



JOB No.: TCS00881/18

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

**Contamination Assessment Plan (CAP) -
Potentially Contaminated Site at SRC-1**

**PREPARED FOR
Hsin Chong Tsun Yip Joint Venture**

Quality Index

Date	Reference No.	Prepared By	Certified By
10 May 2019	TCS00881/18/600/R00139	 Martin Li (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Rev.	Date	Description
0	18 September 2018	First submission
1	17 December 2018	Amended against EPD comment received on 6 November 2018
2	12 April 2019	Amended against EPD comment received on 1 February 2019
3	10 May 2019	Amended against EPD comment received on 9 May 2019



ACUITY
SUSTAINABILITY
CONSULTING LIMITED



Website: www.acuityhk.com



Unit 1908, iPlace,
Nos. 301-305 Castle Peak Road,
Kwai Chung, New Territories



Tel. : (852) 2698 6833
Fax.: (852) 2698 9383

Our ref: CJO4068

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

Attention: Mr. HO Man-to

15 May 2019

Dear Sir,

Contract No. CV/2016/10

**Site formation and Associated Infrastructural Works for Development of Columbarium at
Sandy Ridge Cemetery
Contamination Assessment Plan – Potentially Contaminated Site SRC-1**

I refer to your email concerning the captioned Contamination Assessment Plan (Rev.3) with Ref. No. TCS00881/18/600/R00139. We have no adverse comment on it and verify this plan according to section 1.9 of the Environmental Permit No. FEP-01/534/2017A.

Yours faithfully,

CH Leung

Ir Leung CH Jacky
Independent Environmental Checker

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

Our Ref: TCS00881/18/300/L0278

Hsin Chong Tsun Yip Joint Venture

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

Attn: Mr. HO Man To

15 May 2019

By e-mail and by Hand

Dear Sirs,

**Re: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and related Facilities at Sandy Ridge Cemetery
Certification of Land Contamination Assessment Plan (Revision 3)**

With reference to the Land Contamination Assessment Plan (Revision 3) prepared to fulfil Condition 2.13 of EP-534/2017/A and Condition 2.12 of FEP-01/534/2017/A, we hereby certify the captioned submission pursuant to General Condition 1.9 of the EP-534/2017/A and FEP-01/534/2017/A.

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

Yours sincerely,

For and on Behalf of

Action-United Environmental Services & Consulting (AUES)

T. W. Tam
Environmental Team Leader
TW/ml

cc CEDD
Arup (RE)
Acuity (IEC)

Mr. SHUM Ngai Hung, Steven
Mr. Steve Tang
Mr. Jacky Leung

By-email
By-email
By-email

TABLE OF CONTENTS

1	INTRODUCTION.....	1
	BACKGROUND	1
	LAND CONTAMINATION ASSESSMENT DURING ENVIRONMENTAL IMPACT STUDY	1
	REQUIREMENT OF LAND CONTAMINATION ASSESSMENT STIPULATE IN ENVIRONMENTAL PERMIT AND ENVIRONMENTAL MONITORING & AUDIT MANUAL	1
	REPORT STRUCTURE.....	2
2	GENERAL INFORMATION OF THE DESIGNATED ASSESSMENT SITE	3
	ASSESSMENT SITE	3
	WASTE MANAGEMENT	4
	SITE GEOLOGY AND HYDROGEOLOGY	4
3	SAMPLING LOCATIONS AND METHODOLOGY	6
	PROPOSED SOIL SAMPLING LOCATION	6
	POTENTIAL CONTAMINANTS	7
	SOIL SAMPLING METHODOLOGY	8
	GROUNDWATER SAMPLING METHODOLOGY	10
	ASSESSMENT GUIDELINES	11
4	QA/QC PROCEDURES	13
	PROCEDURE FOR DECONTAMINATING EQUIPMENT AND SAMPLING TOOLS	13
5	HEALTH AND SAFETY	15
6	REPORTING	16

LIST OF TABLES

TABLE 2-1	SUMMARIZED HISTORICAL BACKGROUND FOR THE POTENTIALLY CONTAMINATED LAND SRC-1
TABLE 3-1	MINIMUM NUMBER OF GRID SAMPLING POINTS IN ACCORDANCE WITH THE “PRACTICE GUIDE FOR INVESTIGATION AND REMEDIATION OF CONTAMINATED LAND”
TABLