.50 0.3 - 4.71 4710 4444.	000.00
0.60 0.4 - 6.87 6870 4447.	
0.70 0.5 - 8.79 8790 4450.	1011100
0.80 0.5 - 10.40 10400 4453.	
0.90 0.6 - 11.74 11740 4456.	
1.00 0.7 - 12.83 12830 4459.	
1.10 0.7 - 13.65 13650 4462.	
1.20 0.8 - 14.25 14250 4465.	
1.30 0.9 - 14.64 14640 4468.	0.01110
1.40 0.9 - 14.87 14870 4471.	
1.50 1.0 - 14.81 14810 4474.6	0020.10
1.60 1.1 - 14.52 14520 4477.	0000.0.
1.70 1.1 - 13.92 13920 4480.	
1.80 1.2 - 13.18 13180 4483.6	

Report No.: SLST0200072 Job No.: SHK200021





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 9/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

LD002 S35

PT75

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 9/5/2020

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm 76.3 Wet mass of specimen		g	1137.5	
Length of specimen	mm	150.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4572.3	Moisture content	%	-
Volume of specimen	cm ³	686.31	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

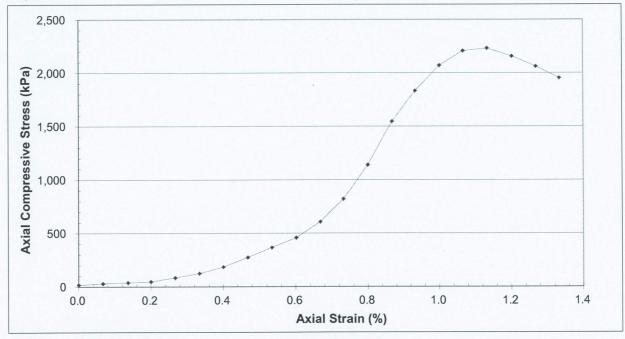
Compression Results

		THE SAME EVEN A	-
Maximum axial stress	2231	kPa	
Axial strain at failure	1.1	%	
Unconfined compressive strength, (qu)	2231	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 6/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date:

11 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A Sample No.#:

9/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 2 of 2

W.O. No.#: -

S35 Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.1
	300-E001A	Original area (A _o)	mm ²	4572.3

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.1%.

Axial	Proving	Load	Axial	Cross-	Axial
Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
3	Reading	Reading	Р	Α	σ_1
(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.0	-	0.08	80	4572.3	17.50
0.1	-	0.14	140	4575.4	30.60
0.1	-	0.18	180	4578.6	39.31
0.2	-	0.22	220	4581.5	48.02
0.3	-	0.39	390	4584.6	85.07
0.3	-	0.57	570	4587.7	124.25
0.4	-	0.85	850	4590.7	185.16
0.5	-	1.26	1260	4593.8	274.28
0.5	-	1.69	1690	4596.9	367.64
0.6	-	2.11	2110	4600.0	458.69
0.7	-	2.80	2800	4603.1	608.29
0.7	-	3.78	3780	4606.1	820.65
0.8	-	5.25	5250	4609.2	1139.02
0.9	-	7.13	7130	4612.4	1545.85
0.9	-	8.46	8460	4615.4	1832.98
1.0	-	9.56	9560	4618.6	2069.91
1.1		10.20	10200	4621.6	2207.01
1.1	-	10.32	10320	4624.8	2231.47
1.2	-	9.98	9980	4628.0	2156.45
1.3	-	9.55	9550	4631.1	2062.15
1.3	-	9.05	9050	4634.1	1952.90
	Strain (%) 0.0 0.1 0.1 0.2 0.3 0.3 0.4 0.5 0.6 0.7 0.7 0.8 0.9 0.9 1.0 1.1 1.1 1.2 1.3	Strain Ring Gauge ε Reading (%) (mm) 0.0 - 0.1 - 0.2 - 0.3 - 0.3 - 0.4 - 0.5 - 0.6 - 0.7 - 0.8 - 0.9 - 1.0 - 1.1 - 1.2 - 1.3 -	Strain Ring Gauge Cell ε Reading Reading (%) (mm) (kN) 0.0 - 0.08 0.1 - 0.14 0.1 - 0.18 0.2 - 0.22 0.3 - 0.39 0.3 - 0.57 0.4 - 0.85 0.5 - 1.26 0.5 - 1.69 0.6 - 2.11 0.7 - 2.80 0.7 - 3.78 0.8 - 5.25 0.9 - 7.13 0.9 - 8.46 1.0 - 9.56 1.1 - 10.32 1.2 - 9.98 1.3 - 9.55	Strain Ring Gauge Cell Force ε Reading Reading P (%) (mm) (kN) (N) 0.0 - 0.08 80 0.1 - 0.14 140 0.1 - 0.18 180 0.2 - 0.22 220 0.3 - 0.39 390 0.3 - 0.57 570 0.4 - 0.85 850 0.5 - 1.26 1260 0.5 - 1.69 1690 0.6 - 2.11 2110 0.7 - 2.80 2800 0.7 - 3.78 3780 0.8 - 5.25 5250 0.9 - 7.13 7130 0.9 - 7.13 7130 0.9 - 8.46 8460 1.0 - 9.56	Strain Ring Gauge Cell Force section Area ε Reading P A (%) (mm) (kN) (N) (mm²) 0.0 - 0.08 80 4572.3 0.1 - 0.14 140 4575.4 0.1 - 0.18 180 4578.6 0.2 - 0.22 220 4581.5 0.3 - 0.39 390 4584.6 0.3 - 0.57 570 4587.7 0.4 - 0.85 850 4590.7 0.5 - 1.26 1260 4593.8 0.5 - 1.69 1690 4596.9 0.6 - 2.11 2110 4600.0 0.7 - 2.80 2800 4603.1 0.7 - 3.78 3780 4606.1 0.8 - 5.25 5250 4609.2 0.9<





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 9/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021 Page: 1 of 2

W.O. No.#: -

LD002 S36 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1126.4
Length of specimen	mm	150.3	Dry mass of specimen	g	_
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	681.83	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

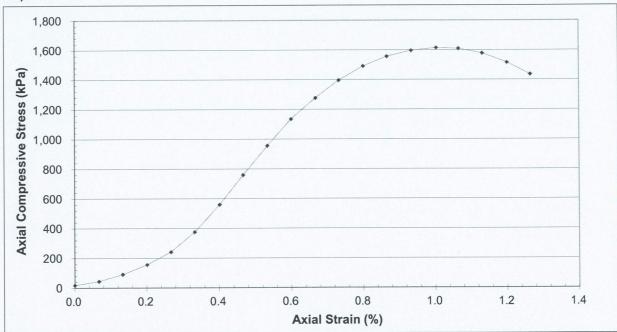
Compression Results

Maximum axial stress	1615	kPa
Axial strain at failure	1.0	%
Unconfined compressive strength, (qu)	1615	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 7/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

11 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200072 Job No.: SHK200021 Page: 2 of 2

Client":

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 11/5/2020

W.O. No.#: -

9/5/2020 LD002

S36

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Farsa Transduces No	SUC-LC01A	Original length (L _o)	mm	150.3
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4536.5	17.63
0.10	0.1	-	0.20	200	4539.5	44.06
0.20	0.1	-	0.41	410	4542.5	90.26
0.30	0.2	-	0.71	710	4545.6	156.20
0.40	0.3	-	1.10	1100	4548.6	241.83
0.50	0.3	-	1.71	1710	4551.6	375.69
0.60	0.4		2.55	2550	4554.7	559.86
0.70	0.5	-	3.46	3460	4557.7	759.15
0.80	0.5	-	4.36	4360	4560.8	955.97
0.90	0.6	-	5.18	5180	4563.8	1135.01
1.00	0.7		5.83	5830	4566.9	1276.58
1.10	0.7		6.38	6380	4569.9	1396.08
1.20	0.8	-	6.82	6820	4573.1	1491.34
1.30	0.9		7.12	7120	4576.1	1555.91
1.40	0.9		7.31	7310	4579.2	1596.34
1.51	1.0	-	7.40	7400	4582.4	1614.86
1.60	1.1		7.38	7380	4585.3	1609.49
1.70	1.1	_	7.24	7240	4588.4	1577.90
1.80	1.2	-	6.96	6960	4591.6	1515.82
1.90	1.3	-	6.60	6600	4594.6	1436.48

Report No.: SLST0200072 Job No.: SHK200021





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 9/5/2020

PT75

Depth (m)#: -

Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

Sample No.#:

Sample Type#:

LD002 S37

Actual Depth (m): -

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Specimen Details

Diameter of specimen	mm 76.1 Wet mass of specimen		Wet mass of specimen	g	1140.2
Length of specimen	mm	149.5	Dry mass of specimen	g	-
Area of specimen	mm ²	4548.4	Moisture content	%	-
Volume of specimen	cm ³	679.99	Bulk density	Mg/m ³	1.68
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

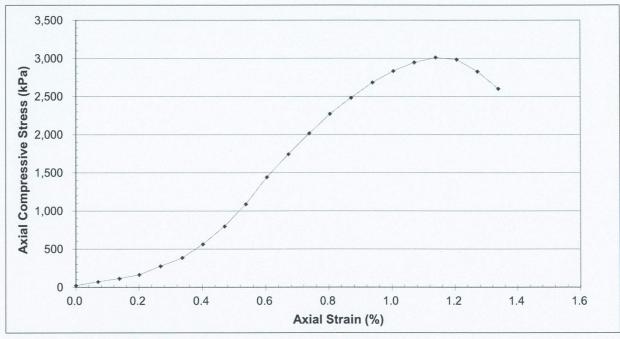
Compression Results

Maximum axial stress	3013	kPa
Axial strain at failure	1.1	%
Unconfined compressive strength, (q _u)	3013	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 7/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date:

11 May 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

S3-SC074A Sample No.#:

9/5/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 11/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 2 of 2

W.O. No.#: -

S37 Sample Type#: PT75

Hole No.#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

information provided by Offerit				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.5
Torce Transducer 140.	300-L001A	Original area (A _o)	mm ²	4548.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.1%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4548.4	21.99
0.11	0.1	-	0.33	330	4551.6	72.50
0.21	0.1	-	0.52	520	4554.7	114.17
0.30	0.2	-	0.75	750	4557.6	164.56
0.40	0.3	-	1.26	1260	4560.7	276.28
0.50	0.3	-	1.76	1760	4563.8	385.64
0.60	0.4	-	2.57	2570	4566.7	562.77
0.70	0.5	-	3.65	3650	4569.9	798.71
0.80	0.5	-	4.98	4980	4573.0	1089.01
0.90	0.6	-	6.60	6600	4576.0	1442.30
1.00	0.7	-	7.98	7980	4579.2	1742.68
1.10	0.7		9.24	9240	4582.2	2016.49
1.20	0.8	-	10.41	10410	4585.3	2270.31
1.30	0.9	-	11.39	11390	4588.4	2482.37
1.40	0.9	-	12.32	12320	4591.5	2683.20
1.50	1.0	-	13.02	13020	4594.6	2833.78
1.60	1.1	-	13.55	13550	4597.7	2947.14
1.70	1.1	-	13.86	13860	4600.8	3012.51
1.80	1.2	-	13.74	13740	4603.9	2984.41
1.90	1.3	-	13.03	13030	4607.0	2828.29
2.00	1.3	-	11.99	11990	4610.1	2600.81

Report No.: SLST0200072 Job No.: SHK200021





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200072 Job No.: SHK200021 Page: 1 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 9/5/2020

Depth (m)#: -

Date of Test: 12/5/2020

Sample No.#:

LD002 S38

Actual Depth (m): -

W.O. No.#: -

Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

cement and 10% sand

Information provided by Client

Cassimon Dotaila

Specimen Details					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1133.3
Length of specimen	mm	149.5	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	678.20	Bulk density	Mg/m ³	1.67
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

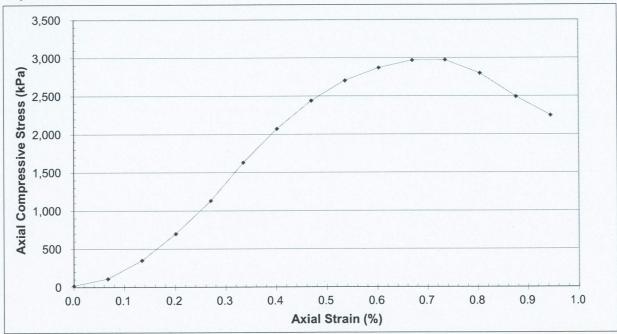
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure Unconfined compressive strength, (q _u)	2974 0.74 2974	kPa % kPa	Sketch of failure conditions Inclination of shear surface	{
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Graph



Remarks:

Mixing Date: 8/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

12 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre,
8 Yip Wong Road, Tuen Mun,
Fax
New Territories, Hong Kong.
E-mail





Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Sample No.#: S3-SC074A

Hole No.#:

9/5/2020 LD002

Depth (m)#: -Actual Depth (m): - Date of Test: 12/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 2 of 2

W.O. No.#: -

S38

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 9/5/2020

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.5
	300-L001A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.7%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4536.5	17.63
0.10	0.1	-	0.50	500	4539.5	110.14
0.20	0.1	-	1.59	1590	4542.6	350.02
0.30	0.2	-	3.17	3170	4545.6	697.38
0.40	0.3	-	5.14	5140	4548.8	1129.98
0.50	0.3	-	7.42	7420	4551.7	1630.16
0.60	0.4	-	9.44	9440	4554.8	2072.55
0.70	0.5	-	11.12	11120	4557.9	2439.74
0.80	0.5	-	12.33	12330	4560.9	2703.40
0.90	0.6	-	13.10	13100	4564.0	2870.29
1.00	0.7	-	13.56	13560	4567.1	2969.08
1.10	0.7	-	13.59	13590	4570.1	2973.69
1.20	0.8	-	12.80	12800	4573.3	2798.88
1.31	0.9	-	11.41	11410	4576.6	2493.14
1.41	0.9	-	10.29	10290	4579.7	2246.85

Report No.: SLST0200072 Job No.: SHK200021





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong. E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 9/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 12/5/2020

Report No.: SLST0200072

Job No.: SHK200021

Page: 1 of 2

W.O. No.#: -

LD002 S39 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 9/5/2020

Specimen Details

Sample Type#:

opeoimen Detaile					
Diameter of specimen	mm	76.5	Wet mass of specimen	g	1146.9
Length of specimen	mm	150.4	Dry mass of specimen	g	-
Area of specimen	mm ²	4596.3	Moisture content	%	-
Volume of specimen	cm ³	691.29	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	2587	kPa
Axial strain at failure	0.67	%
Unconfined compressive strength, (qu)	2587	kPa

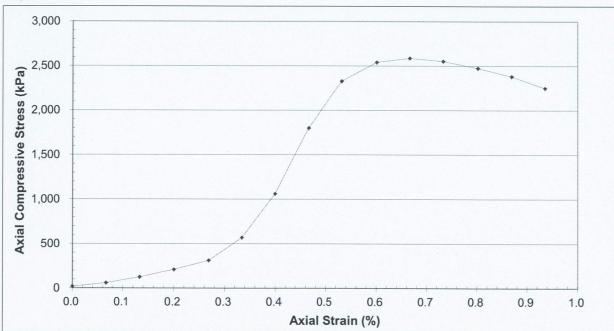
Sketch of failure conditions Inclination of shear surface

+852 2463 0100

: +852 2463 0609



Graph



Mixing Date : 8/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

12 May 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200072 Job No.: SHK200021 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

cement and 10% sand

Hole No.#:

Sample Type#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 12/5/2020

W.O. No.#: -

Sample No.#: 9/5/2020 LD002

S39 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 9/5/2020

Information provided by Client Machine No. TM10 Rate of deformation mm/min 1.00 Deformation gauge No. TM10-PR-DT50 Deformation gauge constant mm/digit 0.001 Proving Ring No. Proving Ring constant kN/mm Original length (L_o) Force Transducer No. mm 150.4 SUC-LC01A Original area (A_o) 4596.3 mm²

 $The \ compression \ was \ terminated \ at \ 0.9\% \ of \ axial \ strain \ and \ the \ peak \ axial \ compressive \ stress \ is \ reached \ at \ 0.7\% .$

Axial	Axial	Proving	Load	Assiml	0	
Deformation	Strain		Load	Axial	Cross-	Axial
	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4596.3	19.58
0.10	0.1	-	0.27	270	4599.4	58.70
0.20	0.1		0.58	580	4602.5	126.02
0.30	0.2	-	0.97	970	4605.6	210.61
0.40	0.3	-	1.44	1440	4608.7	312.45
0.50	0.3	-	2.62	2620	4611.7	568.12
0.60	0.4	-	4.90	4900	4614.8	1061.80
0.70	0.5		8.31	8310	4617.9	1799.53
0.80	0.5		10.76	10760	4620.9	2328.54
0.90	0.6		11.75	11750	4624.1	2541.01
1.00	0.7	-	11.97	11970	4627.2	2586.89
1.10	0.7	_	11.82	11820	4630.3	2552.77
1.21	0.8	_	11.47	11470	4633.5	
1.31	0.9		11.04	11040	4636.6	2475.45
1.41	0.9		10.44	10440		2381.03
	0.0		10.44	10440	4639.8	2250.12

Report No.: SLST0200072 Job No.: SHK200021





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: S3-SC074A 13/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): - Date of Test: 14/5/2020

Report No.: SLST0200075

Job No.: SHK200022

Page: 1 of 2

W.O. No.#: -

LD002 S40 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 13/5/2020

cement and 10% sand

Specimen Details

Sample Type#:

operation 2 state					
Diameter of specimen	mm 76.5 Wet mass of		Wet mass of specimen	g	1142.3
Length of specimen	mm	149.3	Dry mass of specimen	g	-
Area of specimen	mm ²	4596.3	Moisture content	%	-
Volume of specimen	cm ³	686.23	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

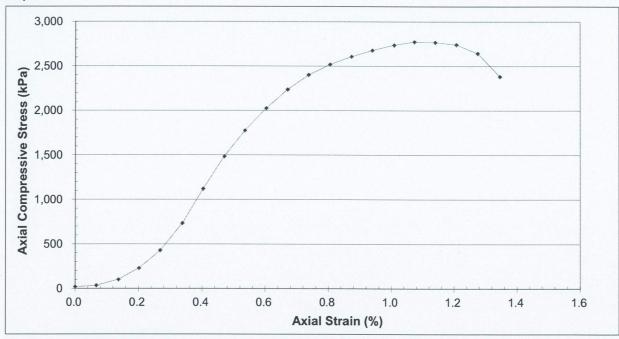
Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	2774	kPa
Axial strain at failure	1.1	%
Unconfined compressive strength, (qu)	2774	kPa

Sketch of failure conditions Inclination of shear surface

Graph



Mixing Date: 9/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

14 May 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200075 Job No.: SHK200022 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 14/5/2020

W.O. No.#: -

Sample No.#:

13/5/2020

LD002 S40

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 13/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	0110 1 004 4	Original length (L _o)	mm	149.3
	SUC-LC01A	Original area (A _o)	mm ²	4596.3

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.1%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4596.3	19.58
0.10	0.1	-	0.16	160	4599.4	34.79
0.20	0.1	-	0.47	470	4602.6	102.12
0.30	0.2	-	1.06	1060	4605.6	230.15
0.40	0.3		1.98	1980	4608.7	429.62
0.51	0.3	-	3.39	3390	4611.9	735.05
0.60	0.4		5.17	5170	4615.0	1120.27
0.70	0.5	-	6.86	6860	4618.1	1485.47
0.80	0.5		8.21	8210	4621.1	1776.63
0.90	0.6	-	9.37	9370	4624.3	2026.27
1.00	0.7	-	10.35	10350	4627.4	2236.68
1.10	0.7		11.12	11120	4630.5	2401.47
1.20	0.8		11.67	11670	4633.7	2518.52
1.30	0.9		12.09	12090	4636.8	2607.38
1.40	0.9	-	12.43	12430	4639.9	2678.91
1.51	1.0	-	12.71	12710	4643.2	2737.35
1.60	1.1	-	12.89	12890	4646.2	2774.31
1.70	1.1	-	12.87	12870	4649.3	2768.15
1.80	1.2	-	12.76	12760	4652.5	2742.61
1.90	1.3		12.31	12310	4655.7	2644.06
2.01	1.3	-	11.11	11110	4659.0	2384.61

Report No.: SLST0200075 Job No.: SHK200022





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Depth (m)#: -

Date of Test: 14/5/2020

Report No.: SLST0200075

Job No.: SHK200022

Page: 1 of 2

Sample No.#:

Sample Type#:

S3-SC074A 13/5/2020

Actual Depth (m): -

W.O. No.#: -

LD002 S41

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 13/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

opconnen betans					
Diameter of specimen	mm 76.1		Wet mass of specimen	g	1121.4
Length of specimen	mm	149.5	Dry mass of specimen	g	
Area of specimen	mm ²	4548.4	Moisture content	%	-
Volume of specimen	cm ³	679.99	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

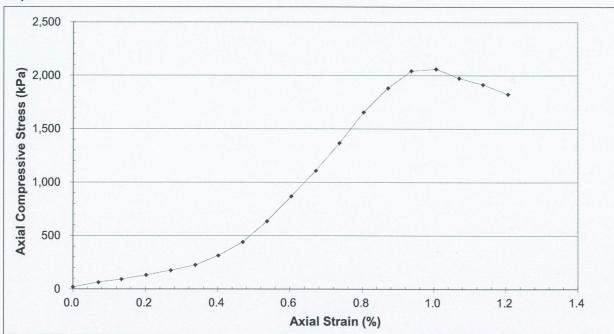
Compression Results

2061	kPa
1.0	%
2061	kPa
	1.0

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 9/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

14 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200075 Job No.: SHK200022 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 14/5/2020

W.O. No.#: -

13/5/2020

LD002 S41

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 13/5/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.5
	SOC-LCOTA	Original area (A _o)	mm ²	4548.4

The compression was terminated at 1.2% of axial strain and the peak axial compressive stress is reached at 1.0%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4548.4	19.79
0.11	0.1	-	0.29	290	4551.6	63.71
0.20	0.1	_	0.42	420	4554.5	92.22
0.30	0.2		0.60	600	4557.6	131.65
0.40	0.3	-	0.80	800	4560.7	175.41
0.50	0.3	-	1.03	1030	4563.8	225.69
0.60	0.4	-	1.43	1430	4566.7	313.13
0.70	0.5	-	2.01	2010	4569.9	439.84
0.80	0.5	-	2.90	2900	4572.9	634.17
0.90	0.6	-	3.97	3970	4576.0	867.56
1.00	0.7	-	5.07	5070	4579.1	1107.20
1.10	0.7		6.26	6260	4582.2	1366.16
1.20	0.8	-	7.59	7590	4585.2	1655.31
1.30	0.9	_	8.64	8640	4588.4	1883.01
1.40	0.9	_	9.38	9380	4591.4	2042.94
1.50	1.0		9.47	9470	4594.6	2061.10
1.60	1.1	_	9.08	9080	4597.6	1974.93
1.70	1.1	_	8.81	8810	4600.7	1914.92
1.80	1.2		8.40	8400	4603.9	1824.53

Report No.: SLST0200075 Job No.: SHK200022





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report No.: SLST0200077

Job No.: SHK200023 Page: 1 of 2

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client[#]: Sang Hing - Kuly Joint Venture
Project[#]: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: - Depth (m)*: - Date of Test: 15/5/2020
Sample No.*: S3-SC074A 14/5/2020 Actual Depth (m): - W.O. No.*: -

LD002 S42

Sample Type[#]: PT75 Sample Origin[#]: Contaminated soil mixed with 7.5% Date Received: 14/5/2020

cement and 10% sand

Specimen Details

Specimen Details					
Diameter of specimen	mm	76.1	Wet mass of specimen	g	1147.7
Length of specimen	mm	149.6	Dry mass of specimen	g	-
Area of specimen	mm ²	4548.4	Moisture content	%	-
Volume of specimen	cm ³	680.44	Bulk density	Mg/m ³	1.69
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

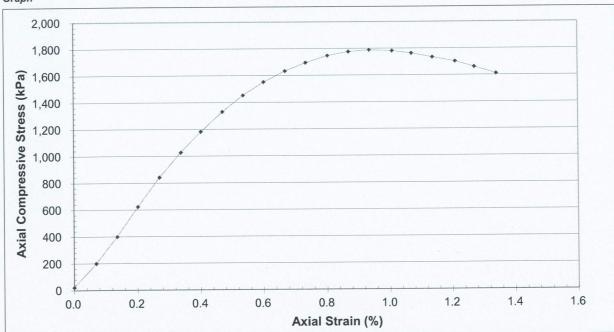
Visual Description: Light olive grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

1788	kPa	Sketch of failure conditions	
0.94	%		
1788	kPa	monitation of orions current	
	0.94	0.94 %	0.94 % Sketch of failure conditions Inclination of shear surface

Graph



Remarks: Mixing Date: 11/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming Certified by : HUI King Fai

Date : 15 May 2020 Date : 19 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

Hole No.#:

Sample No.#:

Client#:

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

S3-SC074A

14/5/2020

LD002 S42

Sample Type#: PT75

Depth (m)#: -

Actual Depth (m): -

Date of Test: 15/5/2020

Report No.: SLST0200077

Job No.: SHK200023

Page: 2 of 2

W.O. No.#: -

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 14/5/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.6
T OF GO THAN DAGGOT TWO.	000-E001A	Original area (A _o)	mm ²	4548.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 0.9%.

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4548.4	21.99
0.10	0.1	-	0.91	910	4551.6	199.93
0.20	0.1	-	1.82	1820	4554.6	399.60
0.30	0.2	-	2.84	2840	4557.6	623.14
0.40	0.3	-	3.84	3840	4560.7	841.97
0.51	0.3	-	4.69	4690	4563.8	1027.65
0.60	0.4	-	5.40	5400	4566.7	1182.47
0.70	0.5	-	6.08	6080	4569.9	1330.45
0.80	0.5	-	6.64	6640	4572.9	1452.03
0.90	0.6	-	7.10	7100	4576.0	1551.59
1.00	0.7	-	7.48	7480	4579.1	1633.51
1.10	0.7	-	7.77	7770	4582.1	1695.73
1.20	0.8	-	8.01	8010	4585.3	1746.90
1.30	0.9	-	8.15	8150	4588.3	1776.24
1.40	0.9	-	8.21	8210	4591.4	1788.12
1.51	1.0	-	8.19	8190	4594.8	1782.47
1.60	1.1	-	8.11	8110	4597.6	1763.95
1.70	1.1	-	7.98	7980	4600.8	1734.49
1.81	1.2	-	7.84	7840	4604.1	1702.81
1.90	1.3	-	7.65	7650	4607.0	1660.52
2.01	1.3	•	7.43	7430	4610.2	1611.64

Report No. : SLST0200077 Job No. : SHK200023





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 14/5/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 15/5/2020

Report No.: SLST0200077

Job No.: SHK200023 Page: 1 of 2

W.O. No.#: -

LD002 S43

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Specimen Details

Specimen Details					
Diameter of specimen	mm	76.3	Wet mass of specimen	g	1147.0
Length of specimen	mm	150.4	Dry mass of specimen	g	-
Area of specimen	mm ²	4572.3	Moisture content	%	-
Volume of specimen	cm ³	687.68	Bulk density	Mg/m ³	1.67
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light olive grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

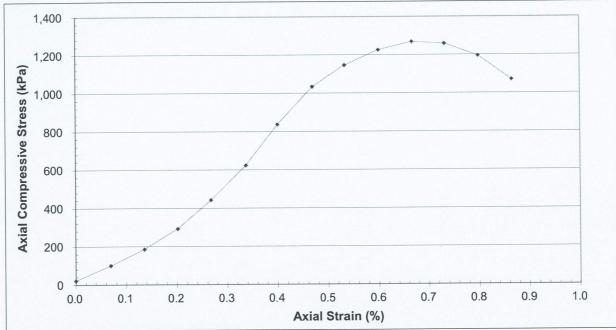
Compression Results

Maximum axial stress	1269	kPa	01
Axial strain at failure	0.67	%	Ske
Unconfined compressive strength, (qu)	1269	kPa	11101

etch of failure conditions clination of shear surface



Graph



Mixing Date: 11/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date: 19 May 2020

Date:

15 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200077 Job No.: SHK200023 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 15/5/2020

Sample No.#:

14/5/2020

W.O. No.#: -

LD002 S43

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
0 0	011010044	Original length (L _o)	mm	150.4
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4572.3

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4572.3	21.87
0.10	0.1	-	0.46	460	4575.5	100.54
0.20	0.1	-	0.85	850	4578.6	185.65
0.30	0.2	-	1.34	1340	4581.6	292.48
0.40	0.3	-	2.03	2030	4584.6	442.79
0.51	0.3	-	2.86	2860	4587.8	623.39
0.60	0.4	-	3.84	3840	4590.7	836.47
0.71	0.5	-	4.75	4750	4593.9	1033.98
0.80	0.5	-	5.27	5270	4596.9	1146.44
0.90	0.6	-	5.64	5640	4599.9	1226.11
1.00	0.7	<u>-</u>	5.84	5840	4603.0	1268.73
1.10	0.7	-	5.80	5800	4606.1	1259.21
1.20	0.8	-	5.51	5510	4609.2	1195.45
1.30	0.9	-	4.94	4940	4612.2	1071.06

Report No.: SLST0200077 Job No.: SHK200023





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Report No.: SLST0200077 Job No.: SHK200023

Page: 1 of 2

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 14/5/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 16/5/2020

W.O. No.#: -

LD002 S44

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Specimen Details

Sample Type#:

Client#:

Specimen Details					
Diameter of specimen	mm 76.6 Wet mass of specimen		Wet mass of specimen	g	1122.6
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4608.4	Moisture content	%	-
Volume of specimen	cm ³	689.87	Bulk density	Mg/m ³	1.63
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light olive grey sandy SILT/CLAY with Cement

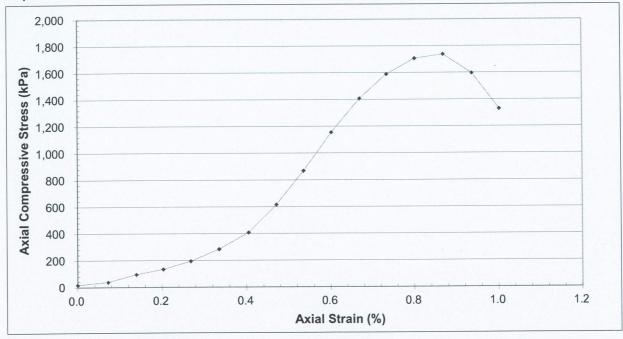
Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

- Compression	ALTERNATION ASSESSMENT				
Maximum axial stress	1738	kPa	Chatab of failure conditions		
Axial strain at failure	0.87	%	Sketch of failure conditions		
Unconfined compressive strength, (qu)	1738	kPa	Inclination of shear surface		



Graph



Mixing Date: 12/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

Date: 19 May 2020 16 May 2020 Date:

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun,

New Territories, Hong Kong.

