Black & Veatch Hong Kong Limited

Agreement No. CE 8/2015 (WS)
First Stage of Desalination Plant at Tseung Kwan O – Investigation, Design, Construction

CONTAMINATION ASSESSMENT PLAN (CAP) & CONTAMINATION ASSESSMENT REPORT (CAR)

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Date:	16 February 2017

SMEC Asia Limited

Contract No. WSD/SO/16/086
Quotation Ref. WQ/16/A032
Provision of Independent Environmental Checking Service for Investigation, Review and Design of First Stage of Tseung Kwan O Desalination Plant

CONTAMINATION ASSESSMENT PLAN (CAP) & CONTAMINATION ASSESSMENT REPORT (CAR)

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Issue 205-5

CONTAMINATION ASSESSMENT PLAN (CAP) & CONTAMINATION ASSESSMENT REPORT (CAR)

Agreement No. CE 8/2015 (WS)

First Stage of Desalination Plant at Tseung Kwan O

– Investigation, Design and Construction

B&V PROJECT NO. 190495/29.2050

Report Authorized For Issue By:

For and on Behalf of
Black & Veatch Hong Kong Limited

PREPARED FOR

Water Supplies Department

15 FEBRUARY 2017

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DOCUMENT CONTROL		Agreement No. CE 8/2015 (WS) First Stage of Desalination Plant at Tseung Kwan O – Investigation, Design and Construction	**No: 190495/29.2050 Issue 205-5**
AMENDMENT RECORD			**Prepared By: B&V**
Contamination Assessment Plan (CAP) & Contamination Assessment Report (CAR)		Client: Water Supplies Department	**Initials: ET**
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Pages	Date	Issue No.	Description	Initials
All	Aug 2016	1	Issue 1	ET
All	Aug 2016	2	Comments from WSD	ET
All	Oct 2016	3	Comments from EPD	ET
All	Jan 2017	4	Comment from EPD	ET
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	Name	Signature	Date
Prepared	Esther Tong		17.2.2017
Checked	Lorinda Lee		17.2.2017
Reviewed	Christina Ko		17.2.2017

1 Introduction

1.1 Background

1.1.1 Water Supplies Department appointed Black & Veatch Hong Kong Limited (B&V) to undertake the consultancy "Agreement No. CE 8/2015 (WS) First Stage of Desalination Plant at Tseung Kwan O – Investigation, Design and Construction" on 16 November 2015.

1.1.2 The purpose of the project is to construct a seawater reverse osmosis (SWRO) desalination plant at Tseung Kwan O (TKO) Area 137, together with all ancillary facilities and the slope mitigation works in the adjoining Clear Water Bay Country Park.

1.1.3 The first stage of the proposed SWRO desalination plant will have a water production capacity of 135,000 cubic meters (m^3) per day with provision for future expansion to the ultimate capacity up to 270,000 m^3 per day when necessary.

1.1.4 The proposed desalination plant is a key supply management initiative under the Total Water Management (TWM) strategy promulgated in 2008. As one of the key supply management initiatives, the desalination plant will help diversify the water supply resources and serve as a new water source to better prepare Hong Kong for uncertainties such as acute climate change and low rainfall. Under the TWM strategy, Hong Kong should broaden its strategic investment in advanced water treatment for desalination of seawater.

1.2 Objective of the Land Contamination Review

1.2.1 The objectives of this report are to:

(1) review the land contamination status of the potential hotspots within the temporary explosive magazine site identified in EIA report and the approved CAP and CAR carried out by MTRCL for the Project, Shatin to Central Link – Tai Wai to Hung Hom Section; and

(2) review the any further potential contamination activities after the completion of the CAR carried out by MTRCL.

1.3 Structure of this Report

1.3.1 The report is structured as follows:

Section 1: Introduction.

Section 2: Land Contamination Review

Section 3: Recommendations

Section 4: References.

2 Land Contamination Review

2.1 Environmental Impact Assessment (EIA) Report

2.1.1 In the Environmental Impact Assessment carried out for "Agreement No. CE21/2012 (WS) Desalination Plant at Tseung Kwan O", potential land contamination areas at the magazine site operated by MTRCL were identified, namely at the generator room and part of the vehicle access road leading to the storage of the waste chemical drums (please refer to Figure 8A.1 of the EIA report AEIAR-192/2015).

2.1.2 As the magazine site was still occupied by MTRCL at the time of the EIA Report, soil sampling could not be conducted to assess the contamination of the site, if any. Nonetheless, it was noted that before the hand-over of the magazine site to WSD for development of the

desalination plant, MTRCL would carry out Contamination Assessment Plan and the Contamination Assessment Report and report any findings and measures required. The findings of the magazine site during the EIA are as follows:

Findings from the magazine storage

2.1.3 During the site reconnaissance, no chemicals were observed being stored within the magazine storages and no aboveground/ underground storage tanks was observed/ reportedly present. The concrete ground surface was maintained in good condition and the structure of the magazine storages provided cover to explosives and detonators from adverse weather. No sign of leakage or spillage of explosive or detonator was observed. Therefore, it is anticipated the risk of land contamination due to activities performed within the magazine storages is minimal.

Findings from the generator room

2.1.4 The generator room was located approximately 20m southeast of the magazine storages, separated by an unpaved vehicle access road. The generators inside the generator room provided electricity for the site office of the magazine storages and were managed by the site contractor. The generator room occupied an approximate area of 10m x 20m, housing a total of 4 diesel-fired generator sets. The generator room was paved with concrete and enclosed by corrugated metal sheets.

2.1.5 The generator sets were provided with secondary containments. However, oil stains were observed on the paved ground inside the generator room. Approximately 10 diesel oil drums (with capacity of 2 Liters / drum) were stored within the generator room and no secondary containment was provided.

2.1.6 Although the generator room is paved, obvious signs of spillage of diesel oil were observed within the generator room. Also, the surrounding area of the generator house is unpaved. The possibility of spilled diesel oil leaking out from the generator room and causing land contamination cannot be ruled out.

Findings from the vehicle access road

2.1.7 The vehicle access road connecting the magazine storages, the jetty, the fire hydrant tank and the generator room was unpaved. During the site reconnaissance, approximately 30 waste chemical drums labelled 'bituminous waterproofing emulsion' were found stored at the side of the vehicle access road southwest of the magazine storages. No secondary containment was provided for these chemical drums and potential leakage from these waste chemical drums could impact the underlying soil.

2.2 Environmental Permit No. EP-503/2015

2.2.1 According to the approved EIA for "Agreement No. CE 21/2012 (WS) Desalination Plant at Tseung Kwan O" (hereinafter referred to as "desalination EIA") (AEIAR-192/2015), a small area covered by the temporary explosive magazine site was identified with potential land contamination. As the site was still occupied by the operator of the magazine site at the time of the EIA, further soil sampling was unable to be conducted. Nonetheless, it was noted that before the hand-over of the magazine site to WSD for development of the desalination plant, the owner of the magazine site and its contractor shall ensure the site is properly cleaned up.

2.2.2 The Environmental Permit No. EP-503/2015 was issued for the Desalination Plant at Tseung Kwan O on 4 December 2015. With reference to EP Condition 2.17 of EP-503/2015 which states:

"The land contamination assessment for the Magazine Site at TKO area shall be carried out when the site is available for access.

- No later than 1 month before the commencement of the land contamination site investigation, submit 3 hard copies and 1 electronic copy of Contamination Assessment Plan (CAP) to the Director for approval. The CAP shall include proposal with details of representative sampling and analysis required to determine the nature and extent of contamination;
- No later than 1 month after the completion of the land contamination site investigation works, submit 3 hard copies and 1 electronic copy of Contamination Assessment Report (CAR) to the Director for record which documents the land contamination assessment findings. If land contamination is confirmed, the Permit Holder shall also submit to the Director for approval 3 hard copies and electronic copy of Remedial Action Plan (RAP) to formulate necessary remedial measures.

Before submission to the Director, the CAP, CAR and RAP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA Report (Register No. AEIAR-192/2015)."

2.3 Magazine Site

2.3.1 The magazine site was previously occupied by MTRC for storage of the explosives, prior to handover of the site to Lands Department and in accordance with the Environmental Permit (EP) Condition 2.36 (a), (b) and (c) of Shatin to Central Link - Tai Wai to Hung Hom Section (EP No.: EP-438/2012/J), the permit holder MTR Corporation Limited prepared and submitted the CAP and CAR for the Environmental Protection Department's (EPD) approval.

2.3.2 If land contamination and the need for remediation is confirmed necessary, the Permit Holder shall submit Remediation Action Plan (RAP) to formulate necessary remedial measures. All remedial measures described in the approved RAP shall be fully implemented. The Permit Holder shall also submit Remediation Report (RR) for approval.

2.4 Contamination Assessment Plan (CAP)

2.4.1 MTRC prepared the CAP in accordance with Part C Clause 2.36 of EP-438/2012/J. The CAP was submitted to the Environmental Protection Department (EPD) and the CAP was subsequently accepted and approved by EPD on 22 April 2016 (Appendix A). Further to the approval of CAP for the temporary magazine site at TKO Area 137, the land contamination investigation was conducted by the MTRCL.

2.5 Contamination Assessment Report (CAR)

2.5.1 The CAR for the magazine site was submitted by MTRC in accordance with Part C Clause 2.36 of EP-438/2012/J. The CAR was subsequently accepted and approved by EPD on 15 June 2016 (Appendix B)

2.5.2 The CAR indicated none of the soil samples exceeded the corresponding Risk-based Remediation Goals (RBRG) level, and therefore no contamination was therefore identified for the magazine site.

2.5.3 Further soil sampling and analysis is for the desalination plant site is considered not necessary.

3 Recommendations

3.1.1 Potential risks of land contamination due to the operational activities of the magazine storages were identified in the desalination EIA report, namely at the generator room and the waste chemical drums storage at the side of the vehicle access road of the magazine site.

3.1.2 These potential land contamination areas identified in the desalination EIA are the same as those areas identified by MTRCL in the CAP prepared under EP Clause 2.36 of MTRCL's EP-

438/2012/J. Therefore, the approved CAP prepared by MTRCL fully covers the potential land contamination areas identified in the desalination EIA report at the Magazine site.

3.1.3 Since the CAP and CAR of the Magazine Site at TKO area have been conducted by MTRCL under the EP Condition 2.36 of EP-438/2012/J, and the CAR for the magazine site indicated that none of the soil samples exceeded the corresponding Risk-based Remediation Goals (RBRG) level, no contamination was therefore identified for the temporary explosive magazine site.

3.1.4 B&V conducted a site visit on 8 June 2016 after the completion of MTRCL's CAP and CAR. No potential land contamination activities were observed on site at Magazine Site at TKO area.

3.1.5 The details of site observations and photos are enclosed in Appendix C. All previously erected facilities had been demolished and removed by MTRCL. There were no stressed vegetation, stained surfaces, potential off-site sources of contamination, sumps, effluent, interceptors, lagoons, noticeable odours and chemicals. Also, there was no on-site landfill. The surrounding land use includes CEDD Public Fill Bank at the North and West of the site, Sea (Joss House Bay) at the South of the site and Country Park at the East of the site. Therefore, further soil sampling and analysis for the desalination plant site is considered unnecessary.

3.1.6 It is recommended that the land contamination assessment as per EP Condition 2.17 of EP-503/2015 at the magazine site is not required.

4 Conclusion

4.1.1 This CAP and CAR is to fulfill Condition 2.17 of the Environmental Permit No. EP-503/2015.

4.1.2 These potential land contamination areas identified in the desalination EIA are the same as those areas identified by MTRCL in the CAP prepared under EP Clause 2.36 of MTRCL's EP-438/2012/J. Therefore, the approved CAP prepared by MTRCL fully covers the potential land contamination areas identified in the desalination EIA report at the Magazine site.

4.1.3 Since the CAP and CAR of the Magazine Site at TKO area have been conducted by MTRCL under the EP Condition 2.36 of EP-438/2012/J, and the CAR for the magazine site indicated that none of the soil samples exceeded the corresponding Risk-based Remediation Goals (RBRG) level, no contamination was therefore identified for the temporary explosive magazine site. B&V conducted a site visit on 8 June 2016 after the completion of MTRCL's CAP and CAR. No potential land contamination activities were observed on site at Magazine Site at TKO area.

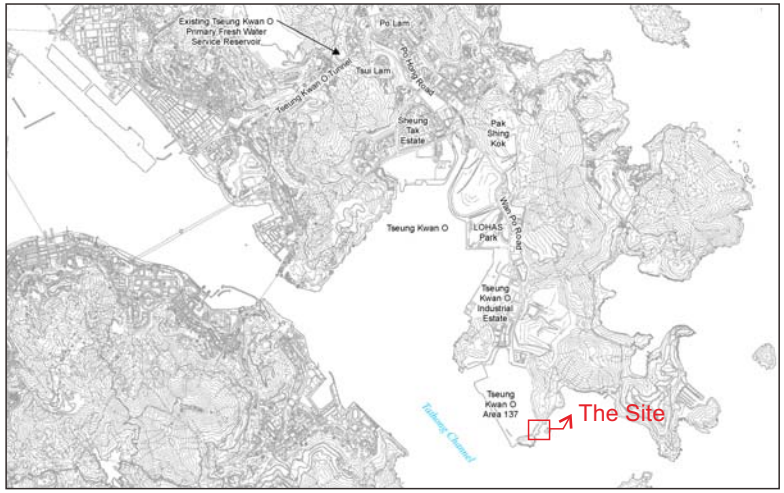
4.1.4 The findings of CAP and CAR of the MTRCL Project are considered valid and applicable to the Desalination Plant at Tseung Kwan O.

5 References

(1) MTR Corporation Limited Shatin To Central Link Tai Wai to Hung Hom Section Contamination Assessment Plan for Magazine Site at TKO Area 137 (22 April 2016)

(2) MTR Corporation Limited Shatin To Central Link Tai Wai to Hung Hom Section Contamination Assessment Report for Magazine Site at TKO Area 137 (3 June 2016)

DRAWINGS



Key

- Observed Diesel Oil Spillage
- Magazine Storages
- Pump Room
- Generator Room
- Fire Hydrant Tank
- Site Contractor Office
- Waste Chemical Drums Storage
- Paved Vehicle Access Road
- Unpaved Vehicle Access Road

Jetty

N

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial					
Date					

Agreement No.
CE 21/2012 (WS)

Contract title
DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY

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SITE LAYOUT MAP

Drawing no.
FIGURE 8A.1

Revision

Scale

水務署
Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

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Date: 6/3/2015

APPENDIX A

APPROVED CONTAMINATION ASSESSMENT PLAN (CAP) PREPARED BY MTRCL

MTR Corporation Limited

Shatin to Central Link
Tai Wai to Hung Hom Section

Contamination Assessment Plan for Magazine Site at TKO Area 137

Certified by: Richard Kwan

Position: Environmental Team Leader

Date: 22 Apr 2016

MTR Corporation Limited

Shatin to Central Link
Tai Wai to Hung Hom Section

Contamination Assessment Plan for Magazine Site at TKO Area 137

Verified by: Frederick Leong

Position: Independent Environmental Checker

Date: 22 APRIL 2016

MTR Corporation Limited

Shatin to Central Link – Tai Wai to Hung Hom Section

Land Contamination Assessment of Magazine Site at TKO Area 137

Contamination Assessment Plan

Final | April 2016

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ARUP

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		Name			
		Signature			
				Issue Document Verification with Document	✓

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Appendix

1 Introduction

1.1 Project Background

1.1.1 MTR Corporation Limited (MTRC) commissioned Ove Arup & Partners Hong Kong Limited (Arup) as the Consultant for undertaking the land contamination assessment of Magazine Site at TKO Area 137 (the Site) for the Shatin to Central Link – Tai Wai to Hung Hom Section [SCL(TAW-HUH)].

1.1.2 The Site is located within Area 137, Tseung Kwan O. The temporary above-ground magazine site for the storage of explosives previously used by Kwun Tong Extension (KTE) was handed to the SCL1103 project to support the construction of the drill and blast tunnelling works for the SCL(TAW-HUH) project. The relevant handover certificates are annexed in **Appendix 1.1**.

1.1.3 After the completion of the decommissioning works of the Magazine Site, the land will be handover to the relevant government departments. Location of the Site is shown in **Figure 1.1**.

1.1.4 According to EP Condition 2.36 of the Environmental Permit of SCL(TAW-HUH) (No. EP-438/2012/J), a land contamination assessment for the temporary explosive magazine site at Area 137, Tseung Kwan O shall be carried out. A Contamination Assessment Plan shall be prepared to the Director of Environment (DEP) for approval no later than one month before the commencement of the land contamination site investigation. A Contamination Assessment Report (CAR) shall be submitted to document the findings of the land contamination assessment findings. If land contamination is confirmed, a Remedial Action Plan (RAP) shall be submitted to formulate necessary remedial measures. A Remediation Report (RR) shall also be submitted after the completion of the remediation works.

1.2 Objectives

1.2.1 The purpose of this Contamination Assessment Plan (CAP) is to provide information, guidance and instruction to characterise land contamination and identify where contaminations are or may be present during the construction and operation within the Site. The objectives of this CAP are:

- To provide an account of the landuse within the Site boundary and relevant past landuse history in relation to possible land contamination;
- To identify areas of potential contamination; and
- To identify the chemicals of concern and scoping of requirements for sampling and laboratory testing of soil and groundwater samples.

1.3 Statutory Legislation and Evaluation Criteria

1.3.1 This CAP is prepared in accordance with the following Technical Memorandum and Guidance Notes:

- Practice Guide for Investigation and Remediation of Contaminated Land, EPD, August 2011;
- Guidance Note for Contaminated Land Assessment and Remediation, EPD, August 2007; and
- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD, December 2007; and
- Annex 19 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO).

1.3.2 In accordance with EPD's Guidance Note for Contaminated Land Assessment and Remediation, a contamination assessment evaluation should:

- provide a clear and detailed account of the present landuse and the relevant past land history, in relation to possible land contamination;
- identify areas of potential contamination and associated impacts, risks or hazards; and
- submit a plan to evaluate the actual contamination conditions for soil and/or groundwater, if required.

1.3.3 The EPD's Guidance Note includes a summary of the general steps of a detail contamination assessment study.

1.3.4 Under the Annex 19 of the TM-EIAO, consideration shall be given to a number of potentially contaminating historical land uses, including but not limited to, oil installations, gas works, power plants, shipyards/boatyards, chemical manufacturing/processing plants, steel mills/metal workshops, car repair and dismantling workshops and dumping ground and landfill, as having the potential to cause or have caused land contamination.

1.3.5 This CAP has been prepared to set out the requirements for a baseline contamination evaluation of the Site. A Contamination Assessment Report (CAR) will be prepared following site investigation activities. If contamination is identified in the CAR, a Remediation Action Plan (RAP) should be developed to formulate appropriate remedial measures. The RAP should follow the requirements specified in EPD's Practice Guide for Investigation and Remediation of Contaminated Land. A Remediation Report (RR) should be prepared to demonstrate adequate clean-up and submitted to EPD for agreement prior to the commencement of any development works at the contaminated areas.

1.4 Structure of this Report

1.4.1

The structure of this CAP is as follows:

Section 1 gives an introduction of the project background and this CAP

Section 2 presents the findings of the site appraisal

Section 3 identifies the potential contaminated site

Section 4 proposes the sampling and testing schedule and presents the potential health risk and environmental impacts

Section 5 presents the reporting programme

2 Site Appraisal

2.1 Desktop Review

2.1.1 A desktop study has been conducted to review past and present landuse, activities and installations within the Site that may pose potential for land contamination.

2.1.2 The following sections present the findings from desktop review.

Review of Aerial Photos

2.1.3 The development history of the Site was reviewed with the aid of aerial photographs from Year 1982 to 2014. A total of six historical photographs were selected and the key findings are summarized in **Table 2.1**. These historical photographs are shown in **Appendix 2.1**.

Table 2.1: Description of Historical Landuse of the Site

Year	Site Description
1982	The Site was part of the sea (Junk Bay). Reclamation had not been carried out in 1982.
1993	No significant change was observed.
2000	Reclamation was completed and the Site was vacant.
2004	Vegetation was observed in the centre of the Site, whereas remaining parts remained as vacant.
2010	No significant change in land use was observed.
2014	The current magazine site was observed

Review of approved EIA report

2.1.4 The approved EIA report *"Agreement No. CE21/2012 (WS) – Desalination Plant at Tseung Kwan O – Feasibility Study"* (AEIAR 192/2015) (hereinafter referred to as "the approved EIA report") was reviewed. From the approved EIA report, it is found that the ground of the magazine storage was concrete paved in good condition and no chemical was observed being stored within the magazine storage. In addition, no aboveground / underground oil tank was observed nor reported. Also, no sign of leakage or spillage of explosive or detonator was observed within the magazine storage. Hence, the approved EIA report concluded that the risk of potential land contamination within the magazine storage is low.

2.1.5 In addition, the approved EIA report stated that the generator room at the southeast of the magazine site was paved with intact concrete and enclosed from surrounding by corrugated metal sheets. The generators inside the generator room were provided with secondary containments. However, oil stains were observed on the concrete paved ground inside the generator room and around the diesel oil drums which were stored inside the generator room without secondary containment.

2.1.6 Furthermore, waste chemical drums with the label "bituminous waterproofing emulsion" were observed at the side of the vehicle access road southwest of the magazine storages. No secondary containment

was observed for the waste chemical drums. According to the photo records of the approved EIA report, it is estimated that the dimension of the storage area is around 6m x 4m.

2.1.7 Based on the findings of the approved EIA Report, potential land contamination at the generator room and the vehicle access road cannot be ruled out. A site visit was conduct to examine the current site conditions (refer to **Section 2.2**).

Review of Environmental Review Report

2.1.8 According to the Environmental Review Report (ERR) submitted for the application for Variation of Environmental Permit (VEP-495/2016) in February 2016 for SCL(TAW-HUH), it was reported that the Site was occupied by the SCL(TAW-HUH) Project since December 2014. During the operation of the magazine site by the SCL(TAW-HUH) Project between December 2014 and Q2 2016, the oil drums were stored properly inside the intact concrete paved generator room with drip trays and no spillage or leakage of oil/ waste oil was observed or recoded. Moreover, there was no chemical or chemical waste stored in other areas except the generator room.

2.1.9 As such, the ERR concluded that it is not anticipated that there was potential land contamination issue caused by the SCL(TAW-HUH) Report.

2.2 Site Survey

2.2.1 A site survey was conducted on 14 March 2016 to identify the existing land use within the Site which may have potential for causing soil contamination. The findings of the site survey are described as follows and the site survey photos are presented in **Figure 2.1**. The site survey checklist is annexed in **Appendix 2.2**.

2.2.2 The findings of the site survey were largely tally with the findings of the approved EIA report and the ERR report as stated in **Section 2.1**.

2.2.3 The magazine storage was concrete paved in good condition and no chemicals were found to be stored within the magazine site (**Photo 1**).

2.2.4 Similar to the findings of the approved EIA report and the ERR report, a generator room was observed in the southeast of the magazine store. The generator room was paved with intact concrete and enclosed by corrugated metal sheets. The bottom of the corrugated metal sheets was sealed with the concrete slab with cement. Also, the area that immediately next to the generator room was concrete paved (**Photo 2**). Diesel-fired generators and oil drums with drip trays were observed inside the generator room (**Photo 3**). Although the generators and the oil drums with drip trays were placed on a concrete slab, oil stains were observed on the concrete slab (**Photo 4**).

2.2.5 A fire hydrant tank and a pump room were also observed next to the generator room. Both the fire hydrant tanks and the pumps were placed on thick concrete slab (**Photo 5** and **Photo 6**). No oil stain or other sign of potential land contamination was observed near the fire hydrant tank

and the pump room.

2.2.6 For the waste chemical drums storage on the vehicle access road that previously identified in the approved EIA report, the vehicle access road was cleared during the site visit. No waste chemical drum nor oil stain was observed during the site survey (**Photo 7**).

2.3 Geological Information

2.3.1 Based on the review of previous ground investigation (GI) reports undertaken near the vicinity of the Site, the Site is generally underlain by a layer of gravel down to 9 m below ground level (m bgl). A 2.5m-thick layer of marine deposit is found beneath of the fill layer. The alluvium and tuff layer is found underneath. **Table 2.2** summarised the underground geology.

Table 2.2: Summary of the Drillhole Record

Depth (m bgl)	Description
0 – 9	Medium to coarse gravel with concrete, wood and brick fragments.
9.0 – 11.5	Marine deposit
11.5 and below	Alluvium and tuff

2.4 Future Land-use

2.4.1 The RBRGs have developed four different post-restoration land uses, namely “Urban Residential”, “Rural Residential”, “Industrial” and “Public Parks”, to reflect actual settings which people could be exposed to contaminated soil or groundwater. Definitions of post-restoration land uses are given in EPD’s Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management.

2.4.2 According to the approved EIA report, the Site will be developed into a desalination plant. Hence, “Industrial” land use will be adopted for result comparison for this land contamination assessment.

3 Potentially Contaminated Area

3.1 Identification of Potentially Contaminated Sites

3.1.1 Identification of potentially contaminated areas with the Site has been done with reference to EPD's *Practice Guide for Investigation and Remediation of Contaminated Land* and with the aid of the information collected from desktop review of selected historical aerial photos and previously approved EIA report and ERR report and from site survey.

3.1.2 From the site survey, oil stains were observed on the intact concrete slab of the generator room but not the part of the vehicle access road that previously store the waste chemical drums.

3.1.3 Also, as revealed from the approved EIA report, potential land contamination area was identified in both generator room and the part of the vehicle access road for storing waste chemical drums.

3.1.4 Based on the findings from the approved EIA report and site survey, the potential land contamination area identified could be divided into two parts according to the historical landuse nature, namely, the generator room (Area A) and the part of the vehicle access road where waste chemical drums were stored (Area B). The details are summarized in **Table 3.1** and shown in **Figure 3.1**.

3.2 Environmental Site Investigation

3.2.1 Environmental site investigation (SI) is recommended to be carried out at the two potentially contaminated sites, i.e. Area A and Area B to determine the types and quantities of contaminants that could be present in the sites. Details of the potentially contaminated areas and the number of sampling locations to be proposed in each area will be based on a hot-spot approach, i.e. sampling point will be located at or near potential sources of contamination identified.

Table 3.1: Potentially Contaminated Area

Site ID	Landuse	Approximate Area (m^2)	Potential Contamination Sources	Number of Recommended Sampling Locations	Trial Pit No.	Justification
Area A	Generator Room	66 [1]	Leakage of diesel from the generator and the oil drums	2	TP1	Potential leakage from oil drums with drip tray
					TP2	Oil stains on the concrete slab around the generators

Site ID	Landuse	Approximate Area (m^2)	Potential Contamination Sources	Number of Recommended Sampling Locations	Trial Pit No.	Justification
Area B	Waste chemicals drums storage	48 [2]	Leakage of the chemicals "bituminous waterproofing emulsion" from the waste chemical drums	2	TP3	Potential leakage from waste chemical drums
					TP4	

Note:
[1] The area of the generator room is provided by MTRC.
[2] The area of the waste chemicals drum storage was estimated from the approved EIA report.

4 Site Investigation

4.1 Proposed Site Investigation

4.1.1 Two potentially contaminated areas have been identified in **Section 3** based on the review of historical information and site survey. Site investigation is needed to determine the types and quantities of contaminants within the Site.

4.1.2 In view of the Area A covers 66m^2, two sampling locations are proposed to cover the identified hotspots (i.e. potential leakage from oil drums (TP1) and the oil stains around the generator (TP2)). The proposed locations are shown in **Figure 3.1**.

4.1.3 The area of the waste chemical drums storage (i.e. Area B) is estimated to be around 48m^2 based on the approved EIA report. Two sampling locations (TP3 and TP4) were also proposed to cover the potentially contaminated area. The proposed locations are shown in **Figure 3.1**.

4.1.4 According to approved EIA report, both potential contamination areas would be used as a car park of the desalination plant. As such, deep excavation is not anticipated for both contamination areas. The termination sampling depth of 3.0 meters below ground level (mbgl) is proposed for soil sampling which is considered sufficient to cover the excavation extent. Therefore, the "trial pit" sampling method is considered for sampling. Three disturbed soil samples would be collected at depths of 0.5, 1.5 and 3.0 mbgl respectively.

4.1.5 The coordinates and sampling depths of the proposed trial pits are summarized in **Table 4.1** below.

Table 4.1: Sampling Strategy for Proposed Trial Pit

Trial Pit No.	Coordinates		Targeted Potentially Contaminated Areas [1]	Sampling Strategy			
	Easting	Northing		Termination Level (mbgl) [2], [3]	Sampling Depths (mbgl) [2], [3]	Soil Sampling	Groundwater Sampling
TP1	846651	814014	Area A	3.0	0.5, 1.5 and 3.0	✓	✓
TP2	846651	814008				✓	✓
TP3	846614	813979	Area B			✓	✓
TP4	846612	813976				✓	✓

Note:

[1]. Area A refers to the generator room and Area B refer to the waste chemical drum storage.

[2]. mbgl refers to metres below ground level.

[3]. The proposed termination levels are just for reference purpose. The exact termination levels and no. of soil samples of each trial pit should be decided by the on-site Land Contamination Specialist. If sign of contamination is observed during site investigation, further samples may be collected by drilling (if required) and the sampling depths and termination depths would be advised by the on-site Land Contamination Specialist.

4.2 Sampling and Testing Strategy

General

4.2.1 Sampling and analytical programme is proposed based on EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*. The sampling work procedures should follow appropriate protocols to minimize potentials for cross-contamination between samples and different sampling locations. The sampling methods are based on techniques developed by the USEPA, which include decontamination procedures, sample collection, preparation and preservation, as well as chain-of-custody documentation.

4.2.2 During the sampling activities, observations of soil and groundwater samples should be recorded by on-site personnel as supporting information for results interpretation.

Decontamination Procedures

4.2.3 Equipment in contact with the ground should be thoroughly decontaminated between each sampling event to minimize the potential for cross contamination. The equipment should be decontaminated by steam cleaning, washed with phosphate-free detergent and rinsed with water. A clean area immediately adjacent to the sample location should be established with a clean plastic sheet where all cleaned and foil wrapped equipment should be placed.

4.2.4 During sampling and decontamination activities, disposable latex gloves should be worn to prevent the transfer of contaminants from other sources. Disposable accessories, such as latex gloves, would be discarded properly after use.

4.2.5 The drilling equipment (if required) and sampling equipment should be cleaned according to the above procedures between sampling holes.

Soil Sampling

4.2.6 Trial pit sampling would be employed to collect soil and groundwater samples in view of the shallow excavation depth. Trial pits would be constructed manually. Exact location of soil sampling should be determined on site by the on-site Land Contamination Specialist based on observation. Sampling of soil should be made at the depth of 0.5m, 1.5m and 3.0m. The maximum depth of the trial pit would be 3mbgl.

4.2.7 If any sign of contamination is observed in the soil, the on-site Land Contamination Specialist would determine if the samples at greater depth would be needed in order to assess the contamination of the samples of greater depth. If it is decided that sampling of greater depth is required, drillhole sampling would be employed to collect soil samples.

4.2.8 If drill rig is used for drillhole sampling, decontamination procedure would be carried in accordance to the principle stated in **Section 4.2.3 – 4.2.5**.

Groundwater Sampling

4.2.9 Groundwater samples would be collected at each trial pit when groundwater is encountered. The decision on whether groundwater samples would be collected in accordance with the actual geological situation rests with the on-site Land Contamination Specialist.

4.2.10 Each sample would be truly representative of the groundwater at the point from which it is taken, without dilution or contamination by water from other sources or by other materials. Groundwater level and thickness of free product layer, if present, would be measured by dip meter and interface probe respectively, before groundwater samples are taken. Moreover, prior to groundwater sampling, the groundwater would be purged (at least three times volumes of the groundwater in the trial pit) to remove fine-grained materials and to collect freshly refilled groundwater samples. After purging, one groundwater sample would then be collected at each sampling location with a Teflon bailer, WaTerra Pump or similar device. The free products, if present, would also be sampled to allow identification by the laboratory.

4.2.11 If the permeability of the surrounding strata and storage is low, dewatering by purging may dry up the hole, in which case the on-site Contamination Specialist would decide whether the requirement to purge three times the liquid volume is to be waived.

4.2.12 After the dewatering process (and allowing groundwater to percolate back into the hole if it has been purged dry), enough quantity of groundwater sample would be collected from each trial pit, and then stored in different sample containers for analysis. Immediately after collection, samples would be transferred to labelled sample containers containing the necessary preservatives (supplied by the laboratory). Samples would be stored between $2^{o}C$ – $4^{o}C$, and delivered to the laboratory within 24 hours. All samples would be collected under chain-of-custody protocols.

Analytical Parameters

4.2.13 The collected soil and groundwater samples would be analysed for the parameters based on the land use types. Testing parameters have been selected with reference to the EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*. All samples should be analysed by a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory. The sampling and testing schedule is shown in **Table 4.2** and the analytical methods are shown in **Table 4.3**. Since the diesel-fired generators and diesel-containing drums were observed in Area A and the waste chemical drums containing organic chemicals were observed in Area B. The proposed testing parameters shall include the following:

- **Metals**: Antimony, Arsenic, Barium, Cadmium, Chromium III, Chromium VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc
- **Volatile Organic Compounds (VOCs)**: Acetone, Benzene, Bromodichloromethane, 2-Butanone, Chloroform, Ethylbenzene,

Methyl Tert-Butyl Ether (MTBE), Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene and Xylenes (Total)

- **Semi-volatile Organic Compounds**: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
- **Petroleum Carbon Ranges (PCRs)**: Carbon Ranges C6-C8, C9-C16 and C17-C35

Table 4.2: Sampling and Testing Schedule

Trial Pit No.	Potentially Contaminated Area	Sampling Type	Testing Parameters			
			Metals[1]	VOCs	SVOCs	PCRs
TP1 and TP2	Area A (Generator Room)	Soil at all sampling depths and groundwater	✓	✓	✓	✓
TP3 and TP4	Area B (Waste Chemical Drums Storage)		✓	✓	✓	✓

Note:

[1]. Only "Mercury" test is required for groundwater sample.

4.2.14 A HOKLAS accredited testing laboratory should be appointed to conduct chemical analysis for the soil and groundwater samples. All laboratory test methods should be accredited by the HOKLAS or one of its Mutual Recognition Arrangement Partners.

Table 4.3: Method of Analysis for Soil and Groundwater Samples

Parameter	Reference Analytical Method	Reporting Limit for Soil (mg/kg)	Reporting Limit for Groundwater (mg/L)
Metals			
Antimony	USEPA Method 6020	1.0	-
Arsenic		1.0	-
Barium		1.0	-
Cadmium		0.2	-
Chromium III	By Calculation	1.0	-
Chromium VI	USEPA Method 6020	1.0	-
Cobalt		1.0	-
Copper		1.0	-
Lead		1.0	-
Manganese		1.0	-
Mercury		0.05	0.0005
Molybdenum		1.0	-
Nickel		1.0	-
Tin		1.0	-
Zinc		1.0	-

Parameter	Reference Analytical Method	Reporting Limit for Soil (mg/kg)	Reporting Limit for Groundwater (mg/L)
VOCs			
Acetone	USEPA Method 8260	50	0.05
Benzene		0.2	0.005
Bromodichloromethane		0.1	0.005
2-Butanone		5	0.05
Chloroform		0.04	0.005
Ethylbenzene		0.5	0.005
Methyl tert-Butyl Ether		0.5	0.005
Methylene Chloride		0.5	0.05
Styrene		0.5	0.005
Tetrachloroethene		0.04	0.005
Toluene		0.5	0.005
Trichloroethene		0.1	0.005
Xylenes (Total)		2.0	0.02
SVOCs			
Acenaphthylene	USEPA Method 8270	0.5	0.002
Acenaphthene		0.5	0.002
Anthracene		0.5	0.002
Benzo(a)anthracene		0.5	-
Benzo(a)pyrene		0.5	-
Benzo(b)fluoranthene		1.0	0.001
Benzo(g,h,i)perylene		0.5	-
Benzo(k)fluoranthene		0.5	-
Bis-(2-Ethylhexyl)phthalate		5.0	-
Chrysene		0.5	0.001
Dibenzo(a,h)anthracene		0.5	-
Fluoranthene		0.5	0.002
Fluorene		0.5	0.002
Hexachlorobenzene		0.2	0.004
Indeno(1,2,3-cd)pyrene		0.5	-
Naphthalene		0.5	0.002
Phenanthrene		0.5	0.002
Phenol		0.5	-
Pyrene		0.5	0.002
PCRs			
C6-C8	USEPA Method 8260	5.0	0.02
C9-C16		200	0.5
C17-C35		500	0.5

Assessment Criteria

4.2.15 As mentioned in **Section 2.4**, "Industrial" would be adopted as the future landuse. Laboratory testing results from site investigation should be compared with "Industrial" RBRGs for the testing parameters stated in **Section 4.2.13**. The RBRGs for soil and soil saturation limits as well as groundwater and groundwater solubility limits for "Industrial" landuse are shown in **Appendix 4.1**.

Storage of Surplus Soil Samples

4.2.16 Landfill disposal may be a practical option if the scale of contamination is localized and the quantity of soil expected to require cleanup is small. Additional tests in terms of Toxicity Characteristic Leaching Procedure (TCLP) would be required to meet the criteria for disposal to landfills. Hence, surplus soil samples obtained during the site investigation would be stored for subsequent TCLP tests if identified necessary.

4.2.17 The allowable storage time for mercury in soil samples is 8 days while the storage time for the rest of the parameters in **Table 4.4** in soil samples could be up to 6 months. Soil samples, if stored beyond the allowable storage time, are not considered representative of the actual site conditions.

4.2.18 Nevertheless, as mentioned in **Section 4.6**, feasible measures should be implemented to minimize the amount of contaminated soils, if any, to be excavated from the site and to avoid disposal of contaminated soils, Any contaminated soils would be handled, treated and re-used on site as far as possible, and the landfill disposal would be treated as last resort for handling of contaminated soils.

4.2.19 Landfill disposal criteria for contaminated soil is shown in **Table 4.4**.

Table 4.4: Landfill disposal criteria for contaminated soil

Parameter	TCLP Limit (mg/L)	Referenced Analytical Method	Reporting Limit (mg/L)
Cadmium	10	USEPA Method 1311 and 6020	0.01
Chromium	50		0.1
Copper	250		0.1
Nickel	250		0.1
Lead	50		0.1
Zinc	250		0.1
Mercury	1		0.002
Tin	250		0.1
Silver	50		0.1
Antimony	150		0.1
Arsenic	50		0.1
Beryllium	10		0.1
Thallium	50		0.01

Parameter	TCLP Limit (mg/L)	Referenced Analytical Method	Reporting Limit (mg/L)
Vanadium	250		0.1
Selenium	1		0.02
Barium	1000		0.1

Ref:
EPD's Practice guide for Investigation and Remediation of Contaminated Land

Quality Assurance and Quality Control (QA/QC)

4.2.20 A proper QA/QC program should be established so that the data collected are accurate and representative of actual soil (and groundwater, if encountered) conditions. At each sampling location, samples will be collected using pre-cleaned sampling equipment.

The QA/QC Programme would include the following:

- 1 duplicate sample per 20 samples;
- 1 equipment blank sample per 20 samples;
- 1 field blank sample per 20 samples; and
- 1 trip blank per trip for the analysis of volatile parameters.

Sample Handling, Packaging and Transport

4.2.21 The soil and groundwater sampling should be conducted by an experienced sampling technician and supervised by an on-site Land Contamination Specialist, and appropriate procedures should be adhered to. Sampling methodologies are based on the techniques developed by the USEPA. Sampling tools should be cleaned thoroughly before, in-between and after each sampling. Special care would be taken to prevent any cross contamination of samples during collection, handling and storage.

4.2.22 Sample containers should be laboratory cleansed, airtight and made of glass or other suitable materials with Teflon-lined lids so that the container does not react with sample or absorb contaminants. Care should be taken when recording and labelling the sample information on the containers. Information such as date/time, sample point codes, depths and any other relevant data should be included. Samples would be stored in an icebox (at about 2℃ - 4℃) immediately after collection and labelled, until they are transported to the laboratory for analysis. All samples should be delivered to the laboratory within 24 hours.

4.3 Potential Health Risk and Environmental Impacts

Potential Impact on Receptors

4.3.1 The potential impacts to the Project from contaminated soil and groundwater are judged by the following risks associated:

- Health risk to site workers;
- Disposal of contaminated soils, where encountered; and

- Disposal of contaminated groundwater, where encountered.

Health Risk to Site Workers

4.3.2 Site construction workers may be exposed to contaminated soils and groundwater during earth moving operations and the laying of pipelines or underground services. The main exposure routes for site construction workers are accidental direct ingestion of contaminated materials through poor hygiene and eating or smoking on site, or through direct contact with potentially toxic or harmful contaminants in excavated soil.

5 Reporting Programme

5.1.1 Following the submission of CAP and completion of SI and lab testing works, a Contamination Assessment Report (CAR) would be prepared. The CAR would present the findings of the site investigation and evaluate the level and extent of potential contamination. The CAR would evaluate the potential environmental and human health impact based on the extent of potential contamination identified. If remediation is required, a Remediation Action Plan (RAP) will be prepared. The objectives of RAP are:

- To undertake further site investigation where required;
- To evaluate and recommend appropriate remedial measures for the contaminated materials identified in the assessment;
- To recommend good handling practices for the contaminated materials during the remediation works;
- To recommend approximate handling and disposal measures; and
- To formulate optimal and cost-effective mitigation and remedial measures for EPD's agreement.

5.1.2 A Remediation Report (RR) to demonstrate adequate clean-up would be prepared prior to the commencement of any construction works within the Site.

Figures

FAT TONG O

JOSS HOUSE BAY
(TAI MIU WAN)

TATHONG CHANNEL

TIT CHAM CHAU

KWUN TSAI

LEGEND :

PROJECT BOUNDARY

0 25 50 75 100 125
METRES

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE			

DRAWN	VL
DESIGNED	VL
CHECKED	JC
APPROVED	ST
DATE	03/2016

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR
ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE
SITE LOCATION PLAN

SCALE 1 : 5000 (A3)

DRAWING NO. Figure 1.1

REV.

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Photo 1

Photo 2

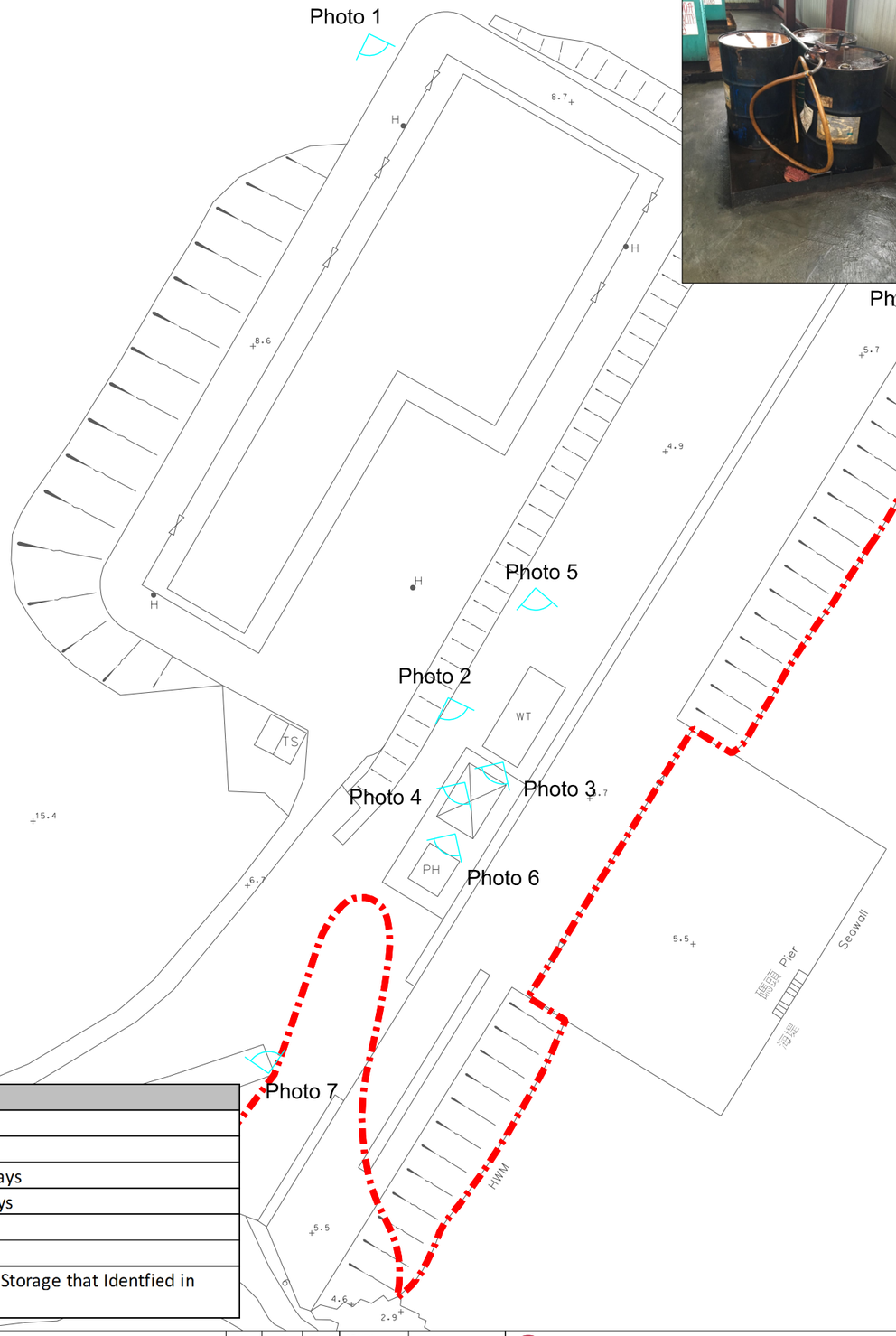
Photo 3

Photo 4

Photo 5

Photo 6

Photo 7



LEGEND :

PROJECT BOUNDARY

PHOTO TAKING POINT

Photo	Description
1	The Magazine Store
2	The Generator Room
3	Generators with Drip Trays
4	Oil Drums with Drip Trays
5	Fire Hydrant Room
6	Pump Room
7	Waste Chemical Drums Storage that Identfied in the approved EIA report

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DATE	03/2016

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SHATIN TO CENTRAL LINK

ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

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TITLE

SITE SURVEY RECORDS

SCALE 1 : 1000 (A3)

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* The photo is extracted from Figure 8A.3c of the approved EIA report of "Desalination Plant at Tseung Kwan O" (AEIAR-192/2005)

TP1

TP2

TP3

TP4

15.4

+6.7

+5.7

+5.5

WT

PH

TS

H

HWM

LEGEND :

- PROJECT BOUNDARY
- AREA A - GENERATOR ROOM
- AREA B - WASTE CHEMICAL DRUMS STORAGE AREA
- PROPOSED TRIAL PIT LOCATION

Sampling ID	Coordinates	
	Easting	Northing
TP1	846651	814014
TP2	846651	814008
TP3	846614	813979
TP4	846612	813976

0 2.5 5 7.5 10 12.5
METRES

REV	DESCRIPTION	BY	DATE	APPROVED
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APPROVED	ST
DATE	03/2016

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SHATIN TO CENTRAL LINK

ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

POTENTIAL LAND CONTAMINATION AREA AND PROPOSED TRIAL PIT LOCATION

SCALE 1 : 500 (A3)

DRAWING NO. Figure 3.1

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Appendix 1.1

Land Handover Certificates

MTR

Land Handover Certificate

Kwun Tong Line Extension
Contract No. 1001
Yau Ma Tei to Whampoa Tunnels and Ho Man Tin Station

Works Areas 1001.W22, 1001.W23 and Adjacent Land
For Temporary Magazine Site at Tseung Kwan O Area 137, Tseung Kwan O

This is to confirm that Nishimatsu Construction Co., Ltd (the Contractor) has handed back the Works Areas 1001.W22, 1001.W23 as shown coloured pink and adjacent land as shown coloured brown on the attached drawing no. SK_515 to MTR Corporation Limited on 28 December 2014.

Attended and signed by:-

Wil (Wilson Chung)

for Land Administration Manager
MTR Corporation Limited

O. Iwata O. IWATA

for Nishimatsu Construction Co., Ltd
(the Contractor)

Sammy (SAMMY Ho)

for Construction Manager
MTR Corporation Limited

WIP May 2007

WIP Jun 2007

WIP May 2007

WIP May 2007

WIP May 2007

WIP Jun 2007

WIP May 2007

1001.W23

1001.W22

TEMPORARY MAGAZINE SITE
AT TSEUNG KWAN O AREA 137

EMERGENCY VEHICLE ACCESS
TO BE MAINTAINED BY THE
CONTRACTOR UNDER THE
SUPPLEMENTARY AGREEMENT
TO STT NO. RDS/KTE-004

鰂魚涌
FAT TONG O

P07/007

大廟灣
JOSS HOUSE BAY

KEY PLAN NOT TO SCALE

LEGEND:

- WORKS AREA BOUNDARY
- PUBLIC ROAD / FOOTPATH
- BOUNDARY OF THE SCHEME

觀仔
KWUN TSAI

鐵爹洲
TIT CHAM CHAU

0 10 20 30 40 50
METRES
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CHECKED	ACHUNG
APPROVED	DN
DATE	24/DEC/2014

MTR

KWUN TONG LINE EXTENSION

ORIGINATOR

PROJECTS DIVISION | PROGRAMMING AND LAND SECTION

CADD REF. SK_515.dgn

TITLE

CONTRACT 1001
KEY PLAN OF WORKS AREA
APPENDIX 'F1'
SHEET 7 OF 10

SCALE 1 : 1000 (A1)

DRAWING NO. SK_515

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Land Handover Certificate

Shatin to Central Link
Contract No. 1103
Hin Keng to Diamond Hill Tunnels

Magazine Site at Tseung Kwan O
Works Sites 1103.W18 and 1103.W19

The subject Works Area as shown coloured pink on the attached plan no. 1103/T/000/PLD/P08/004B was handed over from MTR Corporation Limited to Vinci Construction Grands Projets (the Contractor) on 28 December 2014.

Attendees :	Claudie Keung	MTR Corporation Limited
	Henry Yu	MTR Corporation Limited
	ARROYO, FLORLITO DE JESUS	Vinci Construction Grands Projets (the Contractor)

Site Particulars:

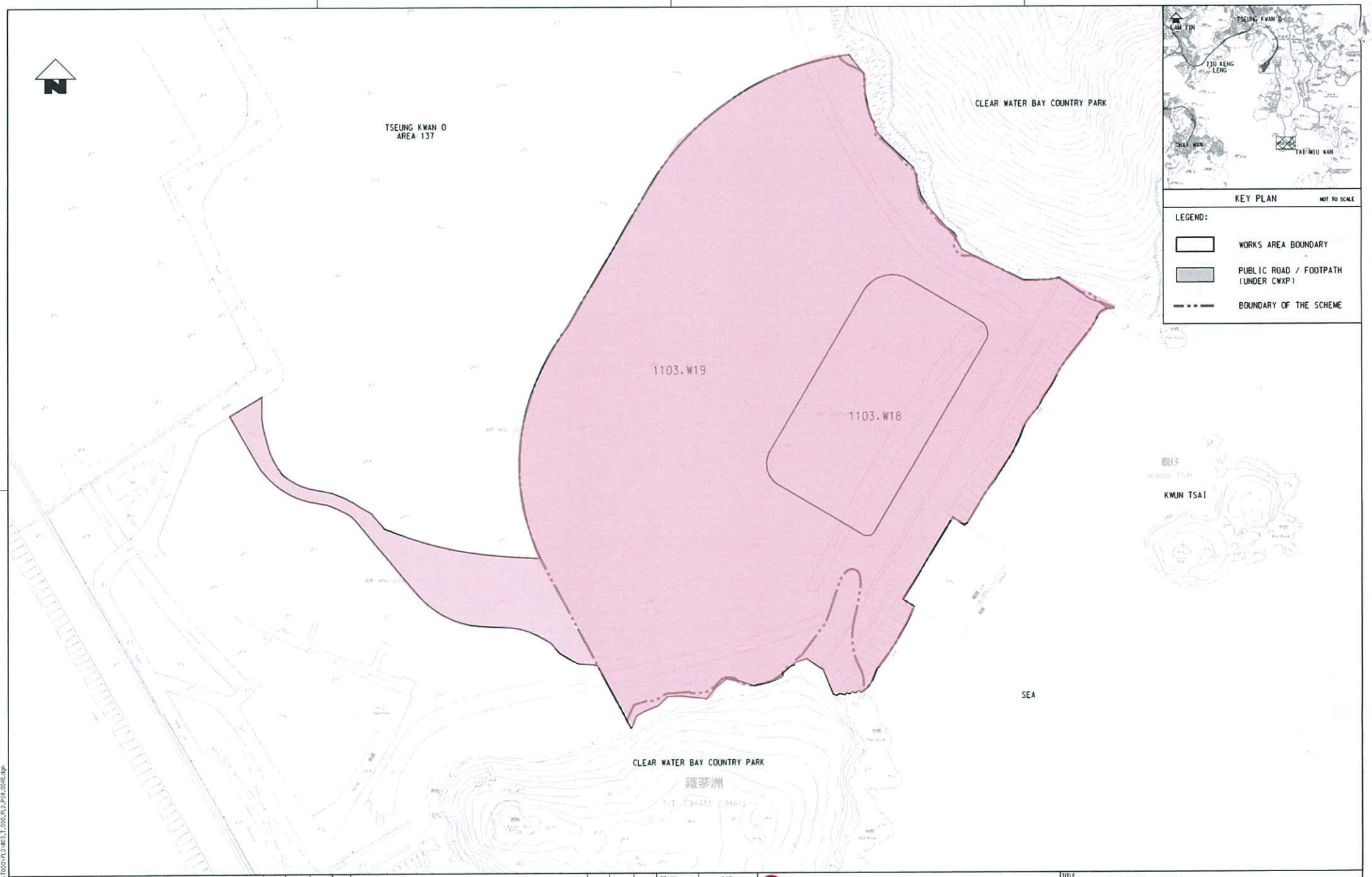
Location	:	As shown coloured pink on the attached plan no. 1103/T/000/PLD/P08/004B
Occupant	:	Vinci Construction Grands Projets (the Contractor)
Date of Possession	:	28 December 2014
Purpose	:	For Contract No. 1103
Remarks	:	Subject to Government Land Allocation – Temporary Railway Development No. 088 (Plan No. RDM1570)

Attended and signed by:-

(Claudie Keung)
for Land Administration Manager
MTR Corporation

(ARROYO, FJ)
for Vinci Construction Grands Projets
(the Contractor)

pp (Henry Yu)
for Construction Manager
MTR Corporation



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APPROVED	DN
DATE	06/OCT/2011

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR: PROJECTS DIVISION | LAND ADMINISTRATION SECTION

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TITLE
CONTRACT 1103
KEY PLAN OF WORKS AREA
APPENDIX 'F1'
SHEET 4 OF 5

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Appendix 2.1

Historical Aerial Photos

Year 1982

LEGEND :

PROJECT BOUNDARY

Year 1993

LEGEND :

PROJECT BOUNDARY

Year 2000

LEGEND :

PROJECT BOUNDARY

Year 2004

Vegetation

LEGEND :

PROJECT BOUNDARY

Year 2010

Vegetation

LEGEND :

PROJECT BOUNDARY

Year 2014

Magazine Site

Generator Room &
Pump Room

LEGEND :

PROJECT BOUNDARY

Appendix 2.2

Site Walkover Checklist

Site Walkover Checklist

1) GENERAL SITE DETAILS	
Site Owner/ Client	Vinci Construction Grand Projects
Property Address	Area 137, Tseung Kwan O
Person Conducting the Questionnaire (name & position)	Jacky Chan
Authorised Owner/ Client Representative (if applicable) (name, position & telephone)	Keith Lee, Deputy IMS Manager, Tel: 37655600

2) ACTIVITIES	
Briefly describe activities carried out on site, including types of products/chemicals/materials handled. **Obtain a flow schematic if possible.**	
Number of employees:	
- Full-time:	6
- Part-time:	0
- Temporary/Seasonal:	0
Maximum no. of people on site at any time:	4
Typical hours of operation:	00:00 - 24:00
Number of shifts:	2
Days per week:	Six days per week.
Weeks per year:	52
Scheduled plant shut-down:	N/A
Detail the main sources of energy at the site:	
Gas (Yes/No)	No
Electricity (Yes/No)	Yes
Coal (Yes/No)	No
Oil (Yes/No)	Yes
Other (Yes/No)	No

Site Walkover Checklist

3) SITE DESCRIPTION	
This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.	
What is the total site area:	8030 m^2
What area of the site is covered by buildings (%):	Around 5%
Please list all current and previous owners/occupiers if possible.	Current Occupant: Vinci Construction Grand Projects
Is a site plan available? (Yes/No) If yes, please attach.	No
Are there any other parties on site as tenants or sub-tenants? (Yes/No) If yes, identify those parties.	No
Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.	
North:	Country Park
South:	Sea (Joss House Bay)
East:	Vegetation
West:	CEDD Public Fill Bank
Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).	Flat terrain and by a body of water
State the size and location of the nearest residential communities.	LOHAS Park (32000 m^2, around 2700m northeast)
Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands, or sites of special scientific interest?	Yes. The Clear Water Bay Country Park is located at 50m north of the Site.

Site Walkover Checklist

4) QUESTIONNAIRE WITH EXISTING/ PREVIOUS SITE OWNER OR OCCUPIER		
	Yes/No	**Notes**
1. What are the main activities/operations at the above address?	-	Storage of explosives.
2. How long have you been occupying the site?	-	1 year and 3 months
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	No	
4. Prior to your occupancy, who occupied the site?	-	Occupied as magazine site for MTRC Kwun Tung Line Extension project (Contractor: Nishimatsu Construction Co., Ltd.).
5. What were the main activities/operations during their occupancy?	-	Storage of explosives.
6. Have there been any major changes in operations carried out at the site in the last 10 years?	No	
7. Have any polluting activities been carried out in the vicinity of the site in the past?	No	
8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage?	No	
9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	No	
10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.)	No	
11. Are any chemicals used in your daily operations? (If yes, please provide details.) - Where do you store these chemicals?	Yes	Diesel was used for electricity generation within the generator room. In oil drums with drip trays.
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	Yes	
13. Has the facility produced a separate hazardous substance inventory?	Yes	
14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.)	No	
15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bays, silos, cisterns, vaults and cylinders)?	-	The explosives were transported to the Site by boat .

Site Walkover Checklist

4) QUESTIONNAIRE WITH EXISTING/ PREVIOUS SITE OWNER OR OCCUPIER (CONTINUED)		
	Yes/No	**Notes**
16. Do you have any underground storage tanks? (If yes, please provide details.)	No	
- How many underground storage tanks do you have on site?	-	
- What are the tanks constructed of?	-	
- What are the contents of these tanks?	-	
- Are the pipelines above or below ground?	-	
- If the pipelines are below ground, has any leak and integrity testing been performed?	-	
- Have there been any spills associated with these tanks?	-	
17. Are there any disused underground storage tanks?	No	
18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	No	
19. How are the wastes disposed of?	-	
20. Have you ever received any notices of violation of environmental regulations or received public complains? (If yes, please provide details.)	No	
21. Have any spills occurred on site? (If yes, please provide details)	No	
- When did the spill occur?	-	
- What were the substances spilled?	-	
- What was the quantity of material spilled?	-	
- Did you notify the relevant departments of the spill?	-	
- What were the actions taken to clean up the spill?	-	
- What were the areas affected?	-	
22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks? (If yes, please provide details.)	No	
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	N/A	
24. Are there any known contaminations on site? (If yes, please provide details.)	No	
25. Has the site ever been remediated? (If yes, please provide details.)	No	

Site Walkover Checklist

5) OBSERVATIONS		
	Yes/No	**Notes**
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	Yes	The generators and oil drums observed in the generator room was provided with drip trays. Also, the generator room was enclosed by corrugated metal sheets and the bottom of the metal sheets was sealed with the concrete slab by cement.
2. What are the conditions of the bund walls and floors?	-	The concrete slab generator room was in good condition. Also, the area that immediately next to the generator room was paved with intact concrete.
3. Are any surface water drains located near to drum storage and unloading areas?	No	
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	Yes	General refuse from the site office.
5. Is there a storage site for the wastes?	No	
6. Is there an on-site landfill?	No	
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	No	
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	Yes	Oil stains were observed on the concrete slab inside the generator room.
9. Are there any potential off-site sources of contamination?	No	
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	No	
11. Are there any sumps, effluent pits, interceptors or lagoons on site?	No	
12. Any noticeable odours during site walkover?	No	
13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives, and polyurethane foam?	Yes	Diesel was used for the generators on site.

Appendix 4.1

Risk Based Remediation Goals (RBRG) Criteria

Chemicals	RBRGs for Soil & Soil Saturation Limit		RBRGs for Groundwater & Solubility Limit	
	Industrial	Soil Saturation Limit (C_{sat})	Industrial	Solubility Limit
	(mg/kg)	(mg/kg)	(mg/L)	(mg/L)
VOCs				
Acetone	10000	***	10000	***
Benzene	9.21	336	54	1750
Bromodichloromethane	2.85	1030	26.2	6740
2-Butanone	10000	***	10000	***
Chloroform	1.54	1100	11.3	7920
Ethylbenzene	8240	138	10000	169
Methyl tert-Butyl Ether	70.1	2380	1810	***
Methylene Chloride	13.9	921	224	***
Styrene	10000	497	10000	310
Tetrachloroethene	0.777	97.1	2.95	200
Toluene	10000	235	10000	526
Trichloroethene	5.68	488	14.2	1100
Xylenes (Total)	1230	150	1570	175
SVOCs				
Acenaphthene	10000	60.2	10000	4.24
Acenaphthylene	10000	19.8	10000	3.93
Anthracene	10000	2.56	10000	0.0434
Benzo(a)anthracene	91.8	--	--	--
Benzo(a)pyrene	9.18	--	--	--
Benzo(b)fluoranthene	17.8	--	7.53	0.0015
Benzo(g,h,i)perylene	10000	--	--	--
Benzo(k)fluoranthene	918	--	--	--
Bis-(2-Ethylhexyl)phthalate	91.8	--		--
Chrysene	1140	--	812	0.0016
Dibenzo(a,h)anthracene	9.18	--	--	--
Fluoranthene	10000	--	10000	0.206
Fluorene	10000	54.7	10000	1.98
Hexachlorobenzene	0.582	--	0.695	6.2
Indeno(1,2,3-cd)pyrene	91.8	--	--	--
Naphthalene	453	125	862	31
Phenanthrene	10000	28	10000	1
Phenol	10000	7260	--	--
Pyrene	10000	--	10000	0.135
Metals				
Antimony	261	--	--	--
Arsenic	196	--	--	--
Barium	10000	--	--	--
Cadmium	653	--	--	--
Chromium III	10000	--	--	--
Chromium VI	1960	--	--	--
Cobalt	10000	--	--	--
Copper	10000	--	--	--
Lead	2290	--	--	--
Manganese	10000	--	--	--
Mercury	38.4	--	6.79	--
Molybdenum	3260	--	--	--
Nickel	10000	--	--	--
Tin	10000	--	--	--
Zinc	10000	--	--	--
Petroleum Carbon Ranges				
C6 - C8	10000	1000	1150	5.23
C9 - C16	10000	3000	9980	2.8
C17 - C35	10000	5000	178	2.8
*** indicated that the C_{sat} value exceeds the 'ceiling limit' (10,000 mg/kg) therefore the RBRG applies.				

APPENDIX B

APPROVED CONTAMINATION ASSESSMENT REPORT (CAR) PREPARED BY MTRCL

MTR Corporation Limited

Shatin to Central Link
Tai Wai to Hung Hom Section

Contamination Assessment Report for Magazine Site at TKO Area 137

Certified by: Richard Kwan

Position: Environmental Team Leader

Date: 3 June 2016

MTR Corporation Limited

Shatin to Central Link
Tai Wai to Hung Hom Section

Contamination Assessment Report for Magazine Site at TKO Area 137

Verified by: Frederick Leong

Position: Independent Environmental Checker

Date: 3 June 2016

MTR Corporation Limited

Shatin to Central Link – Tai Wai to Hung Hom Section - Land Contamination Assessment of Magazine Site at TKO Area 137

Contamination Assessment Report

Draft 3 | June 2016

Job number 216289

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ARUP

Document Verification

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Job title		Shatin to Central Link – Tai Wai to Hung Hom Section - Land Contamination Assessment of Magazine Site at TKO Area 137			**Job number** 216289
Document title		Contamination Assessment Report			**File reference**
Document ref					
Revision	**Date**	**Filename**	CAR_v1.docx		
Draft 1	May 2016	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Various	Jacky Chan	Sam Tsoi/ Jacky Chan
		Signature			
Draft 2	May 2016	**Filename**	CAR_v2.docx		
		Description	Second draft		
			Prepared by	Checked by	Approved by
		Name	Various	Jacky Chan	Sam Tsoi/ Jacky Chan
		Signature			
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			Prepared by	Checked by	Approved by
		Name	Various	Jacky Chan	Sam Tsoi/ Jacky Chan
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	☑

Contents

Laboratory Testing Reports

1 Introduction

1.1 Project Background

MTR Corporation Limited (MTRC) commissioned Ove Arup & Partners Hong Kong Limited (Arup) as the Consultant for undertaking the land contamination assessment of Magazine Site at TKO Area 137 (the Site) for the Shatin to Central Link – Tai Wai to Hung Hom Section [SCL(TAW-HUH)].

The Site is located within Area 137, Tseung Kwan O. The temporary above-ground magazine site for the storage of explosives previously used by Kwun Tong Extension (KTE) was handed to the SCL1103 project to support the construction of the drill and blast tunnelling works for the SCL(TAW-HUH) project. The relevant handover certificates are annexed in **Appendix 1.1**.

After the completion of the decommissioning works of the Magazine Site, the land will be handover to the relevant government departments. Location of the Site is shown in **Figure 1.1**.

According to EP Condition 2.36 of the Environmental Permit of SCL(TAW-HUH) (No. EP-438/2012/J), a land contamination assessment for the temporary explosive magazine site at Area 137, Tseung Kwan O shall be carried out. A Contamination Assessment Plan, which detailed the proposal of representative sampling and analysis to determine the nature and extent of contamination, was approved in April 2016. A Contamination Assessment Report (CAR) shall be submitted to document the findings of the land contamination assessment findings. If land contamination is confirmed, a Remedial Action Plan (RAP) shall be submitted to formulate necessary remedial measures. A Remediation Report (RR) shall also be submitted after the completion of the remediation works.

1.2 Objectives

The purpose of this Contamination Assessment Report (CAR) is to document the findings of the land contamination site investigation works, which comprised the following key components:

- Contamination assessment program;
- Investigation procedures and methodologies; and
- Analytical results of soil and groundwater samples.

1.3 Statutory Legislation and Evaluation Criteria

The report is prepared in accordance with the following Technical Memorandum and Guidance Notes:

- Guidance Note for Contamination Land Assessment and Remediation, EPD, August 2007;

- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD, December 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land, EPD, August 2011.
- Annex 19 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO).

1.4 Structure of Report

The structure of this CAR is as follows:

Section 1 describes the background, objectives and scope of work of the project as well as the content structure of this CAR;

Section 2 describes the approach to assessment in accordance with the approved CAP;

Section 3 describes the conducted site investigation works for soil and ground water sampling;

Section 4 presents the assessment criteria;

Section 5 presents the laboratory test results, results interpretation and investigation findings; and

Section 6 concludes the findings of this CAR.

2 Summary of Sampling and Testing Strategy

2.1 Background

In accordance with the approved CAP, sampling for soil and groundwater were proposed. The sampling locations were determined according to the hotspots identified and estimated within the Site. The testing parameters were proposed as Metals, Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs) and Petroleum Carbon Ranges (PCRs).

2.2 Chemicals of Concern

The proposed sampling and testing schedule for the Chemicals of Concerns (COCs) in the Site are summarized in **Table 2.1**.

Table 2.1: Proposed Laboratory Analysis for Different Trial Pits

Trial Pit No.	Sampling Type	Testing Parameters			
		Metals [1]	VOCs	SVOCs	PCRs
TP1 – TP4	Soil at all sampling depths and groundwater	✓	✓	✓	✓

Notes:

1. Only "Mercury" test is required for groundwater sample.

2.3 Proposed Sampling Locations and Depths

The sampling locations and sampling depths proposed in the CAP for the Site are shown in **Table 2.2**. The proposed sampling locations are shown in **Figure 2.1**.

Table 2.2: Sampling Strategy within Project Site

Trial Pit No.	Coordinates		Sampling Strategy	
	Easting	Northing	Termination Level (mbgl) [1]	Frequency of Sampling (mbgl) [1]
TP1	846651	814014	3.0	0.5, 1.5 and 3.0
TP2	846651	814008		
TP3 [2]	846614	813979		
TP4 [2]	846612	813976		

Note:

1. The proposed termination levels are just for reference purpose. The exact termination levels and no. of soil samples of each trial pit should be decided by the on-site Land Contamination Specialist. If sign of contamination is observed during site investigation, further samples may be collected by drilling (if required) and the sampling depths and termination depths would be advised by the on-site Land Contamination Specialist.
2. The coordinates of TP3 and TP4 were estimated based on the relevant base map.

3 Site Investigation Works

3.1 Soil and Groundwater Sampling

3.1.1 Sampling Locations

Site investigation (SI) works were carried out by VINCI Construction Grand Projects between 21 April 2016 and 26 April 2016. Four trial pits, named TP1 to TP4, were excavated for soil and groundwater sampling in accordance with the approved CAP for the Site. To facilitate the SI, structures of the generator room, including the generators had been removed. The on-site Land Contamination Specialist had supervised the whole SI works and determined the actual sampling depths on a point-by-point basis based on the actual site conditions.

For the proposed trial pit locations, trial pit TP2 was excavated as scheduled in the CAP. However, for trial pits TP1, TP3 and TP4, the actual locations of the trial pits were adjusted due to actual on-site conditions.

After removal of the generator room structures, generators, oil drums and drip trays, noticeable oil stains (**Photo 3.1**) were observed on the generator room's concrete slab, where the generator was located, at 3m east of the original proposed trial pit TP1 location. This noticeable oil stains may be caused by the leakage of diesel from the generator, and is considered a potential land contamination sign. Given that the area and extent of the oil stains were larger than the oil stain observed in the original proposed location (i.e. TP1), TP1A is considered a more representative location at the concerned hotspot area for the assessment. As the potential contamination source of the generator room is the leakage of diesel from the generator and the oil drums, it is considered that the oil stain at TP1 and TP1A would be caused by the same contaminant (i.e. diesel). As such, TP1 was then shifted 3m east to TP1A for better investigation to determine the presence and extent of the potential land contamination.

For trial pits TP3 and TP4, as stipulated in the CAP, the waste chemical drums that were identified in the approved EIA report *"Agreement No. CE21/2012 (WS) – Desalination Plant at Tseung Kwan O – Feasibility Study"* (AEIAR 192/2015) (hereinafter referred as "the approved EIA report") were not observed during the site survey in March 2016. The coordinates of TP3 and TP4 were estimated based on the relevant base map of the concerned area which was mentioned in the approved EIA.

During the setting out stage of site investigation, it was observed that trial pits TP3 and TP4 were located on the slope and access road respectively based on the original proposed coordinates in the CAP. As revealed from the approved EIA report, the location of the waste chemical storage drums should be located at the side of the access road and close to the contractor's site office. As such, these two points (i.e. TP3 and TP4) for estimating the 2 trial pits appeared not to be in the exact area of waste chemical drums and required to be adjusted for rectification.

After confirmation with the on-site engineers and further review of the figure and photo records of the approved EIA report, the area of waste chemical drums should

be located 20m and 15m northeast from TP3 and TP4 respectively, which were namely TP3A and TP4A. Comparison between Figure 8A.3c of the approved EIA report and site photo of TP3A & TP4A was shown in **Photo 3.2**. As shown in the photos, TP3A & TP4A are located at the same area where the waste oil drums were located given that the surrounding features (including site office and lamp post etc.) shown in both photos are the same. As such, it is considered and confirmed that the relocated points (i.e. TP3A & TP4A) are the more accurate area representing the waste chemical drums which is the potential hotspot area as stipulated in the CAP and are representative locations to determine the presence and extent of land contamination at the concerned hotspot area for the assessment.

The proposed and as-built sampling locations are summarized in **Table 3.1**. The as-built drawing showing the actual sampling locations is given in **Figure 3.1**.

Table 3.1: Summary of sampling location and termination levels

Trial Pit No.	Proposed Co-ordinates		As-built Co-ordinates		Justification for shifting sampling location
	Easting	Northing	Easting	Northing	
TP1	846651	814014	-	-	Noticeable oil stains on concrete slab were observed at TP1A.
TP1A	-	-	846654	814012	
TP2	846651	814008	846651	814008	-
TP3 [1]	846614	813979	-	-	Based on actual site condition and further review on-site, the actual waste chemical drum storage location was identified to be 15m (for TP4A) and 20m (for TP3A) northeast of the originally proposed location.
TP3A	-	-	846627	813994	
TP4 [1]	846612	813976	-	-	
TP4A	-	-	846622	813986	

Note:
1. The coordinates of TP3 and TP4 were estimated based on the relevant base map.

Table 3.2: Adjusted sampling location summary

Proposed Trial Pit No.	Revised Trial Pit No.	Deviation from Proposed Location
TP1	TP1A	3m east from original location
TP3	TP3A	20m northeast from original location
TP4	TP4A	15m northeast from original location

3.1.2 Soil Sampling

Three disturbed soil samples were collected at each trail pit. Sufficient samples were collected and placed in the pre-cleaned glass sample jar. The jar was filled with no void space for samples to be tested and was properly labelled.

For trial pits TP1A and TP2, as there was approximately 0.5m thick concrete slab on top of the soil, the first sampling depth (i.e. 0.5mbgl) was then adjusted 0.3m below the original proposed sampling depth to 0.8 mbgl. In addition, two disturbed soil samples were also collected at the depths of 1.5mbgl and 3.0mbgl.

For trial pit TP3A, three disturbed soil samples were collected at the depths of 0.5mbgl, 1.5mbgl and 3.0mbgl. For trial pit TP4A, during excavation, concrete slabs were encountered at 1.0mbgl and at 1.3mbgl respectively (**Photo 3.3**). The remaining area without the concrete slabs was further excavated down to collect the soil samples. At 2.4mbgl, another concrete slab was encountered covering the remaining area (**Photo 3.3**). Given the presence and coverage of the concrete slab at the remaining area, it is considered appropriate to terminate the sampling depth at 2.4mbgl and the excavation was then terminated. Disturbed soil samples were therefore collected at the depths of 0.5mbgl, 1.5mbgl and terminated at 2.4mbgl. The actual sampling depth and the sample type taken at each trial pit are summarised in **Table 3.3**.

During the site investigation, no any sign of contamination including decolouration, odour, and waste materials was observed at all sampling locations (**Photo 3.4**). All collected soil samples were stored on ice in portable ice chests between 2℃ - 4℃. Sampling records of trial pits were made of the details of the sampling locations and other pertinent data. A chain-of-custody form was completed for the samples.

Table 3.3: Summary of actual sampling depth and sample type

Trial Pit No.	Sampling Depth (mbgl)	Sample Type
		Disturbed Sample
TP1A	0.8 [1]	✓
	1.5	✓
	3.0	✓
TP2	0.8 [1]	✓
	1.5	✓
	3.0	✓
TP3A	0.5	✓
	1.5	✓
	3.0	✓
TP4A	0.5	✓
	1.5	✓
	2.4 [2]	✓

Note:

1. As there was 0.5m thick concrete slab, the first sampling point (i.e. 0.5mbgl) for TP1A and TP2 were adjusted 0.3m below the original proposed sampling depth to 0.8 mbgl.
2. Terminated at 2.4mbgl due to the encounter of a concrete slab.

3.1.3 Groundwater Sampling

Since no groundwater was encountered at the termination depth for all four trial pits, no groundwater sample was collected.

3.1.4 Decontamination Procedures

Before excavation, the sampler and all equipment in contact with the ground were thoroughly decontaminated prior to use at each trial pit and between each sampling event by phosphate-free detergent to minimize potential cross contamination. During sampling and decontamination activities, disposable latex gloves were worn to prevent the transfer of contaminants from other sources.

3.2 Analytical Parameters

As proposed in the CAP, the soil maples collected were analysed for the parameters in accordance with the sampling and testing schedule shown in **Table 2.1**. The testing parameters included:

- **Metals**: Antimony, Arsenic, Barium, Cadmium, Chromium III, Chromium VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc
- **Volatile Organic Compounds (VOCs)**: Acetone, Benzene, Bromodichloromethane, 2-Butanone, Chloroform, Ethylbenzene, Methyl Tert-Butyl Ether (MTBE), Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene and Xylenes (Total)
- **Semi-volatile Organic Compounds (SVOCs)**: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene
- **Petroleum Carbon Ranges (PCRs)**: Carbon Ranges C6-C8, C9-C16 and C17-C35

3.3 HOKLAS Accredited Laboratory

Laboratory testing works on the soil were undertaken by "ALS Technichem (HK) Pty Ltd". All laboratory testing methods were accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS) or one of its Mutual Recognition Arrangement Partners.

3.4 Strata Logging

Strata logging for trial pits was taken during the course of drilling and sampling by qualified geologists. The logs including the general stratigraphic descriptions, depth of soil sampling, and sample notation are given in **Appendix 3.1**.

4 Assessment Criteria

The assessment criteria have been adopted in accordance with EPD's *Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management*. The RBRGs was categorised into four different post-restoration land uses, namely "Urban Residential", "Rural Residential", "Industrial" and "Public Parks", to reflect the actual settings which people could be exposed to contaminated soil or groundwater. Definitions of the four post-restoration land use categories are given in EPD's *Guidance Note for Contaminated Land Assessment and Remediation and RBRGs Guidance Manual*.

According to the approved EIA report *"Agreement No. CE21/2012 (WS) – Desalination Plant at Tseung Kwan O – Feasibility Study"* (AEIAR 192/2015), the Site will be developed into a desalination plant. Hence, "Industrial" land use will be adopted for result comparison for this land contamination assessment. The RBRGs criteria for soil and soil saturation limits, and RBRGs criteria for groundwater and groundwater solubility limits are given in **Appendix 4.1**.

5 Interpretation of Laboratory Testing Results

5.1 Soil Analysis

A total of 13 soil samples (including 1 duplicate sample) were collected from 4 trial pits during SI under the supervision of on-site Land Contamination Specialist. All available laboratory testing results of the soil samples have been reviewed against the RBRGs criteria. Based on the testing results, no RBRGs exceedance has been identified. Summary of testing results and the laboratory testing reports are given in **Appendices 5.1** and **5.2** respectively.

5.2 Quality Assurance and Quality Control

A proper QA/QC program was conducted according to the approved CAP to the data collected are accurate and representative of actual soil conditions. According to the approved CAP, the QA/QC programme was conducted as follows:

- 1 duplicate sample per 20 samples;
- 1 equipment blank sample per 20 samples;
- 1 field blank sample per 20 samples; and
- 1 trip blank per trip for the analysis of volatile parameters.

As total 12 soil samples were collected in 4 sampling days (21, 22, 25 and 26 April 2016), therefore, 1 duplicates soil sample, 1 equipment blank sample, 1 field blank sample and 4 trip blank had been collected. The results of the QA/QC samples indicated that the data collected are accurate and representative of actual soil conditions.

6 Conclusion

Site investigation works were conducted between 21 April 2016 and 26 April 2016 according to the approved CAP for the Site.

A total of 13 soil samples (including 1 duplicate) were collected from four trial pits. Since no groundwater was encountered at the termination depth for all four trial pits, no groundwater sample was collected.

The testing results indicated that none of the soil samples exceeded the corresponding RBRG level. No contamination was identified on the Site. Therefore, no remediation action is required.

Figures

LEGEND :

PROJECT BOUNDARY

0 25 50 75 100 125
METRES

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE			

DRAWN	VL
DESIGNED	VL
CHECKED	JC
APPROVED	ST
DATE	05/2016

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

SITE LOCATION PLAN

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DRAWING NO. Figure 1.1

REV.

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H
H
TS
WT
PH
TP1
TP2
TP3
TP4
+15.4
+6.7
+5.7
5.5+
5.5
Pier
Seawall
HWM
0 2.5 5 7.5 10 12.5
METRES

Sampling ID	Coordinates	
	Easting	Northing
TP1	846651	814014
TP2	846651	814008
TP3	846614	813979
TP4	846612	813976

LEGEND :

PROJECT BOUNDARY

PROPOSED TRIAL PIT LOCATION

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE			

DRAWN	VL
DESIGNED	VL
CHECKED	JC
APPROVED	ST
DATE	05/2016

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

PROPOSED TRIAL PIT LOCATION

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DRAWING NO. Figure 2.1

REV.

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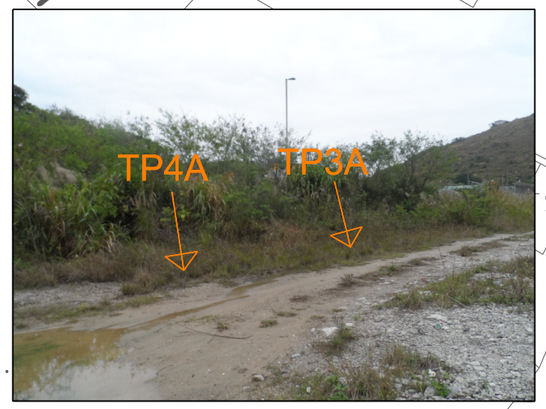

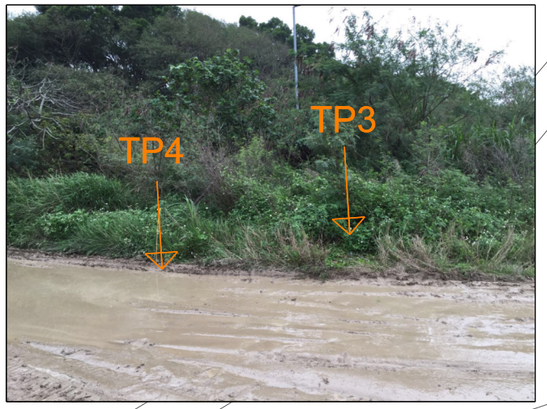

TP1
TP1A
TP2
TP3A
TP4A
TP3
TP4

WT
PH
HWM
Pier
Seawall
碼頭
海堤
+15.
+6.7
+5.7
5.5

Proposed Sampling Locations			As-Built Sampling Locations		
Sampling ID	Easting	Northing	Sampling ID	Easting	Northing
TP1	846651	814014	TP1A	846654	814012
TP2	846651	814008	TP2	846651	814008
TP3	846614	813979	TP3A	846627	813994
TP4	846612	813976	TP4A	846622	813986

LEGEND :

- PROJECT BOUNDARY
- AS BUILT TRIAL PIT LOCATION
- PROPOSED TRIAL PIT LOCATION

0 2.5 5 7.5 10 12.5
METRES

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE			

DRAWN VL
DESIGNED VL
CHECKED JC
APPROVED ST
DATE 05/2016

MTR
SHATIN TO CENTRAL LINK
ORIGINATOR
ARUP Ove Arup & Partners Hong Kong Limited
CADD REF.

TITLE
AS BUILT TRIAL PIT LOCATION

SCALE 1 : 500 (A3)
DRAWING NO. Figure 3.1
REV.

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Photos

Photo 3.1: Site observation of trial pits TP1 and TP1A

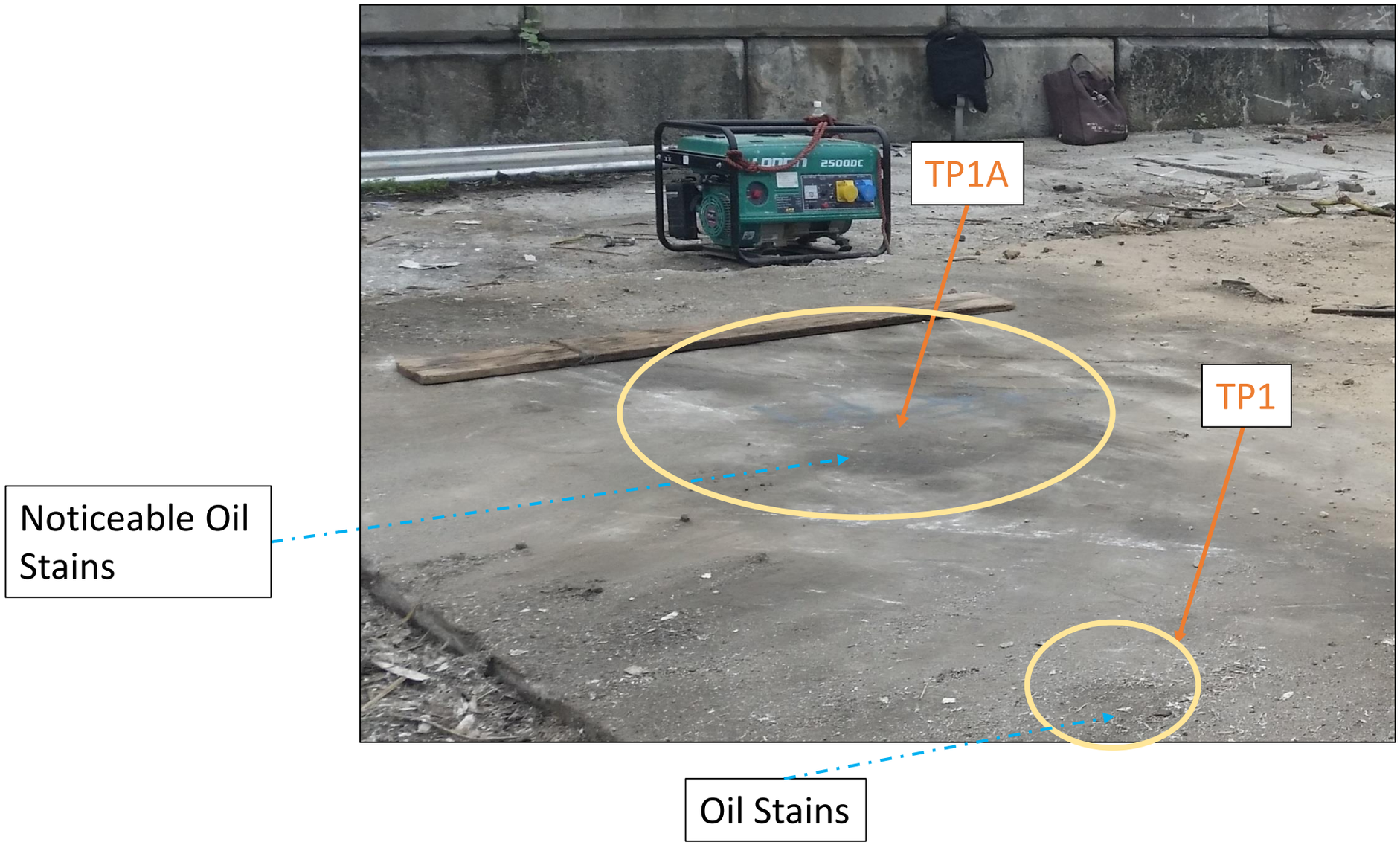
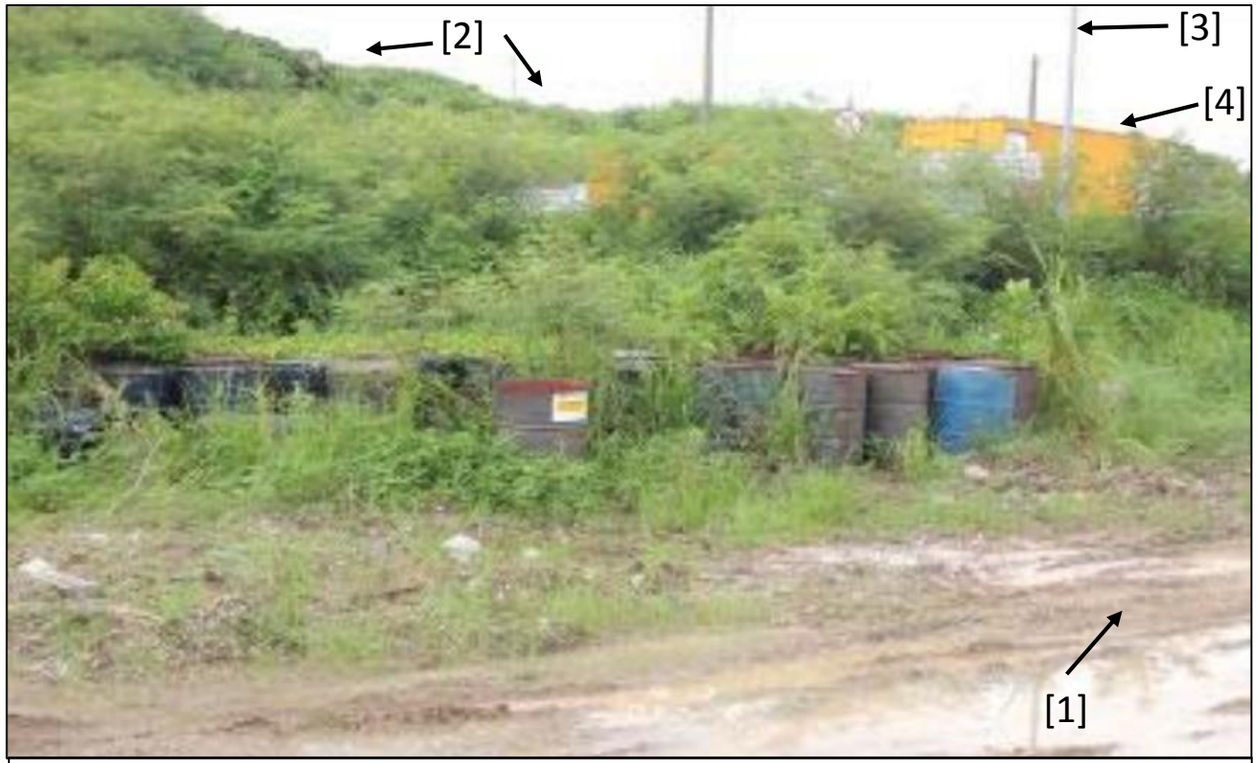
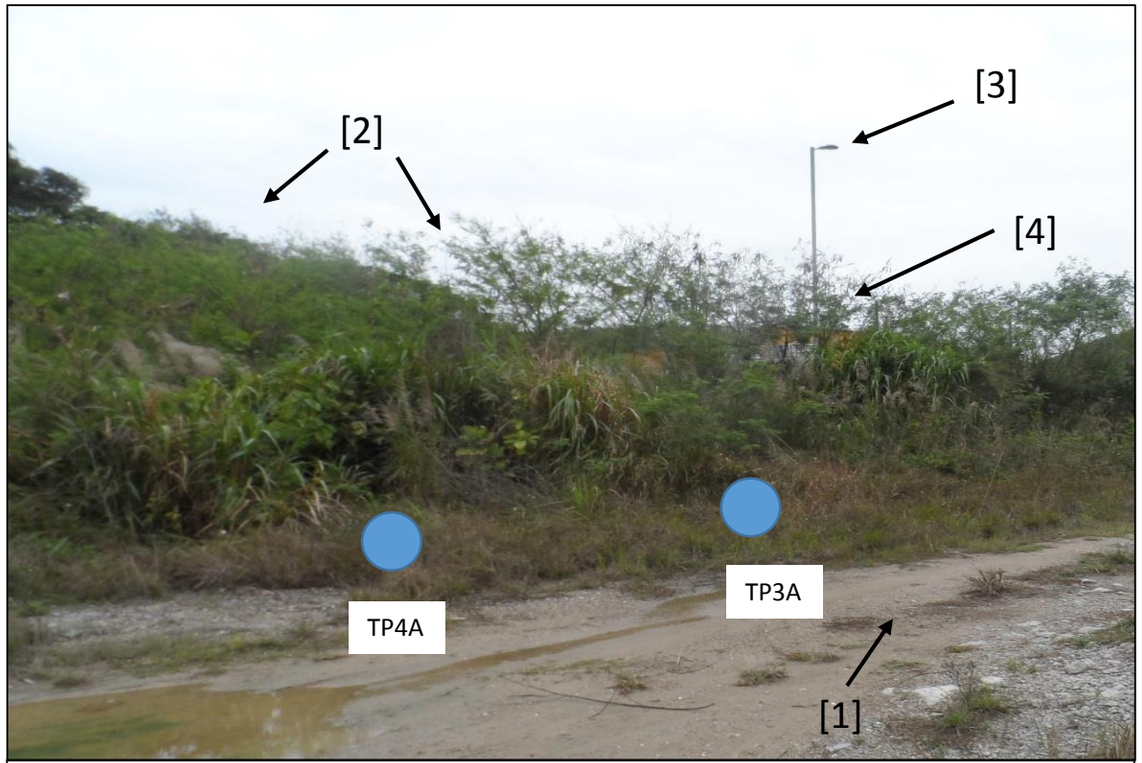


Photo 3.2: Comparison between the approved EIA report and site photos for TP3A and TP4A



From approved EIA report *"Agreement No. CE21/2012 (WS) – Desalination Plant at Tseung Kwan O – Feasibility Study"* (AEIAR 192/2015)



From SCL's site investigation works

Remarks:
[1] Access Road
[2] Slope
[3] Lamp Post
[4] Site Office

Photo 3.3: Trial Pit - TP4A

Concrete slab encountered at 1.0m bgl

Concrete slab encountered at 1.3m bgl

Excavated down to 2.4m bgl and concrete slab was encountered

Photo 3.4: Soil Samples

TP1A 0.8m

TP2 0.8m

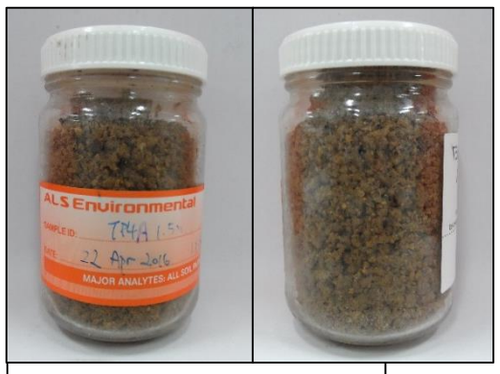
TP3A 0.5m

TP4A 0.5m

TP1A 1.5m

TP2 1.5m

TP3A 1.5m



TP4A 1.5m

TP1A 3.0m

TP2 3.0m

TP3A 3.0m

TP4A 2.4m

Appendix 1.1

Land Handover Certificates

MTR

Land Handover Certificate

Kwun Tong Line Extension
Contract No. 1001
Yau Ma Tei to Whampoa Tunnels and Ho Man Tin Station

Works Areas 1001.W22, 1001.W23 and Adjacent Land
For Temporary Magazine Site at Tseung Kwan O Area 137, Tseung Kwan O

This is to confirm that Nishimatsu Construction Co., Ltd (the Contractor) has handed back the Works Areas 1001.W22, 1001.W23 as shown coloured pink and adjacent land as shown coloured brown on the attached drawing no. SK_515 to MTR Corporation Limited on 28 December 2014.

Attended and signed by:-

Wil (Wilson Chung)

for Land Administration Manager
MTR Corporation Limited

O. Iwata O. IWATA

for Nishimatsu Construction Co., Ltd
(the Contractor)

Sammy (SAMMY Ho)

for Construction Manager
MTR Corporation Limited

WIP May 2007

WIP Jun 2007

WIP May 2007

WIP May 2007

WIP May 2007

WIP Jun 2007

WIP May 2007

1001.W23

1001.W22

TEMPORARY MAGAZINE SITE
AT TSEUNG KWAN O AREA 137

EMERGENCY VEHICLE ACCESS
TO BE MAINTAINED BY THE
CONTRACTOR UNDER THE
SUPPLEMENTARY AGREEMENT
TO STT NO. RDS/KTE-004

鰂魚涌
FAT TONG O

P07/007

大廟灣
JOSS HOUSE BAY

KEY PLAN NOT TO SCALE

LEGEND:

- WORKS AREA BOUNDARY
- PUBLIC ROAD / FOOTPATH
- BOUNDARY OF THE SCHEME

觀仔
KWUN TSAI

鐵爹洲
TIT CHAM CHAU

0 10 20 30 40 50
METRES
1 : 1000

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE	WCHUNG	24DEC14	DN

DRAWN	RKO
DESIGNED	WCHUNG
CHECKED	ACHUNG
APPROVED	DN
DATE	24/DEC/2014

MTR

KWUN TONG LINE EXTENSION

ORIGINATOR

PROJECTS DIVISION | PROGRAMMING AND LAND SECTION

CADD REF. SK_515.dgn

TITLE

CONTRACT 1001
KEY PLAN OF WORKS AREA
APPENDIX 'F1'
SHEET 7 OF 10

SCALE 1 : 1000 (A1)

DRAWING NO. SK_515

REV. A

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Land Handover Certificate

Shatin to Central Link
Contract No. 1103
Hin Keng to Diamond Hill Tunnels

Magazine Site at Tseung Kwan O
Works Sites 1103.W18 and 1103.W19

The subject Works Area as shown coloured pink on the attached plan no. 1103/T/000/PLD/P08/004B was handed over from MTR Corporation Limited to Vinci Construction Grands Projets (the Contractor) on 28 December 2014.

Attendees :	Claudie Keung	MTR Corporation Limited
	Henry Yu	MTR Corporation Limited
	ARROYO, FLORLITO DE JESUS	Vinci Construction Grands Projets (the Contractor)

Site Particulars:

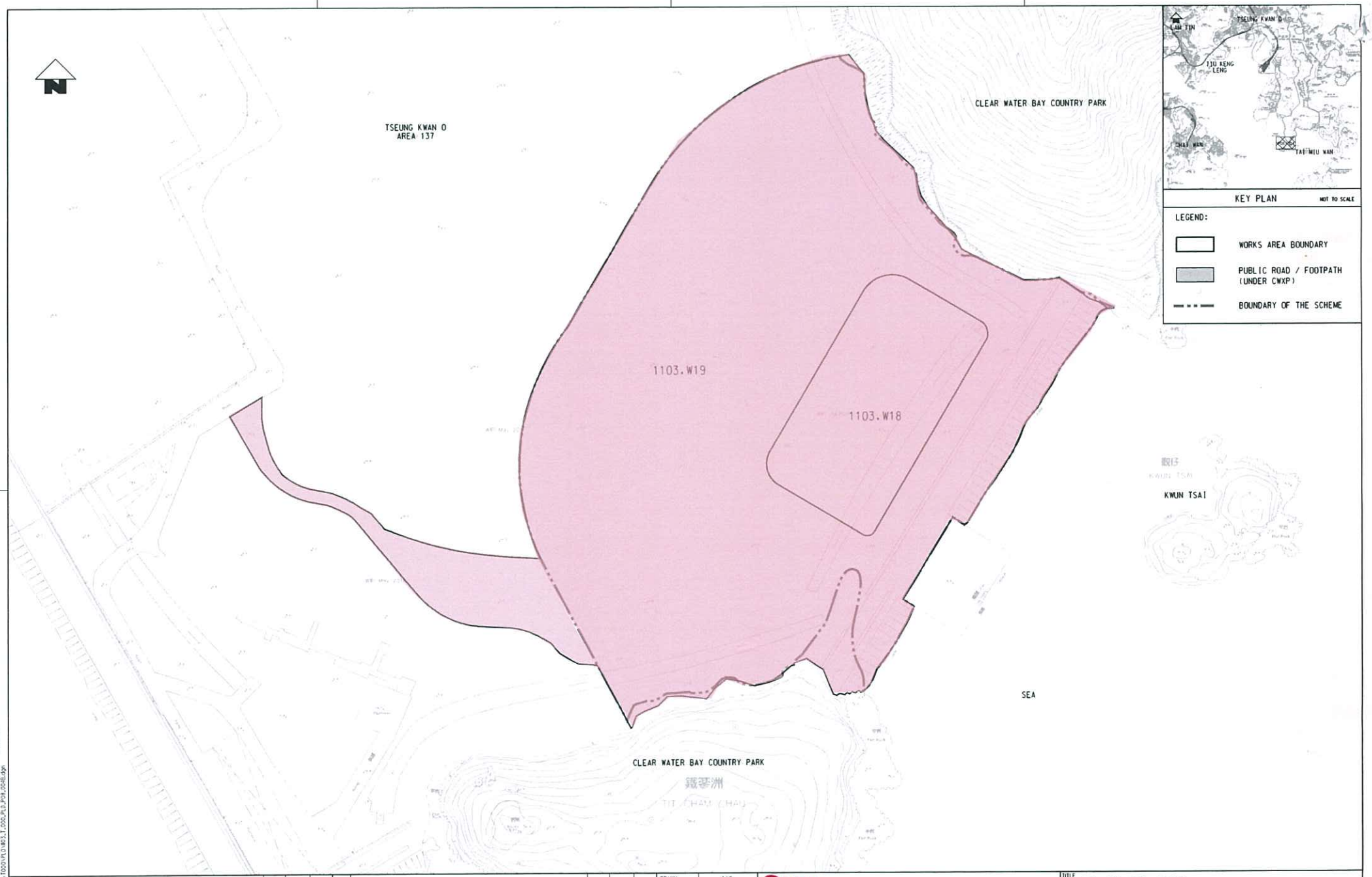
Location	:	As shown coloured pink on the attached plan no. 1103/T/000/PLD/P08/004B
Occupant	:	Vinci Construction Grands Projets (the Contractor)
Date of Possession	:	28 December 2014
Purpose	:	For Contract No. 1103
Remarks	:	Subject to Government Land Allocation – Temporary Railway Development No. 088 (Plan No. RDM1570)

Attended and signed by:-

(Claudie Keung)
for Land Administration Manager
MTR Corporation

(ARROYO, FJ)
for Vinci Construction Grands Projets
(the Contractor)

pp (Henry Yu)
for Construction Manager
MTR Corporation



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A	FIRST ISSUE	RC	FEB12	DN

DRAWN	LWL
DESIGNED	RC
CHECKED	CHC
APPROVED	DN
DATE	06/OCT/2011

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR: PROJECTS DIVISION | LAND ADMINISTRATION SECTION

CADD REF. 1103_T_000_PLD_P08_004B.dgn

TITLE
CONTRACT 1103
KEY PLAN OF WORKS AREA
APPENDIX 'F1'
SHEET 4 OF 5

SCALE 1 : 1000 (A1)

DRAWING NO. 1103/T/000/PLD/P08/004

REV. B

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Appendix 3.1

Strata Logging

VINCI CONSTRUCTION GRANDS PROJETS

Project : SHATIN TO CENTRAL LINK HIN KENG TO DIAMOND HILL TUNNELS

Contract No. : 1103

Works Order No.:

Logged by : P. PAK

Date logged : 26 APR 16

Checked by : KARL NG

Date checked : 26 APR 16

Excavation Dates: 21 APR 16 to 25 APR 16

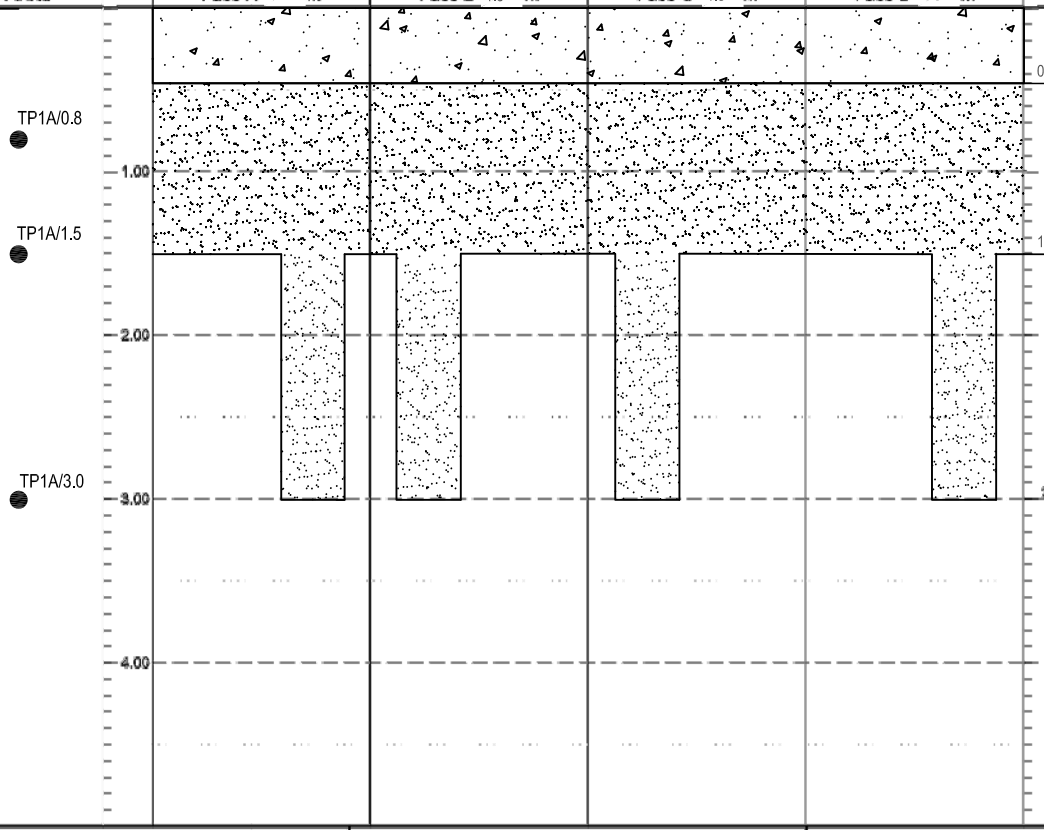
Backfill Date: 26 APR 16

Trial Pit No. TP1A

Co-ordinates : E 846654.3 N 814011.8

Ground Level : 5.6 mPD

TRIAL PIT RECORD

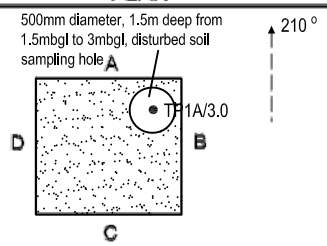


Depth (m)	Legend (Face A)	Description	Grade
0.45		Grey, CONCRETE with steel bar. (CONCRETE SLAB)	
1.50		Dense, moist, yellowish brown, medium to coarse SAND with some angular cobbles and fine to coarse gravel of rock fragment and concrete. (FILL) Base: Same as above	
3.00		Bottom of trial pit at 1.5m depth (max 3.0m)	

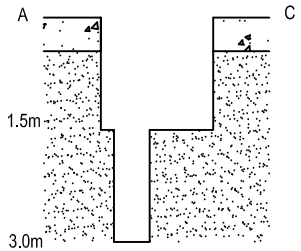
SYMBOL

- Small disturbed sample
- Large disturbed sample
- Undisturbed vertical sample
- Undisturbed horizontal sample
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer Test

PLAN



SECTION (A-C)



REMARKS

1. **Shoring:** YES
2. **Water Seepage:** NO
3. **Maximum Depth:** 3m (Sampling)
4. **Average Depth:** 1.5m
5. Small disturbed samples taken at 0.8m, 1.5m & 3.0m depth for contamination analysis

VINCI CONSTRUCTION GRANDS PROJETS

Project : SHATIN TO CENTRAL LINK HIN KENG TO DIAMOND HILL TUNNELS

Contract No. : 1103

Works Order No.:

Co-ordinates : E 846651 N 814008

Ground Level : 5.6 mPD

Logged by : P. PAK

Date logged : 26 APR 16

Checked by : KARL NG

Date checked : 26 APR 16

Excavation Dates: 21 APR 16 to 25 APR 16

Backfill Date: 26 APR 16

Trial Pit No. TP2

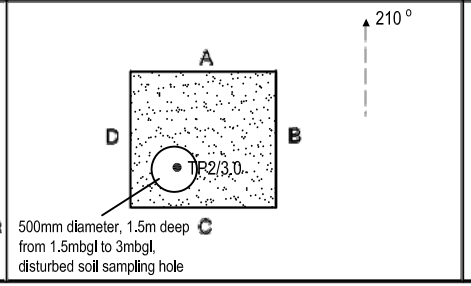
TRIAL PIT RECORD

Sample & Tests	Depth (m)	Sketch (Face A 1.5 m / Face B 1.5 m / Face C 1.5 m / Face D 1.5 m)	Depth (m)	Legend (Face A)	Description	Grade
			0.45		Grey, CONCRETE with steel bar (CONCRETE SLAB)	
TP2/0.8	1.00	Concrete (300mm) / Boulder (400mm)			Dense, moist, yellowish brown, medium to coarse SAND with some angular cobbles and fine to coarse gravel and occasional angular boulders of rock fragment and concrete. (FILL)	
TP2/1.5			1.50		Base: Same as above	
					Bottom of trial pit at 1.5m depth (max 3.0m)	
TP2/3.0	3.00		3.00			
	2.00					
	4.00					

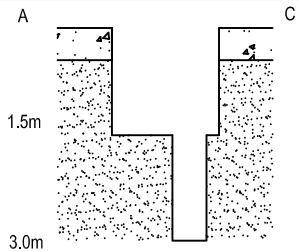
SYMBOL

- Small disturbed sample
- Large disturbed sample
- Undisturbed vertical sample
- Undisturbed horizontal sample
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer Test

PLAN



SECTION (A-C)



REMARKS

1. Shoring: YES
2. Water Seepage: NO
3. Maximum Depth: 3m (Sampling)
4. Average Depth: 1.5m
5. Small disturbed samples taken at 0.8m, 1.5m & 3.0m depth for contamination analysis

VINCI CONSTRUCTION GRANDS PROJETS

Project : SHATIN TO CENTRAL LINK HIN KENG TO DIAMOND HILL TUNNELS

Contract No. : 1103

Works Order No.:

Co-ordinates : E 846626.9 N 813993.6

Ground Level : 5.0 mPD

Logged by : P. PAK

Date logged : 26 APR 16

Checked by : KARL NG

Date checked : 26 APR 16

Excavation Dates: 21 APR 16 to 25 APR 16

Backfill Date: 26 APR 16

Trial Pit No. TP3A

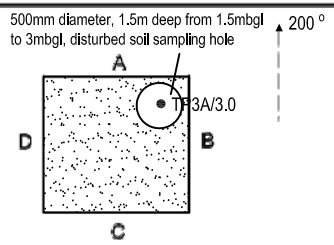
TRIAL PIT RECORD

Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend (Face A)	Description	Grade
TP3A/0.5	0	Face A 1.5 m, Face B 1.5 m, Face C 1.5 m, Face D 1.5 m	0		Dense, moist, yellowish brown, medium to coarse SAND with some angular cobbles and fine to coarse gravel of rock fragment and concrete and some angular boulders of concrete. (FILL)	
	1.00				At 0.4m to 1.5m: Concrete blocks of maximum 1500mm long.	
TP3A/1.5		Concrete (1200mm) Concrete (1500mm) Concrete (600mm)	1.50		Base: Same as above	
	2.00				Bottom of trial pit at 1.5m depth (max 3.0m)	
TP3A/3.0	3.00		3.00			
	4.00					

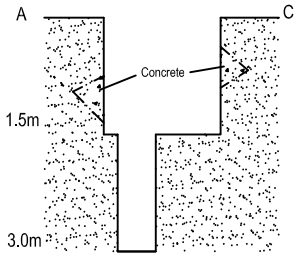
SYMBOL

- Small disturbed sample
- Large disturbed sample
- Undisturbed vertical sample
- Undisturbed horizontal sample
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer Test

PLAN



SECTION (A-C)



REMARKS

1. Shoring: YES
2. Water Seepage: NO
3. Maximum Depth: 3m (Sampling)
4. Average Depth: 1.5m
5. Small disturbed samples taken at 0.5m, 1.5m & 3.0m depth for contamination analysis

VINCI CONSTRUCTION GRANDS PROJETS

Project : SHATIN TO CENTRAL LINK HIN KENG TO DIAMOND HILL TUNNELS	Logged by : P. PAK	Checked by : KARL NG	Excavation Dates:	Trial Pit No.	
Contract No. : 1103	Works Order No.:	Date logged : 26 APR 16	Date checked : 26 APR 16	21 APR 16 to 25 APR 16	TP4A
Co-ordinates : E 846622.3 N 813985.9	Ground Level : 4.8 mPD		Backfill Date: 26 APR 16		

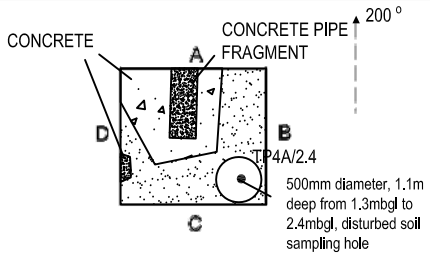
TRIAL PIT RECORD

Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend (Face A)	Description	Grade
TP4A/0.5	0.00	Face A 1.5 m, Face B 1.5 m, Face C 1.5 m, Face D 1.5 m	0.00		Grey, CONCRETE (CONCRETE SLAB)	
					Dense, moist, yellowish brown, medium to coarse SAND with some angular cobbles and gravels of rock fragment and concrete. (FILL)	
			1.00		Base: Same as above with some concrete blocks of maximum 1100mm x 1100mm	
TP4A/1.5	1.00				Bottom of trial pit at 1.3m depth (max 2.4m)	
	2.00					
TP4A/2.4	3.00		3.00			
	4.00					

SYMBOL

- Small disturbed sample
- Large disturbed sample
- Undisturbed vertical sample
- Undisturbed horizontal sample
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer Test

PLAN



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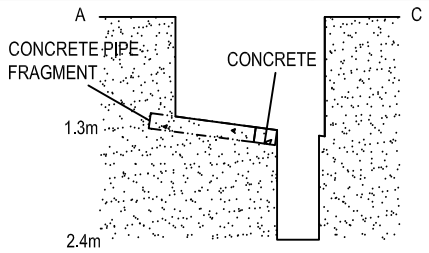

REMARKS

1. Shoring: YES
2. Water Seepage: NO
3. Maximum Depth: 2.4m
4. Average Depth: 1.1m
5. Small disturbed samples taken at 0.5m, 1.5m & 2.4m depth for contamination analysis

Appendix 4.1

Risk-Based Remediation Goals Criteria

Chemicals	RBRGs for Soil & Soil Saturation Limit		RBRGs for Groundwater & Solubility Limit	
	Industrial	Soil Saturation Limit (C_{sat})	Industrial	Solubility Limit
	(mg/kg)	(mg/kg)	(mg/L)	(mg/L)
VOCs				
Acetone	10000	***	10000	***
Benzene	9.21	336	54	1750
Bromodichloromethane	2.85	1030	26.2	6740
2-Butanone	10000	***	10000	***
Chloroform	1.54	1100	11.3	7920
Ethylbenzene	8240	138	10000	169
Methyl tert-Butyl Ether	70.1	2380	1810	***
Methylene Chloride	13.9	921	224	***
Styrene	10000	497	10000	310
Tetrachloroethene	0.777	97.1	2.95	200
Toluene	10000	235	10000	526
Trichloroethene	5.68	488	14.2	1100
Xylenes (Total)	1230	150	1570	175
SVOCs				
Acenaphthene	10000	60.2	10000	4.24
Acenaphthylene	10000	19.8	10000	3.93
Anthracene	10000	2.56	10000	0.0434
Benzo(a)anthracene	91.8	--	--	--
Benzo(a)pyrene	9.18	--	--	--
Benzo(b)fluoranthene	17.8	--	7.53	0.0015
Benzo(g,h,i)perylene	10000	--	--	--
Benzo(k)fluoranthene	918	--	--	--
Bis-(2-Ethylhexyl)phthalate	91.8	--		--
Chrysene	1140	--	812	0.0016
Dibenzo(a,h)anthracene	9.18	--	--	--
Fluoranthene	10000	--	10000	0.206
Fluorene	10000	54.7	10000	1.98
Hexachlorobenzene	0.582	--	0.695	6.2
Indeno(1,2,3-cd)pyrene	91.8	--	--	--
Naphthalene	453	125	862	31
Phenanthrene	10000	28	10000	1
Phenol	10000	7260	--	--
Pyrene	10000	--	10000	0.135
Metals				
Antimony	261	--	--	--
Arsenic	196	--	--	--
Barium	10000	--	--	--
Cadmium	653	--	--	--
Chromium III	10000	--	--	--
Chromium VI	1960	--	--	--
Cobalt	10000	--	--	--
Copper	10000	--	--	--
Lead	2290	--	--	--
Manganese	10000	--	--	--
Mercury	38.4	--	6.79	--
Molybdenum	3260	--	--	--
Nickel	10000	--	--	--
Tin	10000	--	--	--
Zinc	10000	--	--	--
Petroleum Carbon Ranges				
C6 - C8	10000	1000	1150	5.23
C9 - C16	10000	3000	9980	2.8
C17 - C35	10000	5000	178	2.8
*** indicated that the C_{sat} value exceeds the 'ceiling limit' (10,000 mg/kg) therefore the RBRG applies.				