Tel : +852 2463 0100 Fax : +852 2463 0609

E-mail : sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200077 Job No.: SHK200023 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)[#]: -Actual Depth (m): - Date of Test: 16/5/2020

W.O. No.#: -

14/5/2020 LD002 S44

LD002

7 50/-

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.7
	SUC-LCUTA	Original area (A _o)	mm ²	4608.4

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4608.4	17.36
0.11	0.1	-	0.18	180	4611.7	39.03
0.21	0.1	-	0.44	440	4614.8	95.35
0.30	0.2	-	0.62	620	4617.7	134.26
0.40	0.3	-	0.90	900	4620.8	194.77
0.50	0.3	-	1.31	1310	4623.9	283.31
0.61	0.4		1.89	1890	4627.1	408.46
0.71	0.5	-	2.85	2850	4630.2	615.53
0.80	0.5	-	4.02	4020	4633.2	867.65
0.90	0.6	-	5.35	5350	4636.3	1153.94
1.00	0.7	-	6.53	6530	4639.5	1407.49
1.10	0.7	-	7.38	7380	4642.5	1589.66
1.20	0.8	-	7.93	7930	4645.6	1706.98
1.30	0.9	-	8.08	8080	4648.8	1738.08
1.40	0.9	-	7.43	7430	4652.0	1597.16
1.50	1.0	-	6.19	6190	4655.0	1329.74

Report No.: SLST0200077 Job No.: SHK200023





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Report No.: SLST0200077 Job No.: SHK200023

Page: 1 of 2

Date of Test: 16/5/2020

W.O. No.#: -

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

PT75

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Depth (m)#: -Hole No.#: Actual Depth (m): -S3-SC074A 14/5/2020 Sample No.#:

LD002 S45

Sample Origin#: Contaminated soil mixed with 7.5% Date Received: 14/5/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm 76.2 Wet mass of specimen		Wet mass of specimen	· g	1140.7
Length of specimen	mm	149.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	683.14	Bulk density	Mg/m ³	1.67
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light olive grey sandy SILT/CLAY with Cement

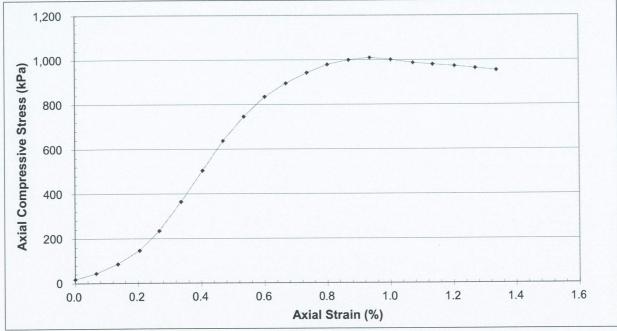
Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1010	kPa	Chatab affailure conditions
Axial strain at failure	0.94	%	Sketch of failure conditions Inclination of shear surface
Unconfined compressive strength, (qu)	1010	kPa	mountation of shear surface



Graph



Mixing Date : 12/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by: HUI King Fai

Date: 19 May 2020 16 May 2020 Date:

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

ame Method)

Job No.: SHK200023

Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 16/5/2020

Report No.: SLST0200077

W.O. No.#: -

Sample No.#:

14/5/2020

LD002 S45

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

information provided by energ				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
	JOO-LOUIA	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ ₁
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4560.4	17.54
0.10	0.1		0.20	200	4563.4	43.83
0.20	0.1	-	0.39	390	4566.5	85.40
0.31	0.2		0.67	670	4569.7	146.62
0.40	0.3	-	1.07	1070	4572.6	234.00
0.50	0.3	-	1.67	1670	4575.8	364.97
0.61	0.4	-	2.31	2310	4578.9	504.49
0.70	0.5		2.92	2920	4581.9	637.29
0.80	0.5	-	3.42	3420	4584.9	745.92
0.90	0.6	-	3.83	3830	4588.0	834.79
1.00	0.7	-	4.11	4110	4591.0	895.22
1.10	0.7	-	4.33	4330	4594.2	942.50
1.20	0.8	-	4.50	4500	4597.2	978.85
1.30	0.9	-	4.60	4600	4600.3	999.93
1.40	0.9	-	4.65	4650	4603.5	1010.11
1.50	1.0	-	4.61	4610	4606.6	1000.75
1.61	1.1	-	4.55	4550	4609.8	987.02
1.70	1.1	-	4.52	4520	4612.7	979.89
1.80	1.2	-	4.49	4490	4616.0	972.71
1.90	1.3	-	4.45	4450	4619.0	963.40
2.00	1.3	-	4.41	4410	4622.2	954.09

Report No.: SLST0200077 Job No.: SHK200023





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 14/5/2020 Sample No.#

Depth (m)#: -

Date of Test: 18/5/2020

Report No.: SLST0200077

Job No.: SHK200023

Page: 1 of 2

W.O. No.#: -

LD002 S46

Actual Depth (m): -

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

opeomien betane					
Diameter of specimen	mm 76.2 Wet mass of specimen		Wet mass of specimen	g	1157.7
Length of specimen	mm	151.6	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	691.35	Bulk density	Mg/m ³	1.67
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

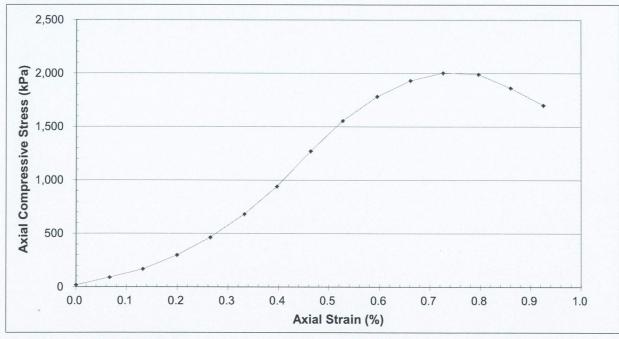
Light olive grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	2005	kPa	01 11 66 11 111	
Axial strain at failure	0.73	%	Sketch of failure conditions Inclination of shear surface	
Unconfined compressive strength, (q _u)	2005	kPa	inclination of shear surface	

Graph



Mixing Date : 13/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date: 18 May 2020 Date: 19 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200077 Job No.: SHK200023 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

cement and 10% sand

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

W.O. No.#: -

14/5/2020

LD002 S46

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

Sample Type#: PT75 # Information provided by Client

information provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.6
	30C-LC01A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4560.4	17.54
0.10	0.1	-	0.41	410	4563.4	89.85
0.20	0.1	-	0.76	760	4566.4	166.43
0.30	0.2	-	1.36	1360	4569.5	297.63
0.40	0.3	-	2.12	2120	4572.5	463.65
0.50	0.3	-	3.12	3120	4575.6	681.88
0.60	0.4	-	4.30	4300	4578.5	939.17
0.70	0.5	-	5.82	5820	4581.6	1270.29
0.80	0.5	-	7.13	7130	4584.6	1555.22
0.90	0.6	-	8.18	8180	4587.7	1783.04
1.00	0.7	-	8.87	8870	4590.7	1932.15
1.10	0.7	-	9.21	9210	4593.7	2004.91
1.21	0.8	-	9.15	9150	4597.0	1990.44
1.30	0.9	-	8.57	8570	4599.9	1863.07
1.40	0.9	-	7.83	7830	4603.0	1701.08

Report No. : SLST0200077 Job No. : SHK200023





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 14/5/2020 Sample No.#: LD002 S47

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

Report No.: SLST0200077

Page: 1 of 2

Job No.: SHK200023

W.O. No.#: -

PT75 Sample Origin#: Contaminated soil mixed with 7.5% Sample Type#:

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

-p					
Diameter of specimen	mm	76.3	Wet mass of specimen	g	1148.0
Length of specimen	mm	151.0	Dry mass of specimen	g	-
Area of specimen	mm ²	4572.3	Moisture content	%	-
Volume of specimen	cm ³	690.42	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

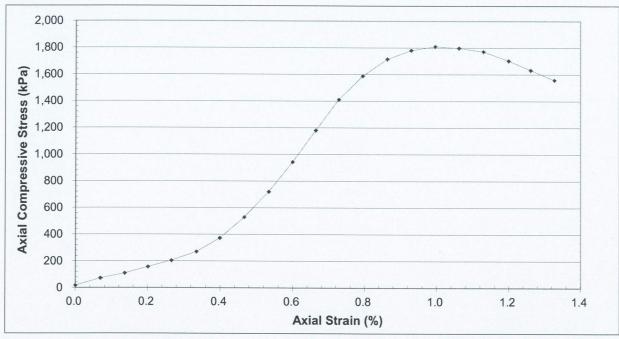
Light olive grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1810	kPa	Chatch of failure conditions	
Axial strain at failure	1.00	%	Sketch of failure conditions Inclination of shear surface	
Unconfined compressive strength, (qu)	1810	kPa	inclination of shear surface	

Graph



Remarks:

Mixing Date: 13/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

18 May 2020

Date: 19 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200077 Job No.: SHK200023 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

W.O. No.#: -

Sample No.#:

Sample Type#:

S3-SC074A 14/5/2020

LD002 S47

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 14/5/2020

cement and 10% sand

Information provided by Client

inionnation provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.0
	30C-LC01A	Original area (A _o)	mm ²	4572.3

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4572.3	17.50
0.11	0.1	-	0.33	330	4575.5	72.12
0.21	0.1	-	0.50	500	4578.6	109.20
0.30	0.2	-	0.72	720	4581.5	157.15
0.40	0.3	-	0.94	940	4584.5	205.04
0.51	0.3	-	1.24	1240	4587.7	270.29
0.60	0.4	-	1.71	1710	4590.6	372.50
0.70	0.5	-	2.43	2430	4593.8	528.98
0.81	0.5	-	3.31	3310	4596.9	720.05
0.91	0.6	-	4.34	4340	4599.9	943.50
1.00	0.7	-	5.43	5430	4602.9	1179.70
1.10	0.7	-	6.50	6500	4605.9	1411.23
1.20	0.8	-	7.32	7320	4609.0	1588.21
1.30	0.9	-	7.91	7910	4612.1	1715.04
1.40	0.9		8.22	8220	4615.2	1781.06
1.50	1.0	<u>.</u>	8.36	8360	4618.3	1810.17
1.60	1.1	-	8.31	8310	4621.4	1798.17
1.71	1.1		8.19	8190	4624.6	1770.98
1.81	1.2	-	7.88	7880	4627.8	1702.74
1.90	1.3	-	7.56	7560	4630.7	1632.57
2.00	1.3	-	7.22	7220	4633.8	1558.10

Report No.: SLST0200077 Job No.: SHK200023





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 16/5/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

Report No.: SLST0200079

Job No.: SHK200024

Page: 1 of 2

W.O. No.#: -

LD002 S48 Sample Type[#]: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 16/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

mm	75.7	Wet mass of specimen	a	1196.8
mm	152.6	Dry mass of specimen	a	_
mm ²	4500.7	Moisture content	%	
cm ³	686.81	Bulk density	Mg/m ³	1.74
Mg/m ³	2.65	Dry density		- 1.7-1
	mm mm² cm³	mm 152.6 mm² 4500.7 cm³ 686.81	mm 152.6 Dry mass of specimen mm² 4500.7 Moisture content cm³ 686.81 Bulk density	mm 152.6 Dry mass of specimen g mm² 4500.7 Moisture content % cm³ 686.81 Bulk density Mg/m³

^{*} Delete whichever is inappropriate

Visual Description:

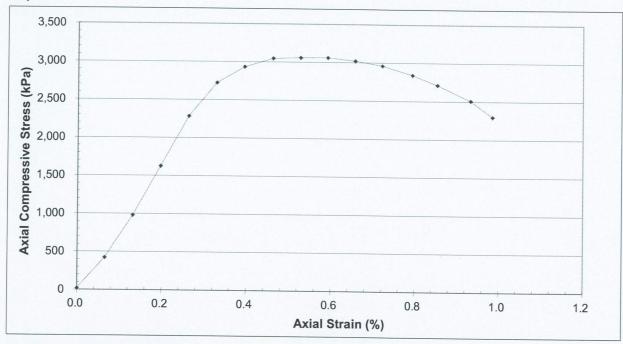
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure Unconfined compressive strength, (qu)	3061 0.59 3061	kPa % kPa	Sketch of failure conditions Inclination of shear surface		
--	----------------------	-----------------	--	--	--

Graph



Remarks: Mixing Date: 14/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by : HUI King Fai

Date:

18 May 2020

Date: 20 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200079 Job No.: SHK200024 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

W.O. No.#: -

Sample No.#: 16/5/2020

LD002 S48

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 16/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Fares Transduces No.	SUC-LC01A	Original length (L _o)	mm	152.6
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4500.7

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.6%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	8	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4500.7	20.00
0.10	0.1	-	1.90	1900	4503.7	421.88
0.20	0.1	-	4.41	4410	4506.7	978.55
0.30	0.2		7.33	7330	4509.6	1625.43
0.40	0.3	-	10.30	10300	4512.5	2282.53
0.50	0.3	-	12.30	12300	4515.6	2723.91
0.60	0.4	-	13.26	13260	4518.5	2934.58
0.70	0.5	-	13.78	13780	4521.6	3047.61
0.80	0.5	-	13.84	13840	4524.6	3058.86
0.90	0.6	-	13.86	13860	4527.5	3061.31
1.00	0.7	-	13.69	13690	4530.4	3021.79
1.10	0.7	-	13.42	13420	4533.4	2960.25
1.21	0.8	-	12.89	12890	4536.7	2841.26
1.30	0.9	-	12.31	12310	4539.4	2711.78
1.42	0.9	-	11.40	11400	4543.1	2509.31
1.50	1.0	-	10.45	10450	4545.5	2299.00

Report No.: SLST0200079 Job No.: SHK200024





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

S3-SC074A 16/5/2020

Depth (m)#: -

Date of Test: 18/5/2020

Report No.: SLST0200079

Job No.: SHK200024

Page: 1 of 2

Sample No.#: LD002 S49 Actual Depth (m): -

W.O. No.#: -

Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 16/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Diameter of specimen	mm	75.8	Wet mass of specimen	0	1161.8
	111111			9	1101.0
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4512.6	Moisture content	%	-
Volume of specimen	cm ³	675.54	Bulk density	Mg/m ³	1.72
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

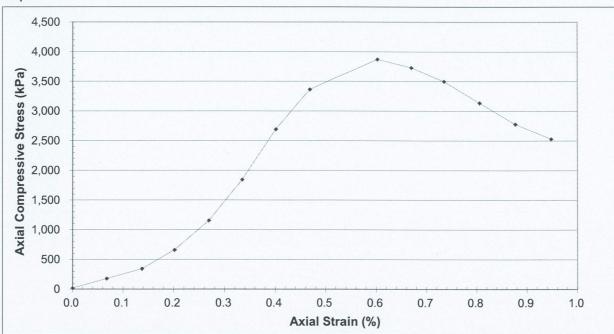
Compression Results

3872	kPa
0.60	%
3872	kPa
	0.60

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date: 14/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

18 May 2020

Date: 20 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 18/5/2020

Report No.: SLST0200079

Job No.: SHK200024

Page: 2 of 2

W.O. No.#: -

16/5/2020

LD002 S49

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 16/5/2020

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.7
	000 E001A	Original area (A _o)	mm ²	4512.6

The compression was terminated at 0.9% of axial strain and the peak axial compressive stress is reached at 0.6%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ ₁
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.08	80	4512.6	17.73
0.10	0.1	-	0.80	800	4515.7	177.16
0.21	0.1	-	1.56	1560	4518.8	345.22
0.30	0.2	-	2.99	2990	4521.7	661.25
0.40	0.3	-	5.23	5230	4524.8	1155.86
0.50	0.3	-	8.35	8350	4527.8	1844.18
0.60	0.4	-	12.21	12210	4530.8	2694.89
0.70	0.5		15.25	15250	4533.8	3363.59
0.90	0.6		17.58	17580	4540.0	3872.27
1.00	0.7	-	16.95	16950	4543.1	3730.97
1.10	0.7	-	15.90	15900	4546.0	3497.57
1.21	8.0	<u>-</u>	14.27	14270	4549.3	3136.77
1.31	0.9	-	12.65	12650	4552.5	2778.67
1.42	0.9	-	11.52	11520	4555.8	2528.65

Report No.: SLST0200079 Job No.: SHK200024





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.



Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: - Sample No.#: S3-SC074A 16/5/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 19/5/2020

Report No.: SLST0200079

Page: 1 of 2

Job No.: SHK200024

W.O. No.#: -

LD002 S50

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 16/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.2	Wet mass of specimen	g	1206.2
Length of specimen	mm	151.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	691.81	Bulk density	Mg/m ³	1.74
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	3592	kPa
Axial strain at failure	1.3	%
Unconfined compressive strength, (qu)	3592	kPa

Sketch of failure conditions Inclination of shear surface

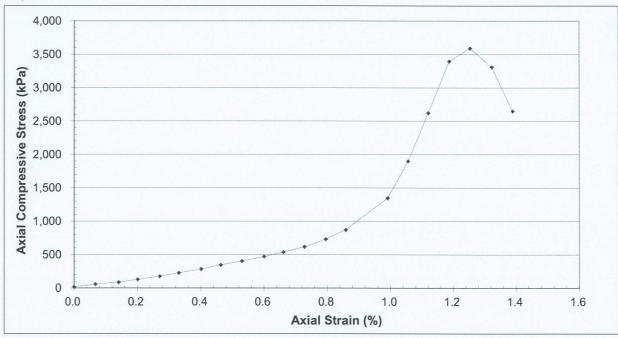
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E-mail: sst@soilservices.com.hk



Graph



Remarks : Mixing Date : 15/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by : ___

HUI King Fai

Date:

19 May 2020

Date: 20 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Project#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 19/5/2020

Report No.: SLST0200079

Job No.: SHK200024

Page: 2 of 2

W.O. No.#: -

16/5/2020

LD002 S50

Date Received: 16/5/2020

Sample Origin[#]: Contaminated soil mixed with 7.5% cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	151.7
	000 E001A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1.4% of axial strain and the peak axial compressive stress is reached at 1.3%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	A	
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	σ ₁ (kPa)
0.00	0.0	-	0.08	80	4560.4	17.54
0.10	0.1	_	0.27	270	4563.4	59.17
0.21	0.1	_	0.40	400	4566.8	87.59
0.31	0.2	-	0.59	590	4569.6	129.12
0.41	0.3	-	0.81	810	4572.8	177.14
0.50	0.3	-	1.04	1040	4575.5	227.30
0.61	0.4	-	1.30	1300	4578.7	283.92
0.70	0.5	-	1.59	1590	4581.6	347.04
0.80	0.5	-	1.85	1850	4584.7	403.52
0.91	0.6	-	2.16	2160	4587.9	470.80
1.00	0.7		2.47	2470	4590.7	538.04
1.10	0.7		2.84	2840	4593.8	618.22
1.21	0.8		3.36	3360	4596.9	730.93
1.30	0.9	-	4.01	4010	4599.8	871.77
1.50	1.0		6.21	6210	4606.0	1348.24
1.60	1.1	-	8.75	8750	4609.0	1898.44
1.70	1.1	-	12.09	12090	4612.1	2621.39
1.80	1.2	-	15.67	15670	4615.2	3395.33
1.90	1.3	-	16.59	16590	4618.3	3592.25
2.01	1.3	-	15.30	15300	4621.5	3310.63
2.11	1.4	-	12.25	12250	4624.6	2648.88

Report No.: SLST0200079 Job No.: SHK200024





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#: S3-SC074A 16/5/2020

PT75

Depth (m)#: -Actual Depth (m): - Date of Test: 19/5/2020

Report No.: SLST0200079

Job No.: SHK200024 Page: 1 of 2

W.O. No.#: -

LD002 S51

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 16/5/2020

Specimen Details

Sample Type#:

Specimen Details						
Diameter of specimen	mm 76.4 Wet mass of specimen		g	1170.4		
Length of specimen	mm	149.6	Dry mass of specimen	g	-	
Area of specimen	mm ²	4584.3	Moisture content	%	-	
Volume of specimen	cm ³	685.82	Bulk density	Mg/m ³	1.71	
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

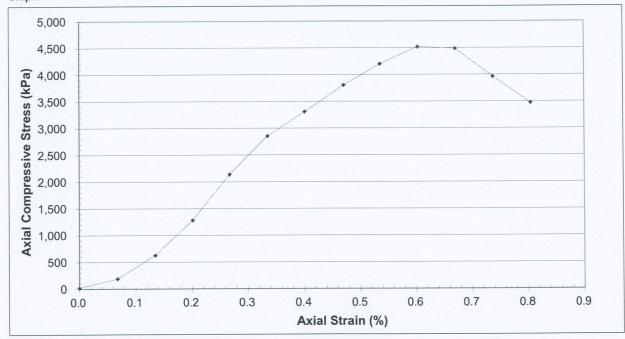
Compression Results

aximum axial stress	4521	kPa
ial strain at failure	0.60	%
confined compressive strength, (qu)	4521	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 15/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

19 May 2020

Date: 20 May 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#. Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 19/5/2020

Report No.: SLST0200079

Job No.: SHK200024

Page: 2 of 2

W.O. No.#: -

Sample No.#: 16/5/2020

LD002 S51

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 16/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation		1 400
		Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.6
	300 E001A	Original area (A _o)	mm ²	4584.3

The compression was terminated at 0.8% of axial strain and the peak axial compressive stress is reached at 0.6%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4584.3	19.63
0.10	0.1	-	0.87	870	4587.4	189.65
0.20	0.1	-	2.88	2880	4590.5	627.38
0.30	0.2	-	5.89	5890	4593.6	1282.22
0.40	0.3	-	9.81	9810	4596.6	2134.17
0.50	0.3	-	13.12	13120	4599.7	2852.33
0.60	0.4	-	15.22	15220	4602.8	3306.68
0.70	0.5	-	17.52	17520	4606.0	3803.72
0.80	0.5	-	19.36	19360	4609.0	4200.46
0.90	0.6	-	20.85	20850	4612.2	4520.64
1.00	0.7	-	20.71	20710	4615.3	4487.27
1.10	0.7		18.31	18310	4618.4	3964.59
1.20	0.8	-	16.05	16050	4621.5	3472.87

Report No.: SLST0200079 Job No.: SHK200024





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 6/6/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

Report No.: SLST0200092 Job No.: SHK200028

Page: 1 of 2

W.O. No.#: -

LD002 S52

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 5/6/2020

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm 76.0 Wet mass of specim		Wet mass of specimen	g	1121.3
Length of specimen mm 151.2		151.2	Dry mass of specimen		-
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	685.91	Bulk density	Mg/m ³	1.63
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description:

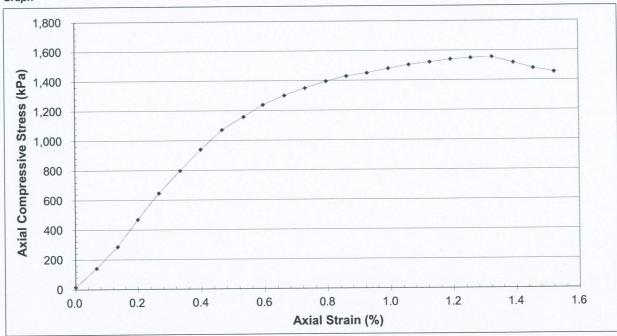
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

1555	kPa	Sketch of failure conditions	
1.3	%		7
1555	kPa	momadon of onear carries	
	1.3	1.3 %	1.3 % Sketch of failure conditions Inclination of shear surface

Graph



Remarks:

Mixing Date: 16/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

6 June 2020

Date: 10 June 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

S3-SC074A Sample No.#:

6/6/2020 LD002

S52

PT75 Sample Type#:

Hole No.#:

Depth (m)#: -Actual Depth (m): -

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date of Test: 6/6/2020

Report No.: SLST0200092

Job No.: SHK200028 Page: 2 of 2

W.O. No.#: -

Date Received: 5/6/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
	0110 1 0044	Original length (L _o)	mm	151.2
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.5% of axial strain and the peak axial compressive stress is reached at 1.3%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	8	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.07	70	4536.5	15.43
0.10	0.1		0.64	640	4539.5	140.98
0.20	0.1	_	1.30	1300	4542.6	286.18
0.30	0.2	_	2.13	2130	4545.5	468.59
0.40	0.3	_	2.94	2940	4548.6	646.36
0.51	0.3		3.63	3630	4551.7	797.51
0.60	0.4	-	4.28	4280	4554.6	939.70
0.71	0.5	_	4.88	4880	4557.7	1070.71
0.81	0.5		5.28	5280	4560.8	1157.68
0.90	0.6		5.65	5650	4563.7	1238.04
1.00	0.7	_	5.94	5940	4566.8	1300.70
1.10	0.7		6.17	6170	4569.8	1350.17
1.21	0.8		6.38	6380	4572.9	1395.17
1.30	0.9		6.54	6540	4575.9	1429.23
1.40	0.9		6.64	6640	4578.9	1450.12
1.50	1.0	-	6.78	6780	4582.0	1479.69
1.60	1.1	_	6.90	6900	4585.1	1504.88
1.70	1.1	-	6.98	6980	4588.2	1521.30
1.80	1.2		7.07	7070	4591.2	1539.89
1.90	1.3	_	7.12	7120	4594.2	1549.77
2.00	1.3	-	7.15	7150	4597.4	1555.24
2.11	1.4	-	6.98	6980	4600.6	1517.20
2.20	1.5	-	6.81	6810	4603.5	1479.30
2.30	1.5		6.70	6700	4606.6	1454.43

Report No.: SLST0200092 Job No.: SHK200028





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 6/6/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

Report No.: SLST0200092

Job No.: SHK200028

Page: 1 of 2

W.O. No.#: -

LD002 S53 PT75

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 5/6/2020

Information provided by Client

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.4	Wet mass of specimen	g	1102.5
Length of specimen	mm	149.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4584.3	Moisture content	%	-
Volume of specimen	cm ³	686.73	Bulk density	Mg/m ³	1.61
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

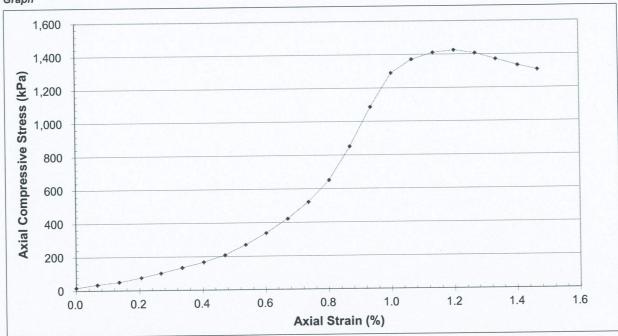
Compression Results

Maximum axial stress	1425	kPa	
Axial strain at failure	1.2	%	
Unconfined compressive strength, (qu)	1425	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 16/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by

HUI King Fai

Date:

6 June 2020

Date: 10 June 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Sample Type#:

S3-SC074A 6/6/2020 LD002

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

W.O. No.#: -

S53

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

information provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4584.3

The compression was terminated at 1.5% of axial strain and the peak axial compressive stress is reached at 1.2%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4584.3	17.45
0.10	0.1	-	0.16	160	4587.4	34.88
0.20	0.1	-	0.23	230	4590.6	50.10
0.31	0.2	-	0.35	350	4593.8	76.19
0.40	0.3	-	0.47	470	4596.6	102.25
0.50	0.3	-	0.62	620	4599.8	134.79
0.60	0.4	-	0.77	770	4602.9	167.29
0.71	0.5	-	0.96	960	4606.0	208.42
0.80	0.5	-	1.24	1240	4609.0	269.04
0.90	0.6	-	1.56	1560	4612.1	338.24
1.00	0.7	-	1.95	1950	4615.3	422.51
1.10	0.7	-	2.41	2410	4618.3	521.83
1.20	0.8		3.01	3010	4621.5	651.31
1.30	0.9	-	3.94	3940	4624.5	851.98
1.40	0.9	-	5.03	5030	4627.6	1086.95
1.50	1.0		5.97	5970	4630.7	1289.21
1.60	1.1	-	6.35	6350	4633.8	1370.36
1.70	1.1	-	6.54	6540	4637.0	1410.40
1.80	1.2	-	6.61	6610	4640.1	1424.53
1.90	1.3	-	6.53	6530	4643.3	1406.33
2.00	1.3	-	6.37	6370	4646.4	1370.94
2.11	1.4	-	6.20	6200	4649.7	1333.41
2.20	1.5	-	6.08	6080	4652.7	1306.77

Report No.: SLST0200092 Job No.: SHK200028





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: S3-SC074A 21/5/2020 Sample No.#: PT75

Depth (m)#: -Actual Depth (m): - Date of Test: 23/5/2020

Report No.: SLST0200081

Job No.: SHK200025

Page: 1 of 2

W.O. No.#: -

LD002 S54

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opeointen betane					
Diameter of specimen	mm 75.9 Wet mass of specimen		g	1108.1	
Length of specimen	mm	152.3	Dry mass of specimen	g	-
Area of specimen	mm ²	4524.5	Moisture content	%	-
Volume of specimen	cm ³	689.09	Bulk density	Mg/m ³	1.61
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

Dark greyish brown sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

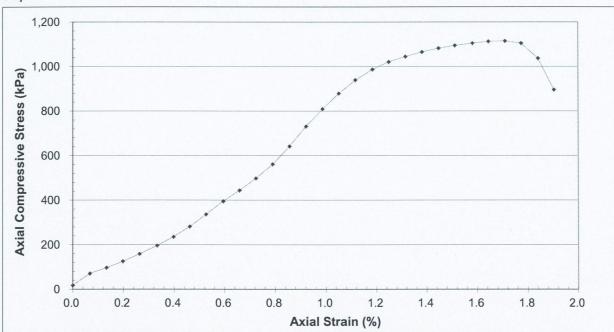
Compression Results

			Ī
Maximum axial stress	1114	kPa	
Axial strain at failure	1.7	%	
Unconfined compressive strength, (qu)	1114	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 18/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

23 May 2020

Date: 27 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: Sample No.*: S3-SC074A

SC074A Actual Depth (m): -

Date of Test: 23/5/2020

Report No.: SLST0200081

Job No.: SHK200025

Page: 2 of 2

W.O. No.#: -

21/5/2020 LD002 S54

Sample Type#: PT75 Sample Origin#: Contaminated soil mixed with 7.5%

Depth (m)#: -

Date Received: 21/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Fares Transducer No.	SUC-LC01A	Original length (L _o)	mm	152.3
Force Transducer No.	SUC-LCUTA	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1.9% of axial strain and the peak axial compressive stress is reached at 1.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4524.5	17.68
0.10	0.1	-	0.32	320	4527.6	70.68
0.20	0.1	-	0.44	440	4530.6	97.12
0.30	0.2	-	0.57	570	4533.5	125.73
0.40	0.3	-	0.72	720	4536.5	158.71
0.51	0.3	-	0.89	890	4539.6	196.05
0.61	0.4	-	1.07	1070	4542.6	235.55
0.70	0.5	-	1.28	1280	4545.5	281.60
0.80	0.5	-	1.53	1530	4548.4	336.38
0.91	0.6	-	1.80	1800	4551.6	395.47
1.00	0.7	-	2.02	2020	4554.5	443.52
1.10	0.7	-	2.27	2270	4557.5	498.08
1.20	0.8	-	2.56	2560	4560.6	561.34
1.30	0.9	-	2.93	2930	4563.6	642.04
1.40	0.9	-	3.34	3340	4566.6	731.40
1.50	1.0	-	3.70	3700	4569.6	809.70
1.60	1.1	-	4.02	4020	4572.6	879.15
1.70	1.1	-	4.30	4300	4575.6	939.77
1.80	1.2	-	4.52	4520	4578.7	987.17
1.90	1.2	<u> -</u>	4.68	4680	4581.7	1021.45
2.00	1.3	-	4.79	4790	4584.8	1044.75
2.10	1.4	-	4.89	4890	4587.9	1065.85
2.20	1.4	-	4.97	4970	4591.0	1082.56
2.30	1.5	-	5.03	5030	4594.0	1094.91
2.41	1.6	-	5.08	5080	4597.2	1105.01
2.50	1.6	-	5.12	5120	4600.2	1113.00
2.60	1.7	-	5.13	5130	4603.2	1114.43
2.70	1.8	-	5.09	5090	4606.2	1105.03
2.80	1.8	-	4.78	4780	4609.4	1037.01
2.90	1.9	-	4.13	4130	4612.4	895.42

Report No.: SLST0200081 Job No.: SHK200025





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client[#]: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: - Sample No.#: \$3-\$C074A 21/5/2020

PT75

Depth (m)[#]: -Actual Depth (m): - Date of Test: 23/5/2020

Report No.: SLST0200081

Job No.: SHK200025

Page: 1 of 2

W.O. No.#: -

LD002 S55

Date Received: 21/5/2020

Sample Origin*: Contaminated soil mixed with 7.5% cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

epecinion z ciane					
Diameter of specimen	mm 76.2 Wet mass of specimen		g	1110.0	
Length of specimen	mm	152.0	Dry mass of specimen	g	
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	693.18	Bulk density	Mg/m ³	1.60
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

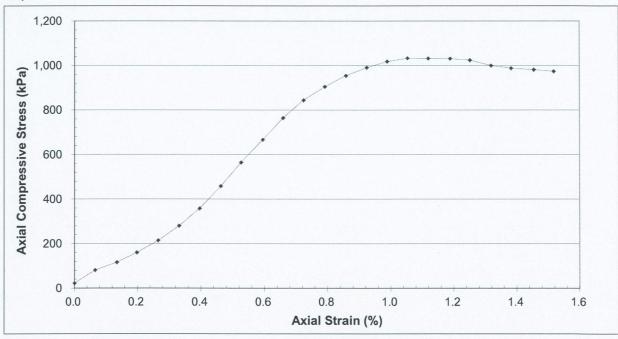
Dark greyish brown sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

kPa	Sketch of failure conditions	
%		
	Inclination of shear surface	
	kPa	Inclination of shear surface

Graph



Remarks : Mixing Date : 18/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by :

Date: 23 May 2020

Date: 27 May 2020



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong. Tel : +852 2463 0100 Fax : +852 2463 0609 E-mail : sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client[#]: Sang Hing - Kuly Joint Venture

Project[#]: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.[#]: - Depth (m)[#]: - Date of Test: 23/5/2020

Sample No.*: S3-SC074A Actual Depth (m): - 21/5/2020

LD002 S55

W.O. No.#: -

20 W.O. N

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 21/5/2020

Report No.: SLST0200081

Job No.: SHK200025

Page: 2 of 2

Information provided by Client

Sample Type#: PT75

inionnation provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	152.0
Force transducer No.	30C-LC01A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1.5% of axial strain and the peak axial compressive stress is reached at 1.1%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.10	100	4560.4	21.93
0.10	0.1	-	0.37	370	4563.4	81.08
0.20	0.1	-	0.53	530	4566.5	116.06
0.30	0.2		0.73	730	4569.4	159.76
0.40	0.3	-	0.98	980	4572.5	214.32
0.50	0.3	-	1.28	1280	4575.5	279.75
0.60	0.4	-	1.64	1640	4578.5	358.20
0.70	0.5		2.10	2100	4581.6	458.36
0.80	0.5	-	2.59	2590	4584.5	564.95
0.90	0.6	-	3.06	3060	4587.7	667.01
1.00	0.7	-	3.51	3510	4590.6	764.61
1.10	0.7	-	3.88	3880	4593.6	844.65
1.20	0.8	-	4.16	4160	4596.7	904.99
1.30	0.9	-	4.39	4390	4599.8	954.38
1.40	0.9	-	4.56	4560	4602.9	990.68
1.50	1.0	-	4.69	4690	4605.9	1018.26
1.60	1.1	-	4.76	4760	4608.9	1032.78
1.70	1.1	-	4.76	4760	4612.0	1032.09
1.81	1.2	-	4.76	4760	4615.2	1031.37
1.90	1.3	-	4.73	4730	4618.2	1024.22
2.00	1.3	-	4.62	4620	4621.3	999.72
2.10	1.4	-	4.57	4570	4624.3	988.25
2.21	1.5	-	4.54	4540	4627.7	981.05
2.31	1.5	-	4.51	4510	4630.6	973.95

Report No.: SLST0200081 Job No.: SHK200025





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200081 Job No.: SHK200025 Page: 1 of 2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 21/5/2020

Depth (m)#: -

Date of Test: 23/5/2020

W.O. No.#: -

Sample No.#:

LD002 S56

Actual Depth (m): -

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

opcomien Detaile					
Diameter of specimen	mm 76.3 Wet mass of specimer		Wet mass of specimen	g	1089.0
Length of specimen	mm	150.0	Dry mass of specimen	g	
Area of specimen	mm ²	4572.3	Moisture content	%	
Volume of specimen	cm ³	685.85	Bulk density	Mg/m ³	1.59
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

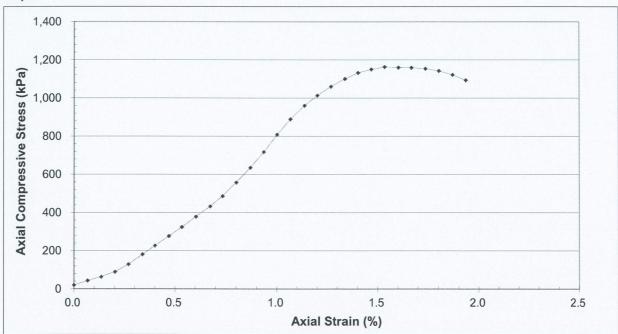
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1163	kPa	01 11 (6.3	
Axial strain at failure	1.5	%	Sketch of failure conditions Inclination of shear surface	
Unconfined compressive strength, (q _{II})	1163	kPa	inclination of shear surface	

Graph



Remarks:

Mixing Date: 19/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

23 May 2020

Date: 27 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 23/5/2020

Report No.: SLST0200081

Page: 2 of 2

Job No.: SHK200025

W.O. No.#: -

Sample No.#: 21/5/2020

LD002 S56

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

intormation provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.0
Torce Transducer No.	30C-ECOTA	Original area (A _o)	mm ²	4572.3

The compression was terminated at 1.9% of axial strain and the peak axial compressive stress is reached at 1.5%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.09	90	4572.3	19.68
0.10	0.1	-	0.20	200	4575.4	43.71
0.20	0.1	-	0.29	290	4578.4	63.34
0.30	0.2	-	0.41	410	4581.6	89.49
0.40	0.3	-	0.59	590	4584.7	128.69
0.51	0.3	-	0.83	830	4587.9	180.91
0.60	0.4	-	1.04	1040	4590.7	226.54
0.70	0.5	-	1.27	1270	4593.9	276.45
0.80	0.5	-	1.49	1490	4596.9	324.13
0.91	0.6	-	1.74	1740	4600.1	378.25
1.01	0.7	-	1.99	1990	4603.3	432.29
1.10	0.7	-	2.24	2240	4606.2	486.30
1.20	0.8	-	2.57	2570	4609.3	557.57
1.31	0.9	-	2.93	2930	4612.5	635.23
1.40	0.9	-	3.31	3310	4615.5	717.15
1.50	1.0	-	3.73	3730	4618.6	807.61
1.60	1.1	-	4.11	4110	4621.7	889.29
1.71	1.1	-	4.44	4440	4624.9	960.01
1.80	1.2	-	4.69	4690	4627.9	1013.42
1.90	1.3	-	4.91	4910	4631.1	1060.22
2.01	1.3	-	5.10	5100	4634.4	1100.48
2.11	1.4	-	5.25	5250	4637.4	1132.09
2.20	1.5	-	5.34	5340	4640.5	1150.74
2.30	1.5	-	5.40	5400	4643.6	1162.88
2.41	1.6	-	5.39	5390	4646.8	1159.93
2.50	1.7	-	5.39	5390	4649.9	1159.16
2.61	1.7	-	5.37	5370	4653.2	1154.06
2.70	1.8	-	5.32	5320	4656.3	1142.55
2.80	1.9	-	5.23	5230	4659.4	1122.45
2.90	1.9	-	5.10	5100	4662.6	1093.81

Report No.: SLST0200081 Job No.: SHK200025





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 21/5/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 23/5/2020

Report No.: SLST0200081

Page: 1 of 2

Job No.: SHK200025

W.O. No.#: -

Sample No.#: LD002 S57 PT75

Date Received: 21/5/2020

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

opconnen Detano					
Diameter of specimen	mm 76.3 Wet mass of specimen		Wet mass of specimen	g	1098.5
Length of specimen	mm	149.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4572.3	Moisture content	%	-
Volume of specimen	cm ³	684.94	Bulk density	Mg/m ³	1.60
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Dark greyish brown sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

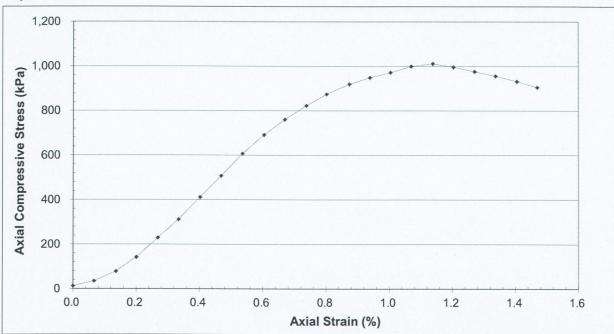
Compression Results

		PER UNITED
Maximum axial stress	1012	kPa
Axial strain at failure	1.1	%
Unconfined compressive strength, (qu)	1012	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date : 19/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Date:

23 May 2020

Date: 27 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200081 Job No.: SHK200025 Page: 2 of 2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: Sample No.*: S3-SC074A

Depth (m)[#]: -Actual Depth (m): - Date of Test: 23/5/2020

W.O. No.#: -

21/5/2020 LD002 S57

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 21/5/2020

cement and 10% sand

Information provided by Client

Sample Type#: PT75

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
	SUC-LCUTA	Original area (A _o)	mm ²	4572.3

The compression was terminated at 1.5% of axial strain and the peak axial compressive stress is reached at 1.1%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.06	60	4572.3	13.12
0.10	0.1	-	0.16	160	4575.4	34.97
0.20	0.1	-	0.36	360	4578.5	78.63
0.30	0.2	-	0.65	650	4581.5	141.87
0.40	0.3	-	1.05	1050	4584.7	229.02
0.50	0.3		1.43	1430	4587.7	311.70
0.60	0.4		1.89	1890	4590.8	411.69
0.70	0.5	-	2.33	2330	4593.8	507.20
0.80	0.5	-	2.79	2790	4597.0	606.92
0.90	0.6	-	3.18	3180	4600.1	691.29
1.00	0.7	-	3.50	3500	4603.1	760.35
1.10	0.7	-	3.79	3790	4606.3	822.79
1.20	0.8	-	4.03	4030	4609.3	874.33
1.31	0.9	-	4.24	4240	4612.7	919.21
1.41	0.9	-	4.38	4380	4615.7	948.94
1.50	1.0		4.49	4490	4618.7	972.14
1.60	1.1	-	4.62	4620	4621.8	999.62
1.70	1.1	-	4.68	4680	4625.0	1011.90
1.80	1.2	-	4.61	4610	4628.0	996.11
1.90	1.3	-	4.52	4520	4631.1	976.00
2.00	1.3	-	4.43	4430	4634.3	955.92
2.10	1.4	-	4.32	4320	4637.5	931.54
2.20	1.5	<u>-</u>	4.20	4200	4640.5	905.07

Report No.: SLST0200081 Job No.: SHK200025





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 6/6/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

Report No.: SLST0200092

Page: 1 of 2

Job No.: SHK200028

W.O. No.#: -

LD002 S58 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.3	Wet mass of specimen	g	1109.6
Length of specimen	mm	149.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4453.3	Moisture content	%	-
Volume of specimen	cm ³	667.10	Bulk density	Mg/m ³	1.66
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

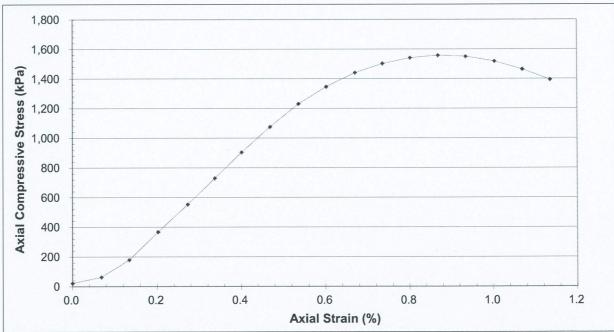
Compression Results

Maximum axial stress	1558	kPa
Axial strain at failure	0.87	%
Unconfined compressive strength, (qu)	1558	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 20/5/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by: HUI King Fai

Date: 6 June 2020 Date: 10 June 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

W.O. No.#: -

: +852 2463 0609

E-mail: sst@soilservices.com.hk

Sample No.#:

6/6/2020 LD002

S58

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Fax

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
0 0	0110 1 0044	Original length (L _o)	mm	149.8
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4453.3

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4453.3	22.46
0.10	0.1	-	0.28	280	4456.3	62.83
0.20	0.1	-	0.80	800	4459.3	179.40
0.30	0.2	-	1.64	1640	4462.3	367.52
0.41	0.3	-	2.47	2470	4465.4	553.14
0.51	0.3	-	3.26	3260	4468.3	729.58
0.60	0.4	-	4.04	4040	4471.2	903.56
0.70	0.5	-	4.81	4810	4474.3	1075.03
0.80	0.5	-	5.51	5510	4477.3	1230.66
0.90	0.6	-	6.03	6030	4480.3	1345.91
1.00	0.7		6.46	6460	4483.3	1440.89
1.10	0.7		6.74	6740	4486.3	1502.36
1.20	0.8	-	6.92	6920	4489.3	1541.45
1.30	0.9	100	7.00	7000	4492.3	1558.21
1.40	0.9		6.97	6970	4495.3	1550.50
1.50	1.0	-	6.83	6830	4498.4	1518.31
1.60	1.1	-	6.59	6590	4501.4	1463.97
1.70	1.1	-	6.28	6280	4504.5	1394.17

Report No.: SLST0200092 Job No.: SHK200028





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Report No.: SLST0200092

Job No.: SHK200028 Page: 1 of 2

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 6/6/2020 Sample No.#:

PT75

Actual Depth (m): -LD002 S59

Date of Test: 6/6/2020 Depth (m)#: -

W.O. No.#: -

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1112.9
Length of specimen	mm	151.0	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	-
Volume of specimen	cm ³	685.01	Bulk density	Mg/m ³	1.62
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

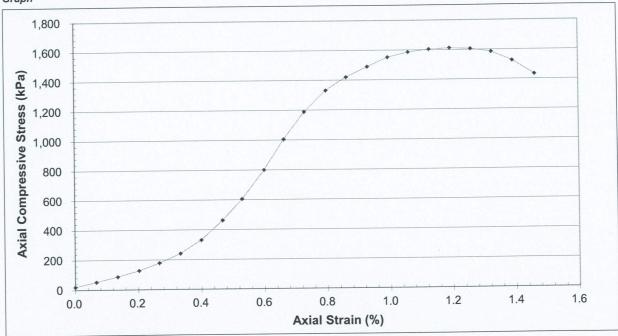
Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress	1612	kPa		
Maximum axiai stress	1012	Ki u	Sketch of failure conditions	
Axial strain at failure	1.2	%	Inclination of shear surface	111
Unconfined compressive strength, (qu)	1612	kPa		

Graph



Mixing Date: 21/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

prior written approval from this laboratory.

HUI King Fai

Date: 10 June 2020 6 June 2020 Date:

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[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -

Date of Test: 6/6/2020

Sample No.#:

6/6/2020 LD002

Actual Depth (m): -

W.O. No.#: -

S59

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	0110 1 0044	Original length (L _o)	mm	151.0
	SUC-LC01A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.5% of axial strain and the peak axial compressive stress is reached at 1.2%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4536.5	19.84
0.10	0.1	-	0.24	240	4539.5	52.87
0.20	0.1	-	0.40	400	4542.6	88.06
0.31	0.2	-	0.58	580	4545.6	127.59
0.40	0.3	-	0.81	810	4548.5	178.08
0.50	0.3	-	1.10	1100	4551.6	241.67
0.60	0.4	-	1.51	1510	4554.6	331.53
0.71	0.5	-	2.11	2110	4557.8	462.95
0.80	0.5	-	2.76	2760	4560.6	605.18
0.91	0.6	-	3.65	3650	4563.8	799.77
1.00	0.7	-	4.59	4590	4566.7	1005.09
1.10	0.7	-	5.43	5430	4569.7	1188.25
1.20	0.8	-	6.09	6090	4572.9	1331.75
1.30	0.9	-	6.50	6500	4575.9	1420.49
1.40	0.9	-	6.82	6820	4579.0	1489.41
1.50	1.0	-	7.11	7110	4582.0	1551.72
1.60	1.1	-	7.27	7270	4585.1	1585.58
1.70	1.1	-	7.36	7360	4588.1	1604.13
1.80	1.2	-	7.40	7400	4591.2	1611.77
1.90	1.3	-	7.38	7380	4594.3	1606.34
2.00	1.3	-	7.29	7290	4597.4	1585.68
2.10	1.4	-	7.02	7020	4600.5	1525.93
2.21	1.5	-	6.60	6600	4603.7	1433.61

Report No.: SLST0200092 Job No.: SHK200028





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: Sample No.*: S3-SC074A 27/5

- Depth (m)*: - S3-SC074A 27/5/2020 Actual Depth (m): -

Date of Test: 27/5/2020

Report No.: SLST0200085

Job No.: SHK200027

Page: 1 of 2

W.O. No.#: -

LD002 S60 Sample Type[#]: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/5/2020

cement and 10% sand

Information provided by Client

Specimen Details

-p					
Diameter of specimen	mm	76.1	Wet mass of specimen	q	1126.0
Length of specimen	mm	149.8	Dry mass of specimen	q	
Area of specimen	mm ²	4548.4	Moisture content	%	
Volume of specimen	cm ³	681.35	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

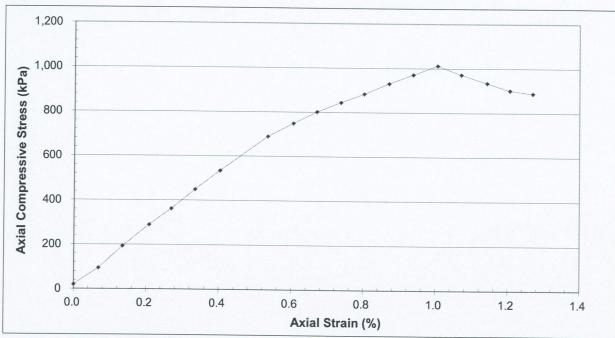
Compression Results

Maximum axial stress	1012	kPa	
Axial strain at failure	1.0	%	Sk
Unconfined compressive strength, (qu)	1012	kPa	Inc

Sketch of failure conditions Inclination of shear surface



Graph



Remarks : Mixing Date : 23/5/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by :

Date: 27 May 2020

Date: 29 May 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#:

Sample Type#:

Client#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 27/5/2020

Report No.: SLST0200085

Job No.: SHK200027

Page: 2 of 2

W.O. No.#: -

27/5/2020

LD002 S60

PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 27/5/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
	300-LC01A	Original area (A _o)	mm ²	4548.4

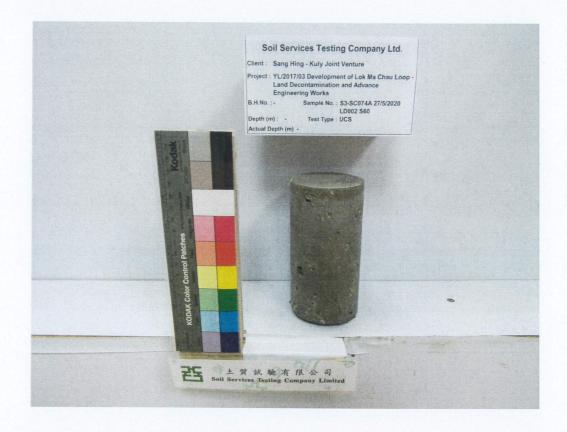
The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4548.4	19.79
0.10	0.1	-	0.43	430	4551.5	94.47
0.20	0.1	-	0.88	880	4554.5	193.21
0.31	0.2	-	1.32	1320	4557.9	289.61
0.40	0.3	-	1.65	1650	4560.7	361.79
0.50	0.3	-	2.05	2050	4563.7	449.20
0.60	0.4	-	2.44	2440	4566.8	534.29
0.80	0.5	-	3.15	3150	4572.8	688.85
0.91	0.6	-	3.43	3430	4576.1	749.55
1.00	0.7	-	3.67	3670	4579.1	801.47
1.10	0.7	-	3.87	3870	4582.2	844.58
1.20	0.8	-	4.05	4050	4585.2	883.28
1.30	0.9	-	4.27	4270	4588.3	930.62
1.40	0.9	-	4.46	4460	4591.4	971.37
1.51	1.0	-	4.65	4650	4594.6	1012.07
1.60	1.1	-	4.47	4470	4597.6	972.25
1.71	1.1	-	4.30	4300	4600.9	934.59
1.81	1.2	-	4.15	4150	4603.9	901.41
1.90	1.3	-	4.09	4090	4606.9	887.80

Report No.: SLST0200085 Job No.: SHK200027





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 6/6/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

Report No.: SLST0200092 Job No.: SHK200028

Page: 1 of 2

W.O. No.#: -

Sample No.#: LD002 S61

Sample Origin#: Contaminated soil mixed with 7.5% PT75 Sample Type#:

Date Received: 5/6/2020

cement and 10% sand

Specimen Details

Specimen Details					
Diameter of specimen	mm	76.2	Wet mass of specimen	g	1116.7
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	-
Volume of specimen	cm ³	682.69	Bulk density	Mg/m ³	1.64
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

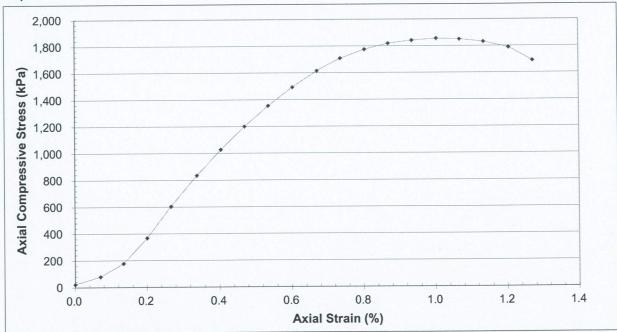
Compression Results

- Compression			-
Maximum axial stress	1856	kPa	
Axial strain at failure	1.0	%	
Unconfined compressive strength, (qu)	1856	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Remarks:

Mixing Date : 25/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

6 June 2020

Date: 10 June 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 6/6/2020

W.O. No.#: -

Sample No.#:

S61

6/6/2020 LD002

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 5/6/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.	0110 1 0044	Original length (L _o)	mm	149.7
	SUC-LC01A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.10	100	4560.4	21.93
0.11	0.1	-	0.36	360	4563.6	78.89
0.20	0.1	-	0.81	810	4566.5	177.38
0.30	0.2	-	1.68	1680	4569.5	367.65
0.40	0.3		2.76	2760	4572.6	603.60
0.51	0.3	-	3.82	3820	4575.9	834.81
0.61	0.4	-	4.71	4710	4578.9	1028.64
0.70	0.5	-	5.50	5500	4581.9	1200.37
0.80	0.5		6.21	6210	4584.9	1354.44
0.90	0.6		6.85	6850	4588.0	1493.01
1.00	0.7	-	7.42	7420	4591.2	1616.15
1.10	0.7	-	7.85	7850	4594.2	1708.67
1.20	0.8	-	8.16	8160	4597.3	1774.94
1.30	0.9	-	8.37	8370	4600.4	1819.42
1.40	0.9	-	8.48	8480	4603.4	1842.10
1.50	1.0	-	8.55	8550	4606.6	1856.03
1.60	1.1	-	8.53	8530	4609.6	1850.47
1.70	1.1	-	8.45	8450	4612.7	1831.88
1.80	1.2	-	8.26	8260	4616.0	1789.43
1.90	1.3	-	7.81	7810	4619.1	1690.80

Report No.: SLST0200092 Job No.: SHK200028





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project#: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#: S3-SC074A 6/6/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 6/6/2020

Report No.: SLST0200092

Job No.: SHK200028

Page: 1 of 2

W.O. No.#: -

nple No.*: \$3-5C074A 6/6/202 LD002 \$62

A 6/6/2020 Actual Depth (I

Sample Origin[#]: Contaminated soil mixed with 7.5% Date Received: 5/6/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.5	Wet mass of specimen	g	1114.7
Length of specimen	mm	150.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4596.3	Moisture content	%	-
Volume of specimen	cm ³	689.91	Bulk density	Mg/m ³	1.62
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

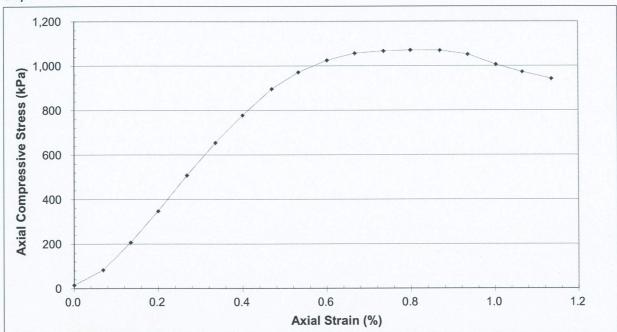
Compression Results

Maximum axial stress	1070	kPa
Axial strain at failure	0.80	%
Unconfined compressive strength, (qu)	1070	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Remarks : Mixing Date : 25/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : HUI King Fai

Date: 6 June 2020 Date: 10 June 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): - Date of Test: 6/6/2020

Sample No.#:

Sample Type#:

6/6/2020 LD002

W.O. No.#: -

S62 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	150.1
TOTOC TRANSCRUCT 140.	30C-LC01A	Original area (A _o)	mm ²	4596.3

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.8%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.07	70	4596.3	15.23
0.10	0.1	-	0.38	380	4599.5	82.62
0.20	0.1	-	0.95	950	4602.5	206.41
0.30	0.2	-	1.60	1600	4605.6	347.41
0.40	0.3	-	2.34	2340	4608.7	507.74
0.50	0.3	-	3.02	3020	4611.8	654.84
0.60	0.4	-	3.59	3590	4614.8	777.93
0.70	0.5	-	4.14	4140	4618.0	896.49
0.80	0.5	-	4.49	4490	4621.0	971.66
0.90	0.6	-	4.74	4740	4624.2	1025.05
1.00	0.7	-	4.89	4890	4627.2	1056.79
1.10	0.7	-	4.94	4940	4630.4	1066.86
1.20	0.8	-	4.96	4960	4633.4	1070.49
1.31	0.9	-	4.96	4960	4636.7	1069.74
1.40	0.9	-	4.88	4880	4639.7	1051.78
1.51	1.0	-	4.67	4670	4642.9	1005.83
1.60	1.1	-	4.52	4520	4645.9	972.90
1.71	1.1	-	4.38	4380	4649.2	942.11

Report No.: SLST0200092 Job No.: SHK200028





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Job No.: SHK200028 Page: 1 of 2

Report No.: SLST0200092

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A 6/6/2020

Depth (m)#: -

Date of Test: 6/6/2020

Sample No.#:

LD002 S63

Actual Depth (m): -

W.O. No.#: -

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 5/6/2020

cement and 10% sand

Information provided by Client

Specimen Details

Specimen Details						
Diameter of specimen	mm 75.5 Wet mass of		Wet mass of specimen	g	1122.9	
Length of specimen	mm	150.0	Dry mass of specimen	g	-	
Area of specimen	mm ²	4477.0	Moisture content	%	-	
Volume of specimen	cm ³	671.54	Bulk density	Mg/m ³	1.67	
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-	