Appendix 5.1

Soil Testing Results Summary

Shatin to Central Link - Tai Wai to Hung Hom Section
- Land Contamination Assessment of Magazine Site at TKO area 137
Summary of Laboratory Results

Sample Nature : Soil

Chemicals	Reporting Limit	RBRGs		ALS Lab ID	HK1616271-001	HK1616271-002	HK1616271-003	HK1616419-001	HK1616058-001	HK1616270-001	HK1616270-002	HK1615957-001	HK1616059-001	HK1616270-003	HK1615966-001	HK1616057-001	HK1616057-002
		Industrial	Soil Saturation Limit (C_{sat})	Sampling ID	TP1A 0.8M	TP1A 0.8M (DUPLICATE)	TP1A 1.5M	TP1A 3M	TP2 0.8M	TP2 1.5M	TP2 3M	TP3A 0.5M	TP3A 1.5M	TP3A 3M	TP4A 0.5M	TP4A 1.5M	TP4A 2.4M
	(mg/kg)	(mg/kg)	(mg/kg)	Sampling Date	25-Apr-16	25-Apr-16	25-Apr-16	26-Apr-16	22-Apr-16	25-Apr-16	25-Apr-16	21-Apr-16	22-Apr-16	25-Apr-16	21-Apr-16	22-Apr-16	22-Apr-16
VOCs																	
Acetone	50	10000	***		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzene	0.2	9.21	336		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromodichloromethane	0.1	2.85	1030		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Butanone	5	10000	***		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloroform	0.04	1.54	1100		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	0.5	8240	138		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether	0.5	70.1	2380		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene Chloride	0.5	13.9	921		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	0.5	10000	497		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.04	0.777	97.1		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	0.5	10000	235		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.1	5.68	488		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylenes (Total)	2	1230	150		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
SVOCs																	
Acenaphthene	0.500	10000	60.2		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.500	10000	19.8		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.500	10000	2.56		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.500	91.8	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.500	9.18	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.500	17.8	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.500	10000	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.500	918	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bis-(2-Ethylhexyl)phthalate	5.00	91.8	--		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chrysene	0.500	1140	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenzo(a,h)anthracene	0.500	9.18	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.500	10000	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.500	10000	54.7		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene	0.200	0.582	--		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Indeno(1,2,3-cd)pyrene	0.500	91.8	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	0.500	453	125		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.500	10000	28		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenol	0.500	10000	7260		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.500	10000	--		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Metals																	
Antimony	1	261	--		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	1	196	--		4	3	3	13	2	12	10	4	5	4	24	5	5
Barium	1	10000	--		60	58	28	47	27	133	18	33	18	30	62	68	35
Cadmium	0.2	653	--		<0.2	<0.2	0.2	<0.2	<0.2	0.2	0.6	<0.2	0.3	<0.2	<0.2	0.3	<0.2
Chromium III	1	10000	--		6	4	3	3	6	6	2	7	1	5	3	6	6
Chromium VI	1	1960	--		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	1	10000	--		3	2	2	3	2	5	2	2	1	2	2	2	2
Copper	1	10000	--		9	5	6	4	9	8	5	7	3	9	4	10	8
Lead	1	2290	--		35	29	39	51	42	249	39	32	54	37	54	42	30
Manganese	1	10000	--		453	482	523	458	450	1800	573	353	1050	368	507	513	356
Mercury	0.05	38.4	--		<0.05	<0.05	<0.05	0.14	<0.05	0.07	<0.05	<0.05	<0.05	0.1	<0.05	0.08	<0.05
Molybdenum	1	3260	--		3	3	3	5	2	3	2	2	2	2	4	1	2
Nickel	1	10000	--		3	3	2	2	4	3	1	3	<1	3	2	3	3
Tin	1	10000	--		4	4	3	2	13	9	6	3	5	6	2	4	3
Zinc	1	10000	--		54	46	44	56	46	56	74	52	60	63	39	66	54
Petroleum Carbon Ranges																	
C6 - C8	5	10000	1000		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C9 - C16	200	10000	3000		<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
C17 - C35	500	10000	5000		<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500

*** indicated that the C_{sat} value exceeds the 'ceiling limit' (10,000 mg/kg) therefore the RBRG applies.

Appendix 5.2

Laboratory Testing Reports

Trial Pit - TP1A

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 14
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616271
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON TONG, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: keung-ngai.chan@arup.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3447 6051	Telephone	: +852 2610 1044		
Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 25-APR-2016
Order number	: ----			Issue Date	: 11-MAY-2016
C-O-C number	: H031682			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Lin Wai Yu, Iris	Senior Chemist - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 10-MAY-2016

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: HK1616271

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.
Water sample(s) analysed and reported on an as received basis.
Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.
Water sample(s) were filtered prior to dissolved metal analysis.
Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 prior to determination of metals. The In-house method is developed based on ASTM D3974-09 method.

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	TP1A 0.8M	TP1A 0.8M (DUPLICATE)	TP1A 1.5M		
				Client sampling date / time	[25-APR-2016]	[25-APR-2016]	[25-APR-2016]		
					HK1616271-001	HK1616271-002	HK1616271-003		
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		**14.7**	**14.2**	**11.2**		
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg		<1	<1	<1		
EG020: Arsenic	7440-38-2	1	mg/kg		**4**	**3**	**3**		
EG020: Barium	7440-39-3	1	mg/kg		**60**	**58**	**28**		
EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	**0.2**		
EG020: Cobalt	7440-48-4	1	mg/kg		**3**	**2**	**2**		
EG020: Copper	7440-50-8	1	mg/kg		**9**	**5**	**6**		
EG020: Lead	7439-92-1	1	mg/kg		**35**	**29**	**39**		
EG020: Manganese	7439-96-5	1	mg/kg		**453**	**482**	**523**		
EG020: Mercury	7439-97-6	0.05	mg/kg		<0.05	<0.05	<0.05		
EG020: Molybdenum	7439-98-7	1	mg/kg		**3**	**3**	**3**		
EG020: Nickel	7440-02-0	1	mg/kg		**3**	**3**	**2**		
EG020: Tin	7440-31-5	1	mg/kg		**4**	**4**	**3**		
EG020: Zinc	7440-66-6	1	mg/kg		**54**	**46**	**44**		
EG049: Trivalent Chromium	16065-83-1	1	mg/kg		**6**	**4**	**3**		
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg		<1	<1	<1		
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	0.500	mg/kg		<0.500	<0.500	<0.500		
Acenaphthylene	208-96-8	0.500	mg/kg		<0.500	<0.500	<0.500		
Acenaphthene	83-32-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Fluorene	86-73-7	0.500	mg/kg		<0.500	<0.500	<0.500		
Phenanthrene	85-01-8	0.500	mg/kg		<0.500	<0.500	<0.500		
Anthracene	120-12-7	0.500	mg/kg		<0.500	<0.500	<0.500		
Fluoranthene	206-44-0	0.500	mg/kg		<0.500	<0.500	<0.500		
Pyrene	129-00-0	0.500	mg/kg		<0.500	<0.500	<0.500		
Benz(a)anthracene	56-55-3	0.500	mg/kg		<0.500	<0.500	<0.500		
Chrysene	218-01-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(a)pyrene	50-32-8	0.500	mg/kg		<0.500	<0.500	<0.500		
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg		<0.500	<0.500	<0.500		
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg		<0.500	<0.500	<0.500		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	0.50	mg/kg		<0.50	<0.50	<0.50		
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg		<0.200	<0.200	<0.200		

Sub-Matrix: SOIL				Client sample ID	TP1A 0.8M	TP1A 0.8M (DUPLICATE)	TP1A 1.5M		
				Client sampling date / time	[25-APR-2016]	[25-APR-2016]	[25-APR-2016]		
Compound	CAS Number	LOR	Unit		HK1616271-001	HK1616271-002	HK1616271-003		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate - Continued									
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg		<5.00	<5.00	<5.00		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	5	mg/kg		<5	<5	<5		
C9 - C16 Fraction	----	200	mg/kg		<200	<200	<200		
C17 - C35 Fraction	----	500	mg/kg		<500	<500	<500		
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0		
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5		
Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0		
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	50	mg/kg		<50	<50	<50		
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	<5	<5		
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	0.5	mg/kg		<0.5	<0.5	<0.5		
Trichloroethene	79-01-6	0.1	mg/kg		<0.1	<0.1	<0.1		
Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	<0.04	<0.04		
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	0.04	mg/kg		<0.04	<0.04	<0.04		
Bromodichloromethane	75-27-4	0.1	mg/kg		<0.1	<0.1	<0.1		
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg		<0.5	<0.5	<0.5		
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**107**	**105**	**105**		
4-Terphenyl-d14	1718-51-0	0.1	%		**112**	**114**	**119**		
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Dibromofluoromethane	1868-53-7	0.1	%		**99.0**	**96.4**	**98.2**		
Toluene-D8	2037-26-5	0.1	%		**108**	**106**	**107**		
4-Bromofluorobenzene	460-00-4	0.1	%		**100**	**99.4**	**101**		
EP-074_SR-S: VOC Surrogates									
Dibromofluoromethane	1868-53-7	0.1	%		**99.0**	**96.4**	**98.2**		
Toluene-D8	2037-26-5	0.1	%		**108**	**106**	**107**		
4-Bromofluorobenzene	460-00-4	0.1	%		**100**	**99.4**	**101**		

Sub-Matrix: WATER				Client sample ID	EQUIPMENT BLANK	FIELD BLANK	TRIP BLANK		
				Client sampling date / time	[25-APR-2016]	[25-APR-2016]	[25-APR-2016]		
Compound	CAS Number	LOR	Unit		HK1616271-004	HK1616271-005	HK1616271-006		
EG: Metals and Major Cations - Filtered									
EG020: Antimony	7440-36-0	1	µg/L		<1	<1	----		
EG020: Arsenic	7440-38-2	10	µg/L		<10	<10	----		
EG020: Barium	7440-39-3	1	µg/L		<1	<1	----		
EG020: Cadmium	7440-43-9	0.2	µg/L		<0.2	<0.2	----		
EG020: Cobalt	7440-48-4	1	µg/L		<1	<1	----		
EG020: Copper	7440-50-8	1	µg/L		<1	<1	----		
EG020: Lead	7439-92-1	1	µg/L		<1	<1	----		
EG020: Manganese	7439-96-5	1	µg/L		<1	<1	----		
EG020: Mercury	7439-97-6	0.1	µg/L		<0.1	<0.1	----		
EG020: Molybdenum	7439-98-7	1	µg/L		<1	<1	----		
EG020: Nickel	7440-02-0	1	µg/L		<1	<1	----		
EG020: Tin	7440-31-5	10	µg/L		<10	<10	----		
EG020: Zinc	7440-66-6	10	µg/L		**34**	**24**	----		
EG049: Trivalent Chromium	16065-83-1	20	µg/L		<20	<20	----		
EG050: Hexavalent Chromium	18540-29-9	20	µg/L		<20	<20	----		
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	2.0	µg/L		<2.0	<2.0	----		
Acenaphthylene	208-96-8	2.0	µg/L		<2.0	<2.0	----		
Acenaphthene	83-32-9	2.0	µg/L		<2.0	<2.0	----		
Fluorene	86-73-7	2.0	µg/L		<2.0	<2.0	----		
Phenanthrene	85-01-8	2.0	µg/L		<2.0	<2.0	----		
Anthracene	120-12-7	2.0	µg/L		<2.0	<2.0	----		
Fluoranthene	206-44-0	2.0	µg/L		<2.0	<2.0	----		
Pyrene	129-00-0	2.0	µg/L		<2.0	<2.0	----		
Benz(a)anthracene	56-55-3	2.0	µg/L		<2.0	<2.0	----		
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----		
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	----		
Benzo(k)fluoranthene	207-08-9	2.0	µg/L		<2.0	<2.0	----		
Benzo(a)pyrene	50-32-8	2.0	µg/L		<2.0	<2.0	----		
Indeno(1.2.3.cd)pyrene	193-39-5	2.0	µg/L		<2.0	<2.0	----		
Dibenz(a.h)anthracene	53-70-3	2.0	µg/L		<2.0	<2.0	----		
Benzo(g.h.i)perylene	191-24-2	2.0	µg/L		<2.0	<2.0	----		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	2.0	µg/L		<2.0	<2.0	----		
Hexachlorobenzene (HCB)	118-74-1	4.0	µg/L		<4.0	<4.0	----		
Bis(2-ethylhexyl)phthalate	117-81-7	2.0	µg/L		<2.0	<2.0	----		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	20	µg/L		<20	<20	<20		
C9 - C16 Fraction	----	500	µg/L		<500	<500	----		
C17 - C35 Fraction	----	500	µg/L		<500	<500	----		

Sub-Matrix: WATER				Client sample ID	EQUIPMENT BLANK	FIELD BLANK	TRIP BLANK		
				Client sampling date / time	[25-APR-2016]	[25-APR-2016]	[25-APR-2016]		
Compound	CAS Number	LOR	Unit		HK1616271-004	HK1616271-005	HK1616271-006		
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	5.0	µg/L		<5.0	<5.0	<5.0		
Toluene	108-88-3	5.0	µg/L		<5.0	<5.0	<5.0		
Ethylbenzene	100-41-4	5.0	µg/L		<5.0	<5.0	<5.0		
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L		<10	<10	<10		
Styrene	100-42-5	5.0	µg/L		<5.0	<5.0	<5.0		
ortho-Xylene	95-47-6	5.0	µg/L		<5.0	<5.0	<5.0		
Xylenes (Total)	----	20	µg/L		<20	<20	<20		
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	500	µg/L		<500	<500	<500		
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	<50		
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	50	µg/L		<50	<50	<50		
Trichloroethene	79-01-6	5.0	µg/L		<5.0	<5.0	<5.0		
Tetrachloroethene	127-18-4	5.0	µg/L		<5.0	<5.0	<5.0		
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	5.0	µg/L		<5.0	<5.0	<5.0		
Bromodichloromethane	75-27-4	5.0	µg/L		<5.0	<5.0	<5.0		
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L		<5.0	<5.0	<5.0		
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**55.3**	**104**	----		
4-Terphenyl-d14	1718-51-0	0.1	%		**115**	**122**	----		
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Dibromofluoromethane	1868-53-7	0.1	%		**95.4**	**96.0**	**97.0**		
Toluene-D8	2037-26-5	0.1	%		**108**	**110**	**109**		
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**102**	**102**		
EP-074_SR-S: VOC Surrogates									
Dibromofluoromethane	1868-53-7	0.1	%		**95.4**	**96.0**	**97.0**		
Toluene-D8	2037-26-5	0.1	%		**108**	**110**	**109**		
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**102**	**102**		

Laboratory Duplicate (DUP) Report

Matrix: SOIL

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126)								
HK1616174-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	11.2	11.4	0.9
HK1616271-002	TP1A 0.8M (DUPLICATE)	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	14.2	15.2	6.9
EG: Metals and Major Cations (QC Lot: 4190095)								
HK1616271-002	TP1A 0.8M (DUPLICATE)	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4190095) - Continued								
HK1616271-002	TP1A 0.8M (DUPLICATE)	**EG020: Cadmium**	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	3	2	0.0
		EG020: Barium	7440-39-3	1	mg/kg	58	51	13.3
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	5	5	0.0
		EG020: Lead	7439-92-1	1	mg/kg	29	25	14.9
		EG020: Manganese	7439-96-5	1	mg/kg	482	421	13.7
		EG020: Molybdenum	7439-98-7	1	mg/kg	3	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	2	0.0
		EG020: Tin	7440-31-5	1	mg/kg	4	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	46	46	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)								
HK1616271-001	TP1A 0.8M	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192) - Continued								
HK1616271-001	TP1A 0.8M	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)								
HK1616271-001	TP1A 0.8M	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)								
HK1616271-001	TP1A 0.8M	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)								
HK1616271-001	TP1A 0.8M	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)								
HK1616271-001	TP1A 0.8M	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)								
HK1616271-001	TP1A 0.8M	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 4190392)								
HK1616271-005	FIELD BLANK	**EG020: Mercury**	7439-97-6	0.1	µg/L	<0.1	<0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	µg/L	<1	<1	0.0
		EG020: Barium	7440-39-3	1	µg/L	<1	<1	0.0
		EG020: Cobalt	7440-48-4	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Manganese	7439-96-5	1	µg/L	<1	<1	0.0
		EG020: Molybdenum	7439-98-7	1	µg/L	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Tin	7440-31-5	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	24	22	5.2
EG: Metals and Major Cations - Filtered (QC Lot: 4190393)								
HK1616271-005	FIELD BLANK	**EG050: Hexavalent Chromium**	18540-29-9	20	µg/L	<20	<20	0.0

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4187986)								
HK1615590-007	Anonymous	**Naphthalene**	91-20-3	0.2	µg/L	<0.2	<0.2	0.0
		Acenaphthylene	208-96-8	0.2	µg/L	<0.2	<0.2	0.0
		Acenaphthene	83-32-9	0.2	µg/L	<0.2	<0.2	0.0
		Fluorene	86-73-7	0.2	µg/L	<0.2	<0.2	0.0
		Phenanthrene	85-01-8	0.2	µg/L	<0.2	<0.2	0.0
		Anthracene	120-12-7	0.2	µg/L	<0.2	<0.2	0.0
		Fluoranthene	206-44-0	0.2	µg/L	<0.2	<0.2	0.0
		Pyrene	129-00-0	0.2	µg/L	<0.2	<0.2	0.0
		Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	<0.2	0.0
		Chrysene	218-01-9	0.2	µg/L	<0.2	<0.2	0.0
		Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	<0.2	0.0
		Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	<0.2	0.0
		Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	<0.2	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	<0.2	<0.2	0.0
		Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	<0.2	<0.2	0.0
		Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	<0.2	<0.2	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4187986)								
HK1615590-007	Anonymous	**Bis(2-ethylhexyl)phthalate**	117-81-7	10.0	µg/L	<10.0	<10.0	0.0
		Hexachlorobenzene (HCB)	118-74-1	4.0	µg/L	<4.0	<4.0	0.0
		Phenol	108-95-2	5.0	µg/L	<5.0	<5.0	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190095)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	100	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	86.7	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.6	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	88.8	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	86.4	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	88.4	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.3	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	97.6	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	91.0	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	87.0	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	87.6	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	102	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	90.5	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	111	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	92.2	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	92.6	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	93.9	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	94.9	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	93.7	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	95.3	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	93.2	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	88.4	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	93.0	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	104	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.1	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	90.9	----	61	147	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report: Spike Concentration	Spike Recovery (%) LCS	Spike Recovery (%) DCS	Recovery Limits (%) Low	Recovery Limits (%) High	RPD (%) Value	RPD (%) Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191) - Continued											
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	86.8	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	87.2	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	94.0	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	87.5	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	86.4	----	56	126	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report: Spike Concentration	Spike Recovery (%) LCS	Spike Recovery (%) DCS	Recovery Limits (%) Low	Recovery Limits (%) High	RPD (%) Value	RPD (%) Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 4190392)											
EG020: Antimony	7440-36-0	1	µg/L	<1	100 µg/L	89.6	----	77	109	----	----
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	88.2	----	74	120	----	----
EG020: Barium	7440-39-3	1	µg/L	<1	100 µg/L	96.4	----	78	112	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	90.6	----	78	112	----	----
EG020: Cobalt	7440-48-4	1	µg/L	<1	100 µg/L	94.4	----	75	115	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	93.5	----	75	115	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	91.8	----	80	110	----	----
EG020: Manganese	7439-96-5	1	µg/L	<1	100 µg/L	94.2	----	75	115	----	----
EG020: Mercury	7439-97-6	0.5	µg/L	<0.5	2 µg/L	102	----	76	118	----	----
EG020: Molybdenum	7439-98-7	1	µg/L	<1	100 µg/L	91.8	----	78	112	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	90.9	----	73	119	----	----
EG020: Tin	7440-31-5	10	µg/L	<10	100 µg/L	91.3	----	74	116	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	86.6	----	73	121	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 4190393)											
EG050: Hexavalent Chromium	18540-29-9	20	µg/L	<20	100 µg/L	91.2	----	80	106	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4187986)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	63.8	----	36	124	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	62.4	----	39	108	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	62.1	----	33	120	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	73.1	----	37	120	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	73.2	----	45	117	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	70.8	----	46	105	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	98.0	----	64	121	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	101	----	64	121	----	----
Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	87.0	----	65	120	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	96.0	----	61	135	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	91.0	----	56	124	----	----
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	102	----	58	129	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4187986) - Continued											
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	93.6	----	42	114	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	75.6	----	43	113	----	----
Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	79.6	----	33	115	----	----
Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	72.6	----	36	124	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4187986)											
Phenol	108-95-2	5	µg/L	<5.0	0.5 µg/L	51.4	----	17	118	----	----
Hexachlorobenzene (HCB)	118-74-1	5	µg/L	<5.0	0.5 µg/L	67.4	----	33	123	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L	<10.0	0.5 µg/L	117	----	76	145	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4188020)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	83.6	----	73	122	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190187)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	83.8	----	42	99	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	90.1	----	53	134	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4191128)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	93.2	----	67	130	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	91.0	----	76	127	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	87.5	----	84	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	100	----	80	128	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	100	----	76	120	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	104	----	84	125	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	102	----	86	123	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4191128)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	86.7	----	65	140	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	86.8	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4191128)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	97.6	----	76	128	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	89.7	----	68	121	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	87.1	----	75	118	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4191128)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	92.5	----	66	134	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	102	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4191128)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	91.0	----	65	121	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190095)										
HK1616271-001	TP1A 0.8M	EG020: Antimony	7440-36-0	5 mg/kg	94.0	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	81.9	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	88.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	84.7	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	98.7	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	109	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	86.6	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	81.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	83.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)										
HK1616271-002	TP1A 0.8M (DUPLICATE)	C9 - C16 Fraction	----	31.5 mg/kg	97.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	94.4	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)										
HK1616271-002	TP1A 0.8M (DUPLICATE)	C6 - C8 Fraction	----	4.5 mg/kg	98.3	----	50	130	----	----

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 4190392)										
HK1616271-004	EQUIPMENT BLANK	EG020: Antimony	7440-36-0	100 µg/L	88.2	----	75	125	----	----
		EG020: Arsenic	7440-38-2	100 µg/L	89.0	----	75	125	----	----
		EG020: Barium	7440-39-3	100 µg/L	89.7	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	86.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	100 µg/L	90.2	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	90.0	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	90.3	----	75	125	----	----
		EG020: Manganese	7439-96-5	100 µg/L	89.3	----	75	125	----	----

Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%): MS	Spike Recovery (%): MSD	Recovery Limits (%): Low	Recovery Limits (%): High	RPD (%): Value	RPD (%): Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 4190392) - Continued										
HK1616271-004	EQUIPMENT BLANK	**EG020: Mercury**	7439-97-6	2 µg/L	87.5	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	100 µg/L	92.2	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	88.4	----	75	125	----	----
		EG020: Tin	7440-31-5	100 µg/L	91.5	----	75	125	----	----
		EG020: Zinc	7440-66-6	100 µg/L	78.0	----	75	125	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 4190393)										
HK1616271-004	EQUIPMENT BLANK	**EG050: Hexavalent Chromium**	18540-29-9	100 µg/L	90.6	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%): Low	Recovery Limits (%): High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616419
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON 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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Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 26-APR-2016
Order number	: ----			Issue Date	: 10-MAY-2016
C-O-C number	: H031685			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 04-MAY-2016

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: HK1616419

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.
Water sample(s) analysed and reported on an as received basis.
Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.
Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 prior to determination of metals. The In-house method is developed based on ASTM D3974-09 method.