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

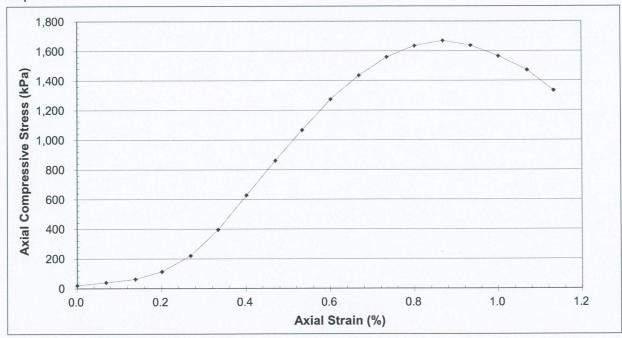
Compression Results

Г				
	Maximum axial stress	1670	kPa	
1	Axial strain at failure	0.87	%	
	Unconfined compressive strength, (qu)	1670	kPa	
- 1				

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 26/5/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by: HUI King Fai

Date:

6 June 2020

Date: 10 June 2020



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200092 Job No.: SHK200028 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

S3-SC074A

Depth (m)#: -

Date of Test: 6/6/2020

Actual Depth (m): -

W.O. No.#: -

6/6/2020 LD002 S63

Sample Origin#: Contaminated soil mixed with 7.5%

Sample Type#: PT75

cement and 10% sand

Date Received: 5/6/2020

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC I C01A	Original length (L _o)	mm	150.0
	SUC-LC01A	Original area (A _o)	mm ²	4477.0

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4477.0	20.10
0.10	0.1	-	0.18	180	4480.0	40.18
0.21	0.1	-	0.28	280	4483.2	62.46
0.30	0.2	-	0.51	510	4486.0	113.69
0.40	0.3	-	0.99	990	4489.0	220.54
0.50	0.3	-	1.78	1780	4492.0	396.26
0.60	0.4	-	2.82	2820	4495.0	627.36
0.71	0.5	-	3.87	3870	4498.1	860.36
0.80	0.5	-	4.80	4800	4501.0	1066.43
0.90	0.6		5.74	5740	4504.1	1274.40
1.00	0.7	-	6.47	6470	4507.1	1435.51
1.10	0.7	-	7.03	7030	4510.1	1558.72
1.20	0.8	-	7.38	7380	4513.1	1635.23
1.30	0.9	-	7.54	7540	4516.2	1669.55
1.40	0.9	-	7.40	7400	4519.2	1637.44
1.50	1.0	-	7.08	7080	4522.3	1565.58
1.61	1.1		6.66	6660	4525.4	1471.69
1.70	1.1	-	6.04	6040	4528.3	1333.84

Report No.: SLST0200092 Job No.: SHK200028





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

Project*: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

Sample Type#:

S3-SC074A 6/6/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 8/6/2020

Report No.: SLST0200092

Job No.: SHK200028

Page: 1 of 2

W.O. No.#: -

Sample No.#: S3-SC0 LD002

PT75

LD002 S64

Sample Origin[#]: Contaminated soil mixed with 7.5% cement and 10% sand

Date Received: 5/6/2020

Specimen Details

-p					
Diameter of specimen	mm	76.2	Wet mass of specimen	g	1080.9
Length of specimen	mm	149.6	Dry mass of specimen	g	-
Area of specimen	mm ²	4560.4	Moisture content	%	
Volume of specimen	cm ³	682.23	Bulk density	Mg/m ³	1.58
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

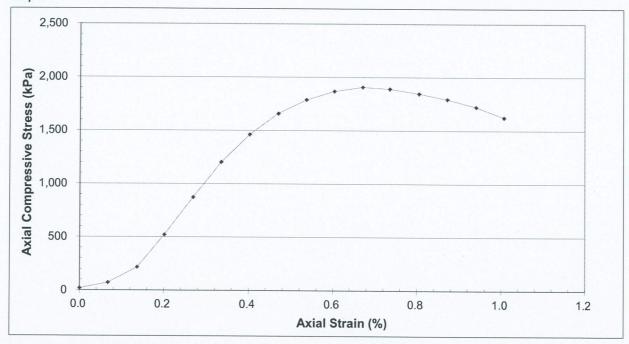
Greyish brown sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure Unconfined compressive strength, (q _u)	1908 0.67 1908	kPa % kPa	Sketch of failure conditions Inclination of shear surface		
---	----------------------	-----------------	--	--	--

Graph



Remarks : Mixing Date : 3/6/2020

Note: The results relate only to the tested sample as received.

Checked by : LAU Chun Ming

Certified by : _____

HUI King Fai

Date:

8 June 2020

Date: 10 June 2020

[#] Information provided by Client



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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#: Sample No.#:

Project#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 8/6/2020

Report No.: SLST0200092

Job No.: SHK200028

Page: 2 of 2

6/6/2020 LD002

W.O. No.#: -

S64

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 5/6/2020

Information provided by Client

miletination provided by Olient				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.		Proving Ring constant	kN/mm	-
Force Transducer No.		Original length (L _o)	mm	149.6
	000-2001A	Original area (A _o)	mm ²	4560.4

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.7%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	Р	A	
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	σ₁ (kPa)
0.00	0.0	-	0.09	90	4560.4	19.74
0.10	0.1	-	0.33	330	4563.4	72.31
0.20	0.1	-	0.99	990	4566.6	216.79
0.30	0.2	-	2.38	2380	4569.6	520.84
0.40	0.3	-	3.99	3990	4572.7	872.58
0.50	0.3	-	5.50	5500	4575.7	1202.00
0.60	0.4	-	6.69	6690	4578.8	1461.09
0.70	0.5	-	7.60	7600	4581.9	1658.71
0.80	0.5	-	8.20	8200	4584.9	1788.46
0.90	0.6	-	8.57	8570	4588.0	1867.90
1.00	0.7	-	8.76	8760	4591.1	1908.02
1.10	0.7	-	8.69	8690	4594.1	1891.54
1.20	0.8	-	8.49	8490	4597.4	1846.71
1.30	0.9	-	8.26	8260	4600.5	1795.47
1.41	0.9	-	7.93	7930	4603.7	1722.54
1.51	1.0	-	7.48	7480	4606.7	1623.71





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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client[#]: Sang Hing - Kuly Joint Venture

Project[#]: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.*: - Sample No.*: S3-SC074A 11/6/2020

Depth (m)#: -Actual Depth (m): - Date of Test: 12/6/2020

Report No.: SLST0200095

Job No.: SHK200029

Page: 1 of 2

W.O. No.#: -

Sample No.#: S3-SC074A 11 LD002 S65

Actual Depth (III). -

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 11/6/2020

cement and 10% sand

Specimen Details

- Poolinion - Olimber					
Diameter of specimen	mm	76.0	Wet mass of specimen	g	1189.9
Length of specimen	mm	150.1	Dry mass of specimen	g	-
Area of specimen	mm ²	4536.5	Moisture content	%	<u>-</u>
Volume of specimen	cm ³	680.92	Bulk density	Mg/m ³	1.75
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

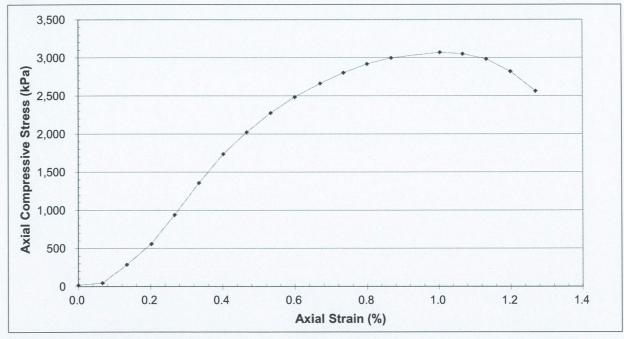
Light greenish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

Compression Results

Maximum axial stress Axial strain at failure	3070	kPa %	Sketch of failure conditions	8
Unconfined compressive strength, (q _u)	3070	kPa	Inclination of shear surface	1

Graph



Remarks : Mixing Date : 4/6/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by : HUI King Fai

Date: 12 June 2020 Date: 15 June 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.





Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200095 Job No.: SHK200029 Page: 2 of 2

Client#:

Sang Hing - Kuly Joint Venture

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.#:

S3-SC074A

Depth (m)#: -Actual Depth (m): -

Date of Test: 12/6/2020

W.O. No.#: -

Sample No.#:

11/6/2020 LD002 S65

Sample Type#: PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 11/6/2020

cement and 10% sand

Information provided by Client

information provided by Client				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
I N	CLIC I COAA	Original length (L _o)	mm	150.1
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4536.5

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	- '	0.08	80	4536.5	17.63
0.10	0.1		0.21	210	4539.5	46.26
0.20	0.1	-	1.30	1300	4542.5	286.18
0.30	0.2	-	2.54	2540	4545.6	558.78
0.40	0.3	-	4.27	4270	4548.6	938.75
0.50	0.3	-	6.18	6180	4551.7	1357.75
0.60	0.4		7.91	7910	4554.8	1736.65
0.70	0.5	-	9.22	9220	4557.7	2022.93
0.80	0.5	-	10.38	10380	4560.8	2275.92
0.90	0.6	-	11.34	11340	4563.9	2484.74
1.01	0.7		12.16	12160	4567.1	2662.54
1.10	0.7	-	12.81	12810	4570.0	2803.04
1.20	0.8	-	13.35	13350	4573.1	2919.28
1.30	0.9	-	13.72	13720	4576.2	2998.15
1.51	1.0	-	14.07	14070	4582.4	3070.42
1.60	1.1	-	13.99	13990	4585.4	3050.99
1.70	1.1	-	13.69	13690	4588.5	2983.57
1.80	1.2	-	12.95	12950	4591.6	2820.40
1.91	1.3	-	11.78	11780	4594.8	2563.78

Report No.: SLST0200095 Job No.: SHK200029





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, : +852 2463 0609 E-mail: sst@soilservices.com.hk New Territories, Hong Kong.



Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 11/6/2020 Sample No.#:

Depth (m)#: -Actual Depth (m): -

Date of Test: 12/6/2020

Report No.: SLST0200095

Job No.: SHK200029 Page: 1 of 2

W.O. No.#: -

LD002 S66 PT75

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 11/6/2020

cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	76.1	Wet mass of specimen	g	1172.6
Length of specimen	mm	149.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4548.4	Moisture content	%	-
Volume of specimen	cm ³	680.90	Bulk density	Mg/m ³	1.72
Particle density (assumed/measured)*	Ma/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light greenish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

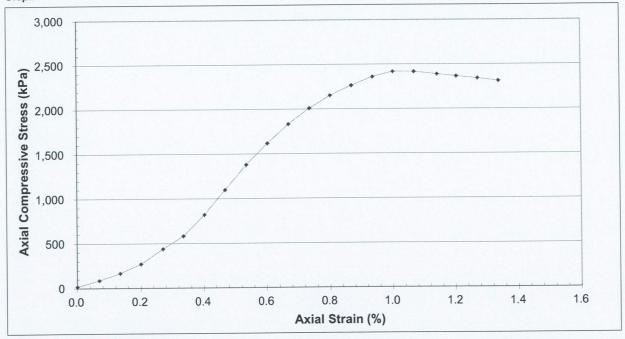
Compression Results

	0440	L-D-
Maximum axial stress	2418	kPa
Axial strain at failure	1.0	%
Unconfined compressive strength, (qu)	2418	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date : 5/6/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

12 June 2020

Date: 15 June 2020

[#] Information provided by Client



: +852 2463 0100 Unit 04 & 10, 13/F, Luen Cheong Can Centre, : +852 2463 0609 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong. E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Depth (m)#: -

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200095 Job No.: SHK200029

Page: 2 of 2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A Sample No.#:

Actual Depth (m): -

Date of Test: 12/6/2020

W.O. No.#: -

11/6/2020

LD002 S66

Sample Origin#: Contaminated soil mixed with 7.5%

cement and 10% sand

Date Received: 11/6/2020

Information provided by Client

Sample Type#: PT75

Machine No.	- TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	<u>-</u>	Proving Ring constant	kN/mm	-
0 0	011010014	Original length (L _o)	mm	149.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4548.4

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first. Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.08	80	4548.4	17.59
0.10	0.1	<u>.</u>	0.39	390	4551.5	85.69
0.20	0.1	-	0.76	760	4554.5	166.87
0.30	0.2	-	1.23	1230	4557.5	269.88
0.41	0.3	-	2.00	2000	4560.7	438.52
0.50	0.3		2.66	2660	4563.7	582.86
0.60	0.4		3.75	3750	4566.8	821.15
0.70	0.5	-	5.02	5020	4569.8	1098.52
0.80	0.5	-	6.30	6300	4572.9	1377.68
0.90	0.6		7.41	7410	4576.0	1619.32
1.00	0.7	-	8.39	8390	4579.1	1832.24
1.10	0.7		9.21	9210	4582.1	2009.98
1.20	0.8		9.87	9870	4585.2	2152.58
1.30	0.9		10.39	10390	4588.3	2264.46
1.40	0.9		10.84	10840	4591.4	2360.92
1.50	1.0		11.11	11110	4594.5	2418.12
1.60	1.1		11.11	11110	4597.6	2416.49
1.71	1.1	-	10.99	10990	4601.0	2388.61
1.80	1.2	-	10.89	10890	4603.9	2365.41
1.91	1.3	-	10.79	10790	4607.0	2342.07
2.00	1.3	-	10.66	10660	4610.1	2312.30

Report No.: SLST0200095 Job No.: SHK200029





Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture Client#:

Project#:

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Depth (m)#: -

Hole No.#: S3-SC074A 20/6/2020 Sample No.#:

Actual Depth (m): -

Date of Test: 23/6/2020

Report No.: SLST0200103

Job No.: SHK200031 Page: 1 of 2

W.O. No.#: -

LD002 Area 6(1) PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 20/6/2020

cement and 10% sand

Specimen Details

Specimen Details					
Diameter of specimen	mm	75.3	Wet mass of specimen	g	1129.8
Length of specimen	mm	150.7	Dry mass of specimen	g	-
Area of specimen	mm ²	4453.3	Moisture content	%	-
Volume of specimen	cm ³	671.11	Bulk density	Mg/m ³	1.68
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	-

^{*} Delete whichever is inappropriate

Visual Description:

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

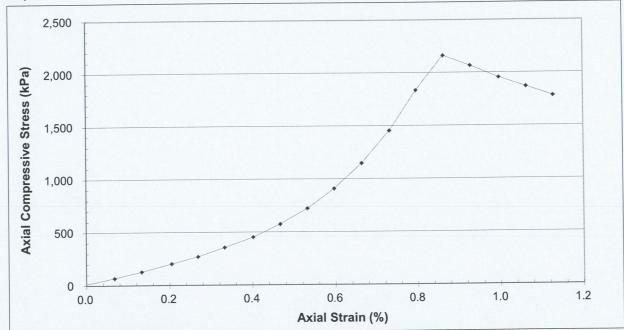
Compression Results

Maximum axial stress	2162	kPa
Axial strain at failure	0.86	%
Unconfined compressive strength, (qu)	2162	kPa

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 19/6/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

23 June 2020

Date: 24 June 2020

[#] Information provided by Client



Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun,

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Sample No.#: S3-SC074A

20/6/2020

Depth (m)#: -Actual Depth (m): -

Date of Test: 23/6/2020

Report No.: SLST0200103 Job No.: SHK200031

Page: 2 of 2

W.O. No.#: -

LD002 Area 6(1)