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP1A 3.0M Client sampling date / time: [26-APR-2016] HK1616419-001
EA/ED: Physical and Aggregate Properties				
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**13.9**
EG: Metals and Major Cations				
EG020: Antimony	7440-36-0	1	mg/kg	<1
EG020: Arsenic	7440-38-2	1	mg/kg	**13**
EG020: Barium	7440-39-3	1	mg/kg	**47**
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	**3**
EG020: Copper	7440-50-8	1	mg/kg	**4**
EG020: Lead	7439-92-1	1	mg/kg	**51**
EG020: Manganese	7439-96-5	1	mg/kg	**458**
EG020: Mercury	7439-97-6	0.05	mg/kg	**0.14**
EG020: Molybdenum	7439-98-7	1	mg/kg	**5**
EG020: Nickel	7440-02-0	1	mg/kg	**2**
EG020: Tin	7440-31-5	1	mg/kg	**2**
EG020: Zinc	7440-66-6	1	mg/kg	**56**
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**3**
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	91-20-3	0.500	mg/kg	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate				
Phenol	108-95-2	0.50	mg/kg	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00

Sub-Matrix: SOIL			Client sample ID	TP1A 3.0M				
			Client sampling date / time	[26-APR-2016]				
Compound	CAS Number	LOR	Unit	HK1616419-001				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5				
C9 - C16 Fraction	----	200	mg/kg	<200				
C17 - C35 Fraction	----	500	mg/kg	<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2				
Toluene	108-88-3	0.5	mg/kg	<0.5				
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5				
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0				
Styrene	100-42-5	0.5	mg/kg	<0.5				
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5				
Xylenes (Total)	----	2.0	mg/kg	<2.0				
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50				
2-Butanone (MEK)	78-93-3	5	mg/kg	<5				
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5				
Trichloroethene	79-01-6	0.1	mg/kg	<0.1				
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04				
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04				
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1				
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**109**				
4-Terphenyl-d14	1718-51-0	0.1	%	**117**				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**97.7**				
Toluene-D8	2037-26-5	0.1	%	**105**				
4-Bromofluorobenzene	460-00-4	0.1	%	**101**				
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**97.7**				
Toluene-D8	2037-26-5	0.1	%	**105**				
4-Bromofluorobenzene	460-00-4	0.1	%	**101**				

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP BLANK Client sampling date / time: [26-APR-2016] HK1616419-002
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)				
C6 - C8 Fraction	----	20	µg/L	<20
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)				
Benzene	71-43-2	5.0	µg/L	<5.0
Toluene	108-88-3	5.0	µg/L	<5.0
Ethylbenzene	100-41-4	5.0	µg/L	<5.0
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10
Styrene	100-42-5	5.0	µg/L	<5.0
ortho-Xylene	95-47-6	5.0	µg/L	<5.0
Xylenes (Total)	----	20	µg/L	<20
EP-074_SR-B: Oxygenated Compounds				
2-Propanone (Acetone)	67-64-1	500	µg/L	<500
2-Butanone (MEK)	78-93-3	50	µg/L	<50
EP-074_SR-E: Halogenated Aliphatics				
Methylene chloride	75-09-2	50	µg/L	<50
Trichloroethene	79-01-6	5.0	µg/L	<5.0
Tetrachloroethene	127-18-4	5.0	µg/L	<5.0
EP-074_SR-G: Trihalomethanes (THM)				
Chloroform	67-66-3	5.0	µg/L	<5.0
Bromodichloromethane	75-27-4	5.0	µg/L	<5.0
EP-074_SR-I: Methyl-tert-butyl Ether				
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	<5.0
EP-080_SRS: TPH(Volatile)/BTEX Surrogate				
Dibromofluoromethane	1868-53-7	0.1	%	**95.4**
Toluene-D8	2037-26-5	0.1	%	**110**
4-Bromofluorobenzene	460-00-4	0.1	%	**102**
EP-074_SR-S: VOC Surrogates				
Dibromofluoromethane	1868-53-7	0.1	%	**95.4**
Toluene-D8	2037-26-5	0.1	%	**110**
4-Bromofluorobenzene	460-00-4	0.1	%	**102**

Laboratory Duplicate (DUP) Report

Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126)								
HK1616174-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	11.2	11.4	0.9
HK1616271-002	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	14.2	15.2	6.9
EG: Metals and Major Cations (QC Lot: 4190095)								
HK1616271-002	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4190095) - Continued								
HK1616271-002	Anonymous	**EG020: Antimony**	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	3	2	0.0
		EG020: Barium	7440-39-3	1	mg/kg	58	51	13.3
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	5	5	0.0
		EG020: Lead	7439-92-1	1	mg/kg	29	25	14.9
		EG020: Manganese	7439-96-5	1	mg/kg	482	421	13.7
		EG020: Molybdenum	7439-98-7	1	mg/kg	3	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	2	0.0
		EG020: Tin	7440-31-5	1	mg/kg	4	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	46	46	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)								
HK1616271-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)								
HK1616271-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)								
HK1616271-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190095)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	100	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	86.7	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.6	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	88.8	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	86.4	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	88.4	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.3	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	97.6	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	91.0	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	87.0	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	87.6	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	102	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	90.5	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160) - Continued											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	111	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	92.2	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	92.6	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	93.9	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	94.9	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	93.7	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	95.3	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	93.2	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	88.4	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	93.0	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	104	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.1	----	67	118	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	90.9	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	86.8	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	87.2	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	94.0	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	87.5	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	86.4	----	56	126	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4191129)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	88.2	----	63	127	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4191128)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	93.2	----	67	130	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	91.0	----	76	127	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	87.5	----	84	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	100	----	80	128	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	100	----	76	120	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	104	----	84	125	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	102	----	86	123	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4191128)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	86.7	----	65	140	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	86.8	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4191128)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	97.6	----	76	128	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	89.7	----	68	121	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	87.1	----	75	118	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4191128)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	92.5	----	66	134	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	102	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4191128)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	91.0	----	65	121	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190095)										
HK1616271-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	94.0	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	81.9	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	88.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	84.7	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	98.7	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	109	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	86.6	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	81.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	83.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190190)										
HK1616271-002	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	97.0	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	94.4	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4190192)										
HK1616271-002	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	98.3	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Sub-Matrix: **WATER**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

Trial Pit - TP2

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616058
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Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 22-APR-2016
Order number	: ----			Issue Date	: 09-MAY-2016
C-O-C number	: H031681			No. of samples received	: 1
Site	: ----			No. of samples analysed	: 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. The completion date of analysis is: 06-MAY-2016

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: HK1616058

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

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

Soil 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.

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 0.8M Client sampling date / time: [22-APR-2016] HK1616058-001
EA/ED: Physical and Aggregate Properties				
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**14.8**
EG: Metals and Major Cations				
EG020: Antimony	7440-36-0	1	mg/kg	<1
EG020: Arsenic	7440-38-2	1	mg/kg	**2**
EG020: Barium	7440-39-3	1	mg/kg	**27**
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	**2**
EG020: Copper	7440-50-8	1	mg/kg	**9**
EG020: Lead	7439-92-1	1	mg/kg	**42**
EG020: Manganese	7439-96-5	1	mg/kg	**450**
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05
EG020: Molybdenum	7439-98-7	1	mg/kg	**2**
EG020: Nickel	7440-02-0	1	mg/kg	**4**
EG020: Tin	7440-31-5	1	mg/kg	**13**
EG020: Zinc	7440-66-6	1	mg/kg	**46**
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**6**
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	91-20-3	0.500	mg/kg	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate				
Phenol	108-95-2	0.50	mg/kg	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 0.8M Client sampling date / time: [22-APR-2016] HK1616058-001
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)				
C6 - C8 Fraction	----	5	mg/kg	<5
C9 - C16 Fraction	----	200	mg/kg	<200
C17 - C35 Fraction	----	500	mg/kg	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)				
Benzene	71-43-2	0.2	mg/kg	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0
EP-074_SR-B: Oxygenated Compounds				
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5
EP-074_SR-E: Halogenated Aliphatics				
Methylene chloride	75-09-2	0.5	mg/kg	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04
EP-074_SR-G: Trihalomethanes (THM)				
Chloroform	67-66-3	0.04	mg/kg	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether				
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates				
2-Fluorobiphenyl	321-60-8	0.1	%	**95.5**
4-Terphenyl-d14	1718-51-0	0.1	%	**103**
EP-080_SRS: TPH(Volatile)/BTEX Surrogate				
Dibromofluoromethane	1868-53-7	0.1	%	**97.0**
Toluene-D8	2037-26-5	0.1	%	**108**
4-Bromofluorobenzene	460-00-4	0.1	%	**101**
EP-074_SR-S: VOC Surrogates				
Dibromofluoromethane	1868-53-7	0.1	%	**97.0**
Toluene-D8	2037-26-5	0.1	%	**108**
4-Bromofluorobenzene	460-00-4	0.1	%	**101**

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190160)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190160) - Continued								
HK1616057-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	13.1	13.1	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EG: Metals and Major Cations (QC Lot: 4195417)								
HK1616057-002	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	5	5	0.0
		EG020: Barium	7440-39-3	1	mg/kg	35	36	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	8	7	0.0
		EG020: Lead	7439-92-1	1	mg/kg	30	28	5.6
		EG020: Manganese	7439-96-5	1	mg/kg	356	374	5.1
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	3	0.0
		EG020: Tin	7440-31-5	1	mg/kg	3	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	54	56	4.2
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176) - Continued								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)								
HK1615791-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EG: Metals and Major Cations (QC Lot: 4195417)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	98.6	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	91.7	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	93.1	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	83.5	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	85.9	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	94.5	----	81	109	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4195417) - Continued											
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	98.5	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	103	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	90.1	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	86.0	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	91.9	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	88.5	----	80	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	82.2	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	84.1	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	85.1	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	101	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	75	122	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177) - Continued											
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	96.8	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	86.9	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.7	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	88.5	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	85.2	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	85.4	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	86.2	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	84.0	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	87.0	----	56	126	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4195417)										
HK1616057-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	91.6	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	86.7	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	97.5	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	82.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	101	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	113	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	93.8	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	80.0	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	86.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%) Low*	*High*
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616270
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON TONG, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: keung-ngai.chan@arup.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3447 6051	Telephone	: +852 2610 1044		
Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 25-APR-2016
Order number	: ----			Issue Date	: 10-MAY-2016
C-O-C number	: H031683			No. of samples received	: 3
Site	: ----			No. of samples analysed	: 3

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 04-MAY-2016

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: HK1616270

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

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

Soil 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.

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	**Manager - Organics**	**Organics**
Wong Wing, Kenneth	**Manager - Metals**	**Inorganics**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 1.5M Client sampling date / time: [25-APR-2016] HK1616270-001	TP2 3M [25-APR-2016] HK1616270-002	TP3A 3M [25-APR-2016] HK1616270-003		
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**15.3**	**11.1**	**19.6**		
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1		
EG020: Arsenic	7440-38-2	1	mg/kg	**12**	**10**	**4**		
EG020: Barium	7440-39-3	1	mg/kg	**133**	**18**	**30**		
EG020: Cadmium	7440-43-9	0.2	mg/kg	**0.2**	**0.6**	<0.2		
EG020: Cobalt	7440-48-4	1	mg/kg	**5**	**2**	**2**		
EG020: Copper	7440-50-8	1	mg/kg	**8**	**5**	**9**		
EG020: Lead	7439-92-1	1	mg/kg	**249**	**39**	**37**		
EG020: Manganese	7439-96-5	1	mg/kg	**1800**	**573**	**368**		
EG020: Mercury	7439-97-6	0.05	mg/kg	**0.07**	<0.05	**0.10**		
EG020: Molybdenum	7439-98-7	1	mg/kg	**3**	**2**	**2**		
EG020: Nickel	7440-02-0	1	mg/kg	**3**	**1**	**3**		
EG020: Tin	7440-31-5	1	mg/kg	**9**	**6**	**6**		
EG020: Zinc	7440-66-6	1	mg/kg	**56**	**74**	**63**		
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**6**	**2**	**5**		
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1		
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500		
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500		
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500		
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500		
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500		
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50		
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200		
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00		

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 1.5M Client sampling date / time: [25-APR-2016] HK1616270-001	Client sample ID: TP2 3M Client sampling date / time: [25-APR-2016] HK1616270-002	Client sample ID: TP3A 3M Client sampling date / time: [25-APR-2016] HK1616270-003		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5		
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200		
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500		
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0		
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5		
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0		
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50		
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5		
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5		
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1		
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04		
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04		
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1		
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5		
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**106**	**94.1**	**99.9**		
4-Terphenyl-d14	1718-51-0	0.1	%	**121**	**105**	**112**		
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**98.2**	**98.8**	**100**		
Toluene-D8	2037-26-5	0.1	%	**107**	**108**	**106**		
4-Bromofluorobenzene	460-00-4	0.1	%	**100**	**101**	**102**		
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**98.2**	**98.8**	**100**		
Toluene-D8	2037-26-5	0.1	%	**107**	**108**	**106**		
4-Bromofluorobenzene	460-00-4	0.1	%	**100**	**101**	**102**		

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126) - Continued								
HK1616174-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	11.2	11.4	0.9
HK1616271-002	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	14.2	15.2	6.9
EG: Metals and Major Cations (QC Lot: 4190094)								
HK1616174-001	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	6	6	0.0
		EG020: Barium	7440-39-3	1	mg/kg	12	11	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	27	27	0.0
		EG020: Copper	7440-50-8	1	mg/kg	13	12	11.5
		EG020: Lead	7439-92-1	1	mg/kg	79	73	7.9
		EG020: Manganese	7439-96-5	1	mg/kg	74	77	3.8
		EG020: Molybdenum	7439-98-7	1	mg/kg	3	3	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	2	1	0.0
		EG020: Tin	7440-31-5	1	mg/kg	1	1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	37	39	5.7
HK1616220-002	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	15.2	15.3	0.7
		EG020: Barium	7440-39-3	0.5	mg/kg	126	113	10.3
		EG020: Cobalt	7440-48-4	0.5	mg/kg	27.4	31.5	13.7
		EG020: Manganese	7439-96-5	0.5	mg/kg	2430	2850	16.0
		EG020: Tin	7440-31-5	0.5	mg/kg	3950	4320	9.0
		EG020: Antimony	7440-36-0	1	mg/kg	459	520	12.4
		EG020: Arsenic	7440-38-2	1	mg/kg	28	33	15.2
		EG020: Copper	7440-50-8	1	mg/kg	605	674	10.8
		EG020: Lead	7439-92-1	1	mg/kg	60	59	0.0
		EG020: Molybdenum	7439-98-7	1	mg/kg	32	31	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	120	117	3.1
		EG020: Zinc	7440-66-6	1	mg/kg	13000	14400	10.4
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472) - Continued								
HK1615957-001	Anonymous	**Pyrene**	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)								
HK1616271-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190094)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	98.8	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.4	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	90.6	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	86.2	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	87.6	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	87.3	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	89.3	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	95.8	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	100	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	89.0	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	87.9	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	93.6	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	90.7	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176) - Continued											
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	93.9	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	94.9	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	93.7	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	95.3	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	93.2	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	88.4	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	93.0	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	104	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.1	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	90.9	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	86.8	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	87.2	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	94.0	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	87.5	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	86.4	----	56	126	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190094)										
HK1616056-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	88.6	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	90.6	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	93.5	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	86.6	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	92.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	82.4	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-080_SRS: TPH(Volatile)/BTEX Surrogate - Continued			
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Trial Pit - TP3A

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1615957
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON 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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Telephone	: +852 3447 6051	Telephone	: +852 2610 1044		
Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 21-APR-2016
Order number	: ----			Issue Date	: 09-MAY-2016
C-O-C number	: H029594			No. of samples received	: 1
Site	: ----			No. of samples analysed	: 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. The completion date of analysis is: 04-MAY-2016

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: HK1615957

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

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

Soil 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.

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	**Manager - Organics**	**Organics**
Wong Wing, Kenneth	**Manager - Metals**	**Inorganics**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP3A 0.5M				
				Client sampling date / time: 21-APR-2016 14:50				
				HK1615957-001				
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**10.6**				
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1				
EG020: Arsenic	7440-38-2	1	mg/kg	**4**				
EG020: Barium	7440-39-3	1	mg/kg	**33**				
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2				
EG020: Cobalt	7440-48-4	1	mg/kg	**2**				
EG020: Copper	7440-50-8	1	mg/kg	**7**				
EG020: Lead	7439-92-1	1	mg/kg	**32**				
EG020: Manganese	7439-96-5	1	mg/kg	**353**				
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05				
EG020: Molybdenum	7439-98-7	1	mg/kg	**2**				
EG020: Nickel	7440-02-0	1	mg/kg	**3**				
EG020: Tin	7440-31-5	1	mg/kg	**3**				
EG020: Zinc	7440-66-6	1	mg/kg	**52**				
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**7**				
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1				
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500				
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500				
Acenaphthene	83-32-9	0.500	mg/kg	<0.500				
Fluorene	86-73-7	0.500	mg/kg	<0.500				
Phenanthrene	85-01-8	0.500	mg/kg	<0.500				
Anthracene	120-12-7	0.500	mg/kg	<0.500				
Fluoranthene	206-44-0	0.500	mg/kg	<0.500				
Pyrene	129-00-0	0.500	mg/kg	<0.500				
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500				
Chrysene	218-01-9	0.500	mg/kg	<0.500				
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500				
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500				
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500				
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500				
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500				
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500				
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50				
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200				
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00				

Sub-Matrix: SOIL				Client sample ID	TP3A 0.5M				
				Client sampling date / time	21-APR-2016 14:50				
Compound	CAS Number	LOR	Unit		HK1615957-001				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	5	mg/kg		<5				
C9 - C16 Fraction	----	200	mg/kg		<200				
C17 - C35 Fraction	----	500	mg/kg		<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	0.2	mg/kg		<0.2				
Toluene	108-88-3	0.5	mg/kg		<0.5				
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5				
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0				
Styrene	100-42-5	0.5	mg/kg		<0.5				
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5				
Xylenes (Total)	----	2.0	mg/kg		<2.0				
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	50	mg/kg		<50				
2-Butanone (MEK)	78-93-3	5	mg/kg		<5				
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	0.5	mg/kg		<0.5				
Trichloroethene	79-01-6	0.1	mg/kg		<0.1				
Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04				
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	0.04	mg/kg		<0.04				
Bromodichloromethane	75-27-4	0.1	mg/kg		<0.1				
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg		<0.5				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**118**				
4-Terphenyl-d14	1718-51-0	0.1	%		**127**				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Dibromofluoromethane	1868-53-7	0.1	%		**95.8**				
Toluene-D8	2037-26-5	0.1	%		**107**				
4-Bromofluorobenzene	460-00-4	0.1	%		**101**				
EP-074_SR-S: VOC Surrogates									
Dibromofluoromethane	1868-53-7	0.1	%		**95.8**				
Toluene-D8	2037-26-5	0.1	%		**107**				
4-Bromofluorobenzene	460-00-4	0.1	%		**101**				

Laboratory Duplicate (DUP) Report

Matrix: SOIL

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190158)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190158) - Continued								
HK1615708-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	12.2	12.2	0.0
HK1615794-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	18.7	18.8	0.0
EG: Metals and Major Cations (QC Lot: 4188647)								
HK1615957-001	TP3A 0.5M	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	4	4	0.0
		EG020: Barium	7440-39-3	1	mg/kg	33	34	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	7	7	0.0
		EG020: Lead	7439-92-1	1	mg/kg	32	32	0.0
		EG020: Manganese	7439-96-5	1	mg/kg	353	335	5.2
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	3	0.0
		EG020: Tin	7440-31-5	1	mg/kg	3	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	52	53	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	TP3A 0.5M	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	TP3A 0.5M	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								
HK1615791-001	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)								
HK1615791-001	Anonymous	Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)								
HK1615791-001	Anonymous	2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)								
HK1615791-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)								
HK1615791-001	Anonymous	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)								
HK1615791-001	Anonymous	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4188647)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	96.0	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	89.4	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.4	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	87.3	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	90.0	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	88.2	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.6	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	94.1	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	97.4	----	75	113	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4188647) - Continued											
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	88.5	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	88.9	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	90.8	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	91.5	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	82.2	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	84.1	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	85.1	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	101	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	75	122	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177) - Continued											
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	96.8	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	86.9	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.7	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	88.5	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	85.2	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	85.4	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	86.2	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	84.0	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	87.0	----	56	126	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4188647)										
HK1615788-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	88.0	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	103	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	93.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	92.2	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	80.6	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	83.0	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	86.9	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	88.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	87.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	TP3A 0.5M	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%) Low*	*High*
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616059
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON 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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Telephone	: +852 3447 6051	Telephone	: +852 2610 1044		
Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 22-APR-2016
Order number	: ----			Issue Date	: 09-MAY-2016
C-O-C number	: H029596			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 06-MAY-2016

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: HK1616059

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.
Water sample(s) analysed and reported on an as received basis.
Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.
Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 prior to determination of metals. The In-house method is developed based on ASTM D3974-09 method.

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP3A 1.5M Client sampling date / time: [22-APR-2016] HK1616059-001
EA/ED: Physical and Aggregate Properties				
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**15.2**
EG: Metals and Major Cations				
EG020: Antimony	7440-36-0	1	mg/kg	<1
EG020: Arsenic	7440-38-2	1	mg/kg	**5**
EG020: Barium	7440-39-3	1	mg/kg	**18**
EG020: Cadmium	7440-43-9	0.2	mg/kg	**0.3**
EG020: Cobalt	7440-48-4	1	mg/kg	**1**
EG020: Copper	7440-50-8	1	mg/kg	**3**
EG020: Lead	7439-92-1	1	mg/kg	**54**
EG020: Manganese	7439-96-5	1	mg/kg	**1050**
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05
EG020: Molybdenum	7439-98-7	1	mg/kg	**2**
EG020: Nickel	7440-02-0	1	mg/kg	<1
EG020: Tin	7440-31-5	1	mg/kg	**5**
EG020: Zinc	7440-66-6	1	mg/kg	**60**
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**1**
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	91-20-3	0.500	mg/kg	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate				
Phenol	108-95-2	0.50	mg/kg	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00

Sub-Matrix: SOIL			Client sample ID	TP3A 1.5M				
			Client sampling date / time	[22-APR-2016]				
Compound	CAS Number	LOR	Unit	HK1616059-001				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5				
C9 - C16 Fraction	----	200	mg/kg	<200				
C17 - C35 Fraction	----	500	mg/kg	<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2				
Toluene	108-88-3	0.5	mg/kg	<0.5				
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5				
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0				
Styrene	100-42-5	0.5	mg/kg	<0.5				
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5				
Xylenes (Total)	----	2.0	mg/kg	<2.0				
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50				
2-Butanone (MEK)	78-93-3	5	mg/kg	<5				
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5				
Trichloroethene	79-01-6	0.1	mg/kg	<0.1				
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04				
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04				
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1				
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**99.3**				
4-Terphenyl-d14	1718-51-0	0.1	%	**102**				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**95.6**				
Toluene-D8	2037-26-5	0.1	%	**108**				
4-Bromofluorobenzene	460-00-4	0.1	%	**100**				
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**95.6**				
Toluene-D8	2037-26-5	0.1	%	**108**				
4-Bromofluorobenzene	460-00-4	0.1	%	**100**				

Sub-Matrix: WATER				Client sample ID	TRIP BLANK				
				Client sampling date / time	[22-APR-2016]				
Compound	CAS Number	LOR	Unit	HK1616059-002					
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	20	µg/L	<20					
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	5.0	µg/L	<5.0					
Toluene	108-88-3	5.0	µg/L	<5.0					
Ethylbenzene	100-41-4	5.0	µg/L	<5.0					
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10					
Styrene	100-42-5	5.0	µg/L	<5.0					
ortho-Xylene	95-47-6	5.0	µg/L	<5.0					
Xylenes (Total)	----	20	µg/L	<20					
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	500	µg/L	<500					
2-Butanone (MEK)	78-93-3	50	µg/L	<50					
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	50	µg/L	<50					
Trichloroethene	79-01-6	5.0	µg/L	<5.0					
Tetrachloroethene	127-18-4	5.0	µg/L	<5.0					
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	5.0	µg/L	<5.0					
Bromodichloromethane	75-27-4	5.0	µg/L	<5.0					
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	<5.0					
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Dibromofluoromethane	1868-53-7	0.1	%	**96.3**					
Toluene-D8	2037-26-5	0.1	%	**109**					
4-Bromofluorobenzene	460-00-4	0.1	%	**105**					
EP-074_SR-S: VOC Surrogates									
Dibromofluoromethane	1868-53-7	0.1	%	**96.3**					
Toluene-D8	2037-26-5	0.1	%	**109**					
4-Bromofluorobenzene	460-00-4	0.1	%	**105**					

Laboratory Duplicate (DUP) Report

Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190160)								
HK1616057-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	13.1	13.1	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EG: Metals and Major Cations (QC Lot: 4195417)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4195417) - Continued								
HK1616057-002	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	5	5	0.0
		EG020: Barium	7440-39-3	1	mg/kg	35	36	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	8	7	0.0
		EG020: Lead	7439-92-1	1	mg/kg	30	28	5.6
		EG020: Manganese	7439-96-5	1	mg/kg	356	374	5.1
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	3	0.0
		EG020: Tin	7440-31-5	1	mg/kg	3	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	54	56	4.2
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177) - Continued								
HK1615791-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)								
HK1615791-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EG: Metals and Major Cations (QC Lot: 4195417)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	98.6	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	91.7	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	93.1	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	83.5	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	85.9	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	94.5	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	98.5	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	103	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	90.1	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	86.0	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	91.9	----	78	110	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4195417) - Continued											
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	88.5	----	80	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	82.2	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	84.1	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	85.1	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	101	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	96.8	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	86.9	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.7	----	67	118	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	88.5	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	85.2	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	85.4	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	86.2	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	84.0	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	87.0	----	56	126	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4188020)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	83.6	----	73	122	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4188017)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	80.8	----	67	130	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	93.6	----	76	127	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	85.5	----	84	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	94.7	----	80	128	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	91.8	----	76	120	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	87.2	----	84	125	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	92.2	----	86	123	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4188017)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	97.4	----	65	140	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	93.1	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4188017)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	92.9	----	76	128	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	86.6	----	68	121	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	84.4	----	75	118	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4188017)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	91.7	----	66	134	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	83.5	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4188017)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	90.7	----	65	121	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4195417)										
HK1616057-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	91.6	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	86.7	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	97.5	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	82.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	101	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	113	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	93.8	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	80.0	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	86.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%) Low	High
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%) Low	High
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
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Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 25-APR-2016
Order number	: ----			Issue Date	: 10-MAY-2016
C-O-C number	: H031683			No. of samples received	: 3
Site	: ----			No. of samples analysed	: 3

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 04-MAY-2016

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: HK1616270

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

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

Soil 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.