PT75 Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 20/6/2020

cement and 10% sand

Information provided by Client

Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
5 T I N	CLIC I CO1A	Original length (L _o)	mm	150.7
Force Transducer No.	SUC-LC01A	Original area (A _o)	mm ²	4453.3

The compression was terminated at 1.1% of axial strain and the peak axial compressive stress is reached at 0.9%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data	are	printed	in	Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.05	50	4453.2	11.23
0.10	0.1	-	0.30	300	4456.3	67.32
0.20	0.1	-	0.57	570	4459.2	127.83
0.31	0.2	-	0.90	900	4462.4	201.69
0.40	0.3	-	1.20	1200	4465.2	268.74
0.50	0.3	-	1.59	1590	4468.1	355.85
0.61	0.4	-	2.02	2020	4471.2	451.78
0.70	0.5	-	2.57	2570	4474.1	574.41
0.80	0.5	-	3.23	3230	4477.1	721.45
0.90	0.6	- 1	4.07	4070	4480.0	908.48
1.00	0.7	-	5.14	5140	4483.0	1146.55
1.10	0.7	-	6.52	6520	4486.1	1453.39
1.20	0.8	-	8.23	8230	4489.0	1833.36
1.30	0.9	-	9.71	9710	4492.0	2161.61
1.40	0.9	-	9.29	9290	4495.0	2066.74
1.50	1.0	-	8.79	8790	4498.1	1954.14
1.60	1.1	-	8.41	8410	4501.1	1868.42
1.70	1.1		8.03	8030	4504.1	1782.83

Report No.: SLST0200103 Job No.: SHK200031





Soil Services Testing Company Limited

Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: S3-SC074A 20/6/2020 Sample No.#:

PT75

Depth (m)#: -Actual Depth (m): - Date of Test: 23/6/2020

Report No.: SLST0200103

Job No.: SHK200031

Page: 1 of 2

W.O. No.#: -

LD002 Area 6(2)

Date Received: 20/6/2020

Sample Origin#: Contaminated soil mixed with 7.5% cement and 10% sand

Specimen Details

Sample Type#:

Specimen Details					
Diameter of specimen	mm	75.9	Wet mass of specimen	g	1095.5
Length of specimen	mm	146.8	Dry mass of specimen	g	-
Area of specimen	mm ²	4524.5	Moisture content	%	
Volume of specimen	cm ³	664.20	Bulk density	Mg/m ³	1.65
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	

^{*} Delete whichever is inappropriate

Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

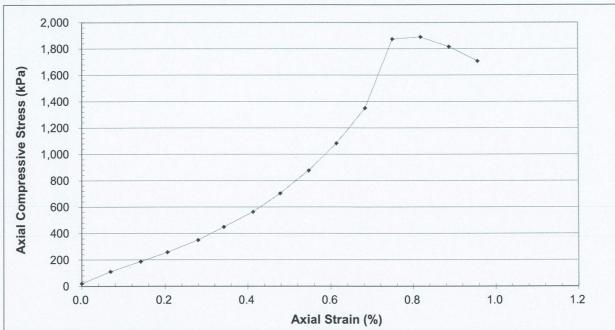
Compression Results

Maximum axial stress	1890	kPa
Axial strain at failure	0.82	%
Unconfined compressive strength, (qu)	1890	kPa
Officerinifica compressive salerigar, (qu)	1000	KI G

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 19/6/2020 Remarks:

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

Certified by:

HUI King Fai

Date:

23 June 2020

Date: 24 June 2020

[#] Information provided by Client



Soil Services Testing Company Limited

Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method) Tested in Accordance with: BS1377-7:1990 Clause 7.2

Report No.: SLST0200103 Job No.: SHK200031 Page: 2 of 2

Client#: Sang Hing - Kuly Joint Venture

Project[#]: YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Hole No.[#]: - Depth (m)[#]: - Sample No.[#]: S3-SC074A Actual Depth (m): -

Date of Test: 23/6/2020

20/6/2020

LD002 Area 6(2)

W.O. No.#: -

Sample Type[#]: PT75 Sa

Sample Origin#: Contaminated soil mixed with 7.5%

Date Received: 20/6/2020

cement and 10% sand

Information provided by Client

intermedent provided by energy				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	146.8
	300-LCOTA	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1% of axial strain and the peak axial compressive stress is reached at 0.8%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0	-	0.09	90	4524.5	19.89
0.10	0.1	-	0.50	500	4527.6	110.43
0.21	0.1	-	0.85	850	4530.9	187.60
0.30	0.2	-	1.17	1170	4533.9	258.06
0.41	0.3	-	1.59	1590	4537.2	350.44
0.50	0.3	-	2.04	2040	4540.1	449.33
0.61	0.4	-	2.56	2560	4543.3	563.47
0.70	0.5	-	3.20	3200	4546.3	703.87
0.80	0.5	-	3.99	3990	4549.4	877.04
0.90	0.6	-	4.93	4930	4552.5	1082.93
1.00	0.7	-	6.15	6150	4555.6	1349.98
1.10	0.7	-	8.54	8540	4558.7	1873.35
1.20	0.8	-	8.62	8620	4561.9	1889.57
1.30	0.9	-	8.29	8290	4565.0	1815.97
1.41	1.0	-	7.80	7800	4568.3	1707.44

Report No.: SLST0200103 Job No.: SHK200031





Soil Services Testing Company Limited

Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

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Report No.: SLST0200104

Job No.: SHK200032

Page: 1 of 2

Report on Unconfined Compression Test - Summary of Soil Properties

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Client#: Sang Hing - Kuly Joint Venture YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works Project#:

Hole No.#: Depth (m)#: -Date of Test: 26/6/2020

S3-SC074A 24/6/2020 Actual Depth (m): -Sample No.#: W.O. No.#: -

LD002 Area 6(3) Sample Type#:

Sample Origin#: Contaminated soil mixed with 7.5% PT75 Date Received: 24/6/2020

cement and 10% sand

Specimen Details

Diameter of specimen	mm	75.9	Wet mass of specimen	g	1079.3
Length of specimen	mm	149.8	Dry mass of specimen	g	_
Area of specimen	mm ²	4524.5	Moisture content	%	
Volume of specimen	cm ³	677.77	Bulk density	Mg/m ³	1.59
Particle density (assumed/measured)*	Mg/m ³	2.65	Dry density	Mg/m ³	_

^{*} Delete whichever is inappropriate

Visual Description: Light brownish grey sandy SILT/CLAY with Cement

Particle size assessment before test: The size of the largest particle does not exceed 1/5 of the diameter of the specimen.

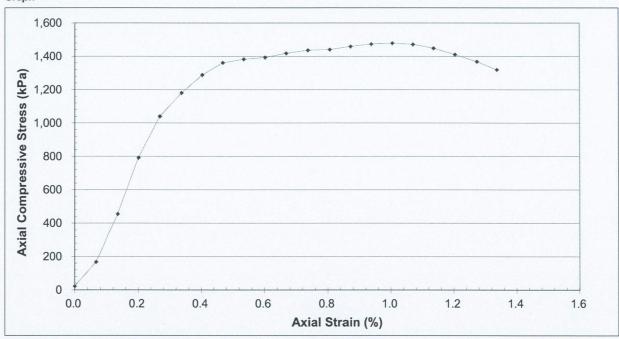
Compression Results

Maximum axial stress	1479	kPa	
Axial strain at failure	1.0	%	
Unconfined compressive strength, (qu)	1479	kPa	

Sketch of failure conditions Inclination of shear surface



Graph



Mixing Date: 22/6/2020

Note: The results relate only to the tested sample as received.

Checked by: LAU Chun Ming

HUI King Fai

Date: 26 June 2020 Date: 29 June 2020

[#] Information provided by Client



Client#:

Project#:

Hole No.#:

Sample No.#:

Soil Services Testing Company Limited

Unit 04 & 10, 13/F, Luen Cheong Can Centre, 8 Yip Wong Road, Tuen Mun, New Territories, Hong Kong.

: +852 2463 0609 Fax E-mail: sst@soilservices.com.hk



Report on Unconfined Compression Test - Compression Data

Test Method: Determination of the Unconfined Compressive Strength (Load Frame Method)

Tested in Accordance with: BS1377-7:1990 Clause 7.2

Sang Hing - Kuly Joint Venture

Depth (m)#: -

S3-SC074A Actual Depth (m): -

24/6/2020

LD002 Area 6(3)

Sample Origin#: Contaminated soil mixed with 7.5% Sample Type#: PT75

cement and 10% sand

YL/2017/03 Development of Lok Ma Chau Loop - Land Decontamination and Advance Engineering Works

Date Received: 24/6/2020

W.O. No.#: -

Date of Test: 26/6/2020

Report No.: SLST0200104

Job No.: SHK200032

Page: 2 of 2

Information provided by Client

illorination provided by olient				
Machine No.	TM10	Rate of deformation	mm/min	1.00
Deformation gauge No.	TM10-PR-DT50	Deformation gauge constant	mm/digit	0.001
Proving Ring No.	-	Proving Ring constant	kN/mm	-
Force Transducer No.	SUC-LC01A	Original length (L _o)	mm	149.8
	SUC-LCUTA	Original area (A _o)	mm ²	4524.5

The compression was terminated at 1.3% of axial strain and the peak axial compressive stress is reached at 1.0%.

Termination criterion: Terminate the test after the peak axial compressive stress is reached or at an axial strain of at least 20%, whichever occurs first.

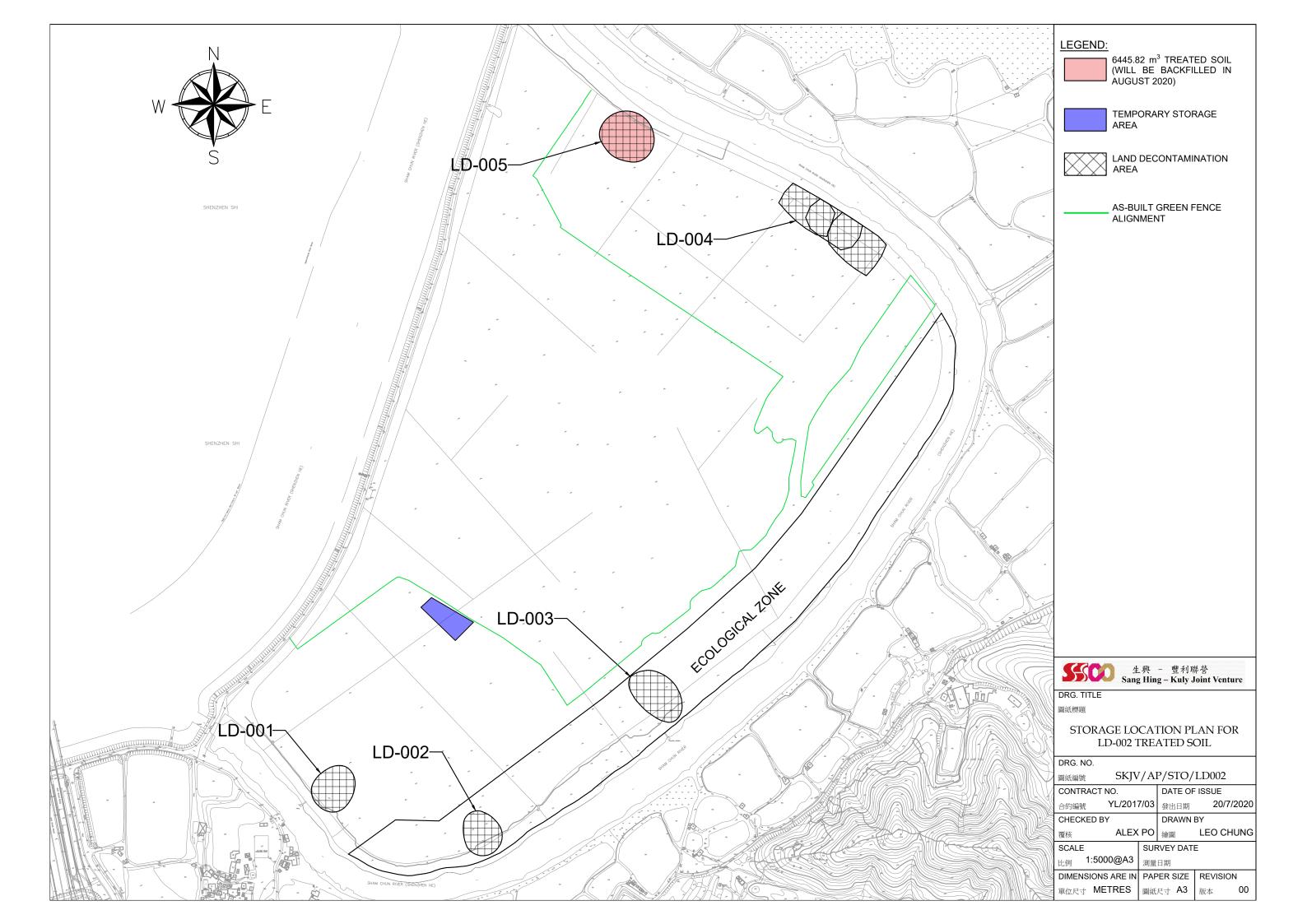
Raw data are printed in Italic

Axial	Axial	Proving	Load	Axial	Cross-	Axial
Deformation	Strain	Ring Gauge	Cell	Force	section Area	Compressive Stress
Reading	3	Reading	Reading	P	Α	σ_1
(mm)	(%)	(mm)	(kN)	(N)	(mm ²)	(kPa)
0.00	0.0		0.10	100	4524.5	22.10
0.10	0.1	-	0.76	760	4527.6	167.86
0.20	0.1	-	2.06	2060	4530.6	454.69
0.30	0.2	-	3.59	3590	4533.6	791.86
0.40	0.3	-	4.72	4720	4536.7	1040.40
0.50	0.3	-	5.36	5360	4539.8	1180.67
0.60	0.4	-	5.85	5850	4542.8	1287.75
0.70	0.5	-	6.19	6190	4545.8	1361.69
0.80	0.5	-	6.29	6290	4548.9	1382.77
0.90	0.6	-	6.34	6340	4551.9	1392.81
1.00	0.7	-	6.46	6460	4555.0	1418.23
1.10	0.7	-	6.55	6550	4558.1	1437.00
1.21	0.8	-	6.57	6570	4561.3	1440.37
1.31	0.9	-	6.66	6660	4564.3	1459.14
1.41	0.9	-	6.73	6730	4567.4	1473.50
1.51	1.0	-	6.76	6760	4570.4	1479.07
1.60	1.1	-	6.73	6730	4573.5	1471.52
1.70	1.1	-	6.63	6630	4576.5	1448.71
1.80	1.2	-	6.46	6460	4579.7	1410.59
1.91	1.3		6.27	6270	4582.9	1368.13
2.00	1.3	-	6.05	6050	4585.8	1319.28

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Appendix E	TREATED SOIL TEMPORARY AND PERMANENT LOCATION PLAN	



Appendix F PHOTOGRAPHICAL RECORD

Photographical Record



8) (A) (H) (9) (A)

Photo 1
Mixing area of contaminated soil

<u>Photo 2</u> Soil sample collected at LD-002



Photo 3
Confirmatory sampling at LD-002



<u>Photo 4</u> Condition of temporary backfilled treated soil

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