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	**Manager - Organics**	**Organics**
Wong Wing, Kenneth	**Manager - Metals**	**Inorganics**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 1.5M Client sampling date / time: [25-APR-2016] HK1616270-001	TP2 3M [25-APR-2016] HK1616270-002	TP3A 3M [25-APR-2016] HK1616270-003		
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**15.3**	**11.1**	**19.6**		
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1		
EG020: Arsenic	7440-38-2	1	mg/kg	**12**	**10**	**4**		
EG020: Barium	7440-39-3	1	mg/kg	**133**	**18**	**30**		
EG020: Cadmium	7440-43-9	0.2	mg/kg	**0.2**	**0.6**	<0.2		
EG020: Cobalt	7440-48-4	1	mg/kg	**5**	**2**	**2**		
EG020: Copper	7440-50-8	1	mg/kg	**8**	**5**	**9**		
EG020: Lead	7439-92-1	1	mg/kg	**249**	**39**	**37**		
EG020: Manganese	7439-96-5	1	mg/kg	**1800**	**573**	**368**		
EG020: Mercury	7439-97-6	0.05	mg/kg	**0.07**	<0.05	**0.10**		
EG020: Molybdenum	7439-98-7	1	mg/kg	**3**	**2**	**2**		
EG020: Nickel	7440-02-0	1	mg/kg	**3**	**1**	**3**		
EG020: Tin	7440-31-5	1	mg/kg	**9**	**6**	**6**		
EG020: Zinc	7440-66-6	1	mg/kg	**56**	**74**	**63**		
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**6**	**2**	**5**		
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1		
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500		
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500		
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500		
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500		
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500	<0.500		
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500		
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500	<0.500		
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500		
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50		
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200		
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00		

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: TP2 1.5M Client sampling date / time: [25-APR-2016] HK1616270-001	Client sample ID: TP2 3M Client sampling date / time: [25-APR-2016] HK1616270-002	Client sample ID: TP3A 3M Client sampling date / time: [25-APR-2016] HK1616270-003		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5		
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200		
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500		
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0		
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5		
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0		
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50		
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5		
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5		
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1		
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04		
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04		
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1		
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5		
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**106**	**94.1**	**99.9**		
4-Terphenyl-d14	1718-51-0	0.1	%	**121**	**105**	**112**		
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**98.2**	**98.8**	**100**		
Toluene-D8	2037-26-5	0.1	%	**107**	**108**	**106**		
4-Bromofluorobenzene	460-00-4	0.1	%	**100**	**101**	**102**		
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**98.2**	**98.8**	**100**		
Toluene-D8	2037-26-5	0.1	%	**107**	**108**	**106**		
4-Bromofluorobenzene	460-00-4	0.1	%	**100**	**101**	**102**		

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4191126) - Continued								
HK1616174-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	11.2	11.4	0.9
HK1616271-002	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	14.2	15.2	6.9
EG: Metals and Major Cations (QC Lot: 4190094)								
HK1616174-001	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	6	6	0.0
		EG020: Barium	7440-39-3	1	mg/kg	12	11	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	27	27	0.0
		EG020: Copper	7440-50-8	1	mg/kg	13	12	11.5
		EG020: Lead	7439-92-1	1	mg/kg	79	73	7.9
		EG020: Manganese	7439-96-5	1	mg/kg	74	77	3.8
		EG020: Molybdenum	7439-98-7	1	mg/kg	3	3	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	2	1	0.0
		EG020: Tin	7440-31-5	1	mg/kg	1	1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	37	39	5.7
HK1616220-002	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	15.2	15.3	0.7
		EG020: Barium	7440-39-3	0.5	mg/kg	126	113	10.3
		EG020: Cobalt	7440-48-4	0.5	mg/kg	27.4	31.5	13.7
		EG020: Manganese	7439-96-5	0.5	mg/kg	2430	2850	16.0
		EG020: Tin	7440-31-5	0.5	mg/kg	3950	4320	9.0
		EG020: Antimony	7440-36-0	1	mg/kg	459	520	12.4
		EG020: Arsenic	7440-38-2	1	mg/kg	28	33	15.2
		EG020: Copper	7440-50-8	1	mg/kg	605	674	10.8
		EG020: Lead	7439-92-1	1	mg/kg	60	59	0.0
		EG020: Molybdenum	7439-98-7	1	mg/kg	32	31	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	120	117	3.1
		EG020: Zinc	7440-66-6	1	mg/kg	13000	14400	10.4
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472) - Continued								
HK1615957-001	Anonymous	**Pyrene**	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)								
HK1616271-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)								
HK1616271-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190094)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	98.8	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.4	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	90.6	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	86.2	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	87.6	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	87.3	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	89.3	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	95.8	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	100	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	89.0	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	87.9	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	93.6	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	90.7	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176) - Continued											
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4190191)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	93.9	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	94.9	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	93.7	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	95.3	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	93.2	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	88.4	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	93.0	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4190191)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	104	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.1	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4190191)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	90.9	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	86.8	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	87.2	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4190191)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	94.0	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	87.5	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4190191)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	86.4	----	56	126	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4190094)										
HK1616056-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	88.6	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	90.6	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	93.5	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	86.6	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	92.4	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	82.4	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-080_SRS: TPH(Volatile)/BTEX Surrogate - Continued			
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Trial Pit - TP4A

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

HOKLAS 066 TEST

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 11
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1615966
Address	: LEVEL 5 FESTIVAL WALK, 80 TAT CHEE AVENUE, KOWLOON TONG, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: keung-ngai.chan@arup.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 3447 6051	Telephone	: +852 2610 1044		
Facsimile	: +852 2268 3966	Facsimile	: +852 2610 2021		
Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 21-APR-2016
Order number	: ----			Issue Date	: 09-MAY-2016
C-O-C number	: H029594			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 04-MAY-2016

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: HK1615966

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.
Water sample(s) analysed and reported on an as received basis.
Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.
Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 prior to determination of metals. The In-house method is developed based on ASTM D3974-09 method.

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP4A 0.5M Client sampling date / time: 21-APR-2016 14:11 HK1615966-001
EA/ED: Physical and Aggregate Properties				
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**12.1**
EG: Metals and Major Cations				
EG020: Antimony	7440-36-0	1	mg/kg	<1
EG020: Arsenic	7440-38-2	1	mg/kg	**24**
EG020: Barium	7440-39-3	1	mg/kg	**62**
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	**2**
EG020: Copper	7440-50-8	1	mg/kg	**4**
EG020: Lead	7439-92-1	1	mg/kg	**54**
EG020: Manganese	7439-96-5	1	mg/kg	**507**
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05
EG020: Molybdenum	7439-98-7	1	mg/kg	**4**
EG020: Nickel	7440-02-0	1	mg/kg	**2**
EG020: Tin	7440-31-5	1	mg/kg	**2**
EG020: Zinc	7440-66-6	1	mg/kg	**39**
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**3**
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	91-20-3	0.500	mg/kg	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate				
Phenol	108-95-2	0.50	mg/kg	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00

Sub-Matrix: SOIL			Client sample ID	TP4A 0.5M				
			Client sampling date / time	21-APR-2016 14:11				
Compound	CAS Number	LOR	Unit	HK1615966-001				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5				
C9 - C16 Fraction	----	200	mg/kg	<200				
C17 - C35 Fraction	----	500	mg/kg	<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2				
Toluene	108-88-3	0.5	mg/kg	<0.5				
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5				
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0				
Styrene	100-42-5	0.5	mg/kg	<0.5				
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5				
Xylenes (Total)	----	2.0	mg/kg	<2.0				
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50				
2-Butanone (MEK)	78-93-3	5	mg/kg	<5				
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5				
Trichloroethene	79-01-6	0.1	mg/kg	<0.1				
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04				
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04				
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1				
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.7**				
4-Terphenyl-d14	1718-51-0	0.1	%	**107**				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**96.9**				
Toluene-D8	2037-26-5	0.1	%	**108**				
4-Bromofluorobenzene	460-00-4	0.1	%	**102**				
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**96.9**				
Toluene-D8	2037-26-5	0.1	%	**108**				
4-Bromofluorobenzene	460-00-4	0.1	%	**102**				

Sub-Matrix: WATER				Client sample ID	TRIP BLANK				
				Client sampling date / time	[21-APR-2016]				
Compound	CAS Number	LOR	Unit	HK1615966-002					
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	20	µg/L	<20					
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	5.0	µg/L	<5.0					
Toluene	108-88-3	5.0	µg/L	<5.0					
Ethylbenzene	100-41-4	5.0	µg/L	<5.0					
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10					
Styrene	100-42-5	5.0	µg/L	<5.0					
ortho-Xylene	95-47-6	5.0	µg/L	<5.0					
Xylenes (Total)	----	20	µg/L	<20					
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	500	µg/L	<500					
2-Butanone (MEK)	78-93-3	50	µg/L	<50					
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	50	µg/L	<50					
Trichloroethene	79-01-6	5.0	µg/L	<5.0					
Tetrachloroethene	127-18-4	5.0	µg/L	<5.0					
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	5.0	µg/L	<5.0					
Bromodichloromethane	75-27-4	5.0	µg/L	<5.0					
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	<5.0					
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Dibromofluoromethane	1868-53-7	0.1	%	**96.0**					
Toluene-D8	2037-26-5	0.1	%	**110**					
4-Bromofluorobenzene	460-00-4	0.1	%	**104**					
EP-074_SR-S: VOC Surrogates									
Dibromofluoromethane	1868-53-7	0.1	%	**96.0**					
Toluene-D8	2037-26-5	0.1	%	**110**					
4-Bromofluorobenzene	460-00-4	0.1	%	**104**					

Laboratory Duplicate (DUP) Report

Matrix: SOIL

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190158)								
HK1615708-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	12.2	12.2	0.0
HK1615794-001	Anonymous	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	18.7	18.8	0.0
EG: Metals and Major Cations (QC Lot: 4188647)								
HK1615957-001	Anonymous	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0

Matrix: SOIL

				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 4188647) - Continued								
HK1615957-001	Anonymous	**EG020: Antimony**	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	4	4	0.0
		EG020: Barium	7440-39-3	1	mg/kg	33	34	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	7	7	0.0
		EG020: Lead	7439-92-1	1	mg/kg	32	32	0.0
		EG020: Manganese	7439-96-5	1	mg/kg	353	335	5.2
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	3	0.0
		EG020: Tin	7440-31-5	1	mg/kg	3	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	52	53	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	TP4A 0.5M	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)								
HK1615791-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4188647)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	96.0	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	89.4	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.4	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	87.3	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	90.0	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	88.2	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.6	----	81	109	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	94.1	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	97.4	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	88.5	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	88.9	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	90.8	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	91.5	----	80	122	----	----
EG: Metals and Major Cations (QC Lot: 4191160)											

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160) - Continued											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	82.2	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	84.1	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	85.1	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	101	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	75	122	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	96.8	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	86.9	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.7	----	67	118	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	88.5	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	85.2	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	85.4	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	86.2	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	84.0	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	87.0	----	56	126	----	----

Matrix: WATER

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4188020)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	83.6	----	73	122	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4188017)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	80.8	----	67	130	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	93.6	----	76	127	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	85.5	----	84	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	94.7	----	80	128	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	91.8	----	76	120	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	87.2	----	84	125	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	92.2	----	86	123	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4188017)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	97.4	----	65	140	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	93.1	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4188017)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	92.9	----	76	128	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	86.6	----	68	121	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	84.4	----	75	118	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4188017)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	91.7	----	66	134	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	83.5	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4188017)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	90.7	----	65	121	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4188647)										
HK1615788-001	Anonymous	**EG020: Antimony**	7440-36-0	5 mg/kg	88.0	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	103	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	93.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	92.2	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	80.6	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	83.0	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	86.9	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	88.9	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	87.0	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: **SOIL**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

Sub-Matrix: **WATER**

Compound	*CAS Number*	*Recovery Limits (%)* *Low*	*High*
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: OVE ARUP & PARTNERS HONG KONG LTD	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
Contact	: MR JACKY CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1616057
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Project	: TKO 137 MAGAZINE SITE	Quote number	: ----	Date Samples Received	: 22-APR-2016
Order number	: ----			Issue Date	: 09-MAY-2016
C-O-C number	: H029597			No. of samples received	: 2
Site	: ----			No. of samples analysed	: 2

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 06-MAY-2016

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: HK1616057

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

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

Soil 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.

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

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

Signatories	*Position*	*Authorised results for*
Chan Ka Yu, Karen	Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TP4A 1.5M Client sampling date / time: [22-APR-2016] HK1616057-001	Client sample ID: TP4A 2.4M Client sampling date / time: [22-APR-2016] HK1616057-002			
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	**13.1**	**14.1**			
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1			
EG020: Arsenic	7440-38-2	1	mg/kg	**5**	**5**			
EG020: Barium	7440-39-3	1	mg/kg	**68**	**35**			
EG020: Cadmium	7440-43-9	0.2	mg/kg	**0.3**	<0.2			
EG020: Cobalt	7440-48-4	1	mg/kg	**2**	**2**			
EG020: Copper	7440-50-8	1	mg/kg	**10**	**8**			
EG020: Lead	7439-92-1	1	mg/kg	**42**	**30**			
EG020: Manganese	7439-96-5	1	mg/kg	**513**	**356**			
EG020: Mercury	7439-97-6	0.05	mg/kg	**0.08**	<0.05			
EG020: Molybdenum	7439-98-7	1	mg/kg	**1**	**2**			
EG020: Nickel	7440-02-0	1	mg/kg	**3**	**3**			
EG020: Tin	7440-31-5	1	mg/kg	**4**	**3**			
EG020: Zinc	7440-66-6	1	mg/kg	**66**	**54**			
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	**6**	**6**			
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1			
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500			
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500			
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500			
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500			
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500			
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500			
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500			
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500			
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500			
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500			
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500			
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500			
Benzo(a)pyrene	50-32-8	0.500	mg/kg	<0.500	<0.500			
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500			
Dibenz(a.h)anthracene	53-70-3	0.500	mg/kg	<0.500	<0.500			
Benzo(g.h.i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500			
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50			
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200			
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00			

Sub-Matrix: SOIL

Compound	CAS Number	LOR	Unit	Client sample ID: TP4A 1.5M Client sampling date / time: [22-APR-2016] HK1616057-001	Client sample ID: TP4A 2.4M Client sampling date / time: [22-APR-2016] HK1616057-002			
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5			
C9 - C16 Fraction	----	200	mg/kg	<200	<200			
C17 - C35 Fraction	----	500	mg/kg	<500	<500			
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2			
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5			
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5			
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0			
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5			
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5			
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0			
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50			
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5			
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5			
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1			
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04			
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04			
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1			
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5			
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**103**	**100**			
4-Terphenyl-d14	1718-51-0	0.1	%	**109**	**104**			
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								
Dibromofluoromethane	1868-53-7	0.1	%	**96.9**	**96.3**			
Toluene-D8	2037-26-5	0.1	%	**106**	**108**			
4-Bromofluorobenzene	460-00-4	0.1	%	**103**	**101**			
EP-074_SR-S: VOC Surrogates								
Dibromofluoromethane	1868-53-7	0.1	%	**96.9**	**96.3**			
Toluene-D8	2037-26-5	0.1	%	**106**	**108**			
4-Bromofluorobenzene	460-00-4	0.1	%	**103**	**101**			

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report: LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190160)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 4190160) - Continued								
HK1616057-001	TP4A 1.5M	**EA055: Moisture Content (dried @ 103°C)**	----	0.1	%	13.1	13.1	0.0
EG: Metals and Major Cations (QC Lot: 4191160)								
HK1615966-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
HK1616182-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	1	mg/kg	<1	<1	0.0
EG: Metals and Major Cations (QC Lot: 4195417)								
HK1616057-002	TP4A 2.4M	**EG020: Mercury**	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	5	5	0.0
		EG020: Barium	7440-39-3	1	mg/kg	35	36	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	8	7	0.0
		EG020: Lead	7439-92-1	1	mg/kg	30	28	5.6
		EG020: Manganese	7439-96-5	1	mg/kg	356	374	5.1
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	3	3	0.0
		EG020: Tin	7440-31-5	1	mg/kg	3	3	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	54	56	4.2
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Naphthalene**	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a.h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g.h.i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)								
HK1615957-001	Anonymous	**Hexachlorobenzene (HCB)**	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)								

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report				
				LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176) - Continued								
HK1615791-001	Anonymous	**C9 - C16 Fraction**	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)								
HK1615791-001	Anonymous	**C6 - C8 Fraction**	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Benzene**	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)								
HK1615791-001	Anonymous	**2-Butanone (MEK)**	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Tetrachloroethene**	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Chloroform**	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)								
HK1615791-001	Anonymous	**Methyl tert-Butyl Ether (MTBE)**	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	101	----	92	122	----	----
EG: Metals and Major Cations (QC Lot: 4195417)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	98.6	----	77	107	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6	----	75	111	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	91.7	----	79	113	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	93.1	----	79	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	83.5	----	75	117	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	85.9	----	79	109	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	94.5	----	81	109	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4195417) - Continued											
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	98.5	----	78	122	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	103	----	75	113	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	90.1	----	81	107	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	86.0	----	77	111	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	91.9	----	78	110	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	88.5	----	80	122	----	----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 4189472)											
Naphthalene	91-20-3	25	µg/kg	<50	500 µg/kg	104	----	71	116	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	500 µg/kg	83.1	----	52	112	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	500 µg/kg	100	----	71	112	----	----
Fluorene	86-73-7	25	µg/kg	<50	500 µg/kg	96.8	----	72	109	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	500 µg/kg	98.9	----	74	115	----	----
Anthracene	120-12-7	25	µg/kg	<50	500 µg/kg	81.1	----	50	112	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	500 µg/kg	112	----	71	118	----	----
Pyrene	129-00-0	25	µg/kg	<50	500 µg/kg	115	----	72	119	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	500 µg/kg	91.3	----	68	109	----	----
Chrysene	218-01-9	25	µg/kg	<50	500 µg/kg	107	----	78	117	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	500 µg/kg	88.4	----	63	121	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	500 µg/kg	110	----	74	123	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	500 µg/kg	76.0	----	58	112	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	500 µg/kg	99.3	----	61	129	----	----
Dibenz(a.h)anthracene	53-70-3	25	µg/kg	<50	500 µg/kg	85.0	----	58	129	----	----
Benzo(g.h.i)perylene	191-24-2	25	µg/kg	<50	500 µg/kg	80.3	----	52	135	----	----
EP-076HK: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 4189472)											
Phenol	108-95-2	25	µg/kg	<500	500 µg/kg	107	----	72	131	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	500 µg/kg	92.1	----	67	108	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	500 µg/kg	102	----	87	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)											
C9 - C16 Fraction	----	200	mg/kg	<200	31.5 mg/kg	104	----	73	118	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	100	----	71	117	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	90.2	----	77	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	82.2	----	75	113	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	84.1	----	77	126	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	85.1	----	80	127	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.4	mg/kg	<0.4	0.50 mg/kg	101	----	85	138	----	----
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	75	122	----	----

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
		LOR	Unit	Result		LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 4187177) - Continued											
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	89.0	----	77	132	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	96.8	----	83	135	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 4187177)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	86.9	----	74	128	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.7	----	67	118	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 4187177)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	88.5	----	61	147	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	85.2	----	75	111	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	85.4	----	79	126	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 4187177)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	86.2	----	75	116	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	84.0	----	80	118	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 4187177)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	87.0	----	56	126	----	----

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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 4191160)										
HK1615957-001	Anonymous	**EG3060: Hexavalent Chromium**	18540-29-9	2.5 mg/kg	100	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 4195417)										
HK1616057-001	TP4A 1.5M	**EG020: Antimony**	7440-36-0	5 mg/kg	91.6	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	86.7	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	97.5	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	82.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	101	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	113	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	93.8	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	80.0	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	86.7	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187176)										
HK1615794-001	Anonymous	**C9 - C16 Fraction**	----	31.5 mg/kg	101	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	98.5	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 4187178)										
HK1615794-001	Anonymous	**C6 - C8 Fraction**	----	4.5 mg/kg	95.8	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL

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

Sub-Matrix: SOIL

Compound	CAS Number	Recovery Limits (%) Low	High
EP-074_SR-S: VOC Surrogates - Continued			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

APPENDIX C

EXISTING CONDITION OF THE MAGAZINE SITE AT TKO AREA (8 JUNE 2016)

	Designed	Reviewed	Drawn	Checked
Initial	FL	ET	FL	ET
Date	July 2016	July 2016	July 2016	July 2016

Revision	Date	Description	Initial

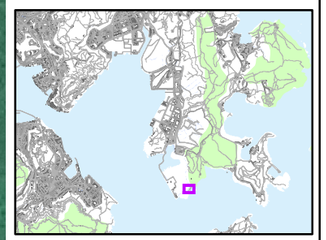
Legend

- Waste Chemical Drums Storage
- Magazine Storage Boundary
- Magazine Storage
- Site Office
- Fire Hydrant Tank
- Generator Room
- Pump Room
- Paved Area/Road
- Unpaved Road
- Desalination Plant Area
- Viewpoint (VP)

VP1

VP2

VP3



Approved

Agreement No. CE 8/2015 (WS)

Project Title

First Stage of Desalination Plant at Tseung Kwan O – Investigation, Design, Construction

Figure Title

Existing Condition of the Magazine Site at TKO area (Jun 2016)

Drawing No.	Scale
Appendix C	1:800 @ A3

Client

水務署
Water Supplies Department

Consultant

BLACK & VEATCH
Building a world of difference®

Mxd: C:\Users\lam80489\Desktop\Projects\190495 - Desalination Plant at TKO\LandCon\Appendix C.mxd

Site Walkover Checklist

1) SITE DESCRIPTION	
This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the previous magazine site operated by MTRCL.	
What is the total site area:	8,030 m^2
What area of the site is covered by buildings (%):	The buildings previously erected on the magazine site have been demolished by MTRCL.
Please list all current and previous owners/occupiers if possible.	Current Owner: DLO-Lands Department Previous Occupant: Vinci construction Grand Projects (MTRCL)
Is a site plan available? (Yes/No) If yes, please attach.	Yes
Are there any other parties on site as tenants or sub-tenants? (Yes/No) If yes, identify those parties.	No
Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry. North: South: East: West:	 CEDD Public Fill Bank Sea (Joss House Bay) Country Park CEDD Public Fill Bank
Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).	Flat terrain and by a body of water
State the size and location of the nearest residential communities.	LOHAS Park (32000 m^2, around 2700m northeast)
Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands, or sites of special scientific interest?	Yes. The Clear Water Bay Country Park is located east of the site.

Date of observation : 8 June 2016		
2) OBSERVATIONS		
	Yes/No	**Notes**
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	N/A	MTRCL had demolished and removed the previously erected facilities.
2. What are the conditions of the bund walls and floors?	N/A	MTRCL had demolished and removed the previously erected facilities.
3. Are any surface water drains located near to drum storage and unloading areas?	N/A	MTRCL had demolished and removed the previously erected facilities.
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	N/A	MTRCL had demolished and removed the previously erected facilities.
5. Is there a storage site for the wastes?	N/A	MTRCL had demolished and removed the previously erected facilities.
6. Is there an on-site landfill?	No	CEDD's public fill bank is located at North and West of the site
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	No	-
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	No	-
9. Are there any potential off-site sources of contamination?	No	-
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	N/A	MTRCL had demolished and removed the previously erected facilities.
11. Are there any sumps, effluent pits, interceptors or lagoons on site?	No	MTRCL had demolished and removed the previously erected facilities.
12. Any noticeable odours during site walkover?	No	-
13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives, and polyurethane foam?	No	MTRCL had demolished and removed the previously erected facilities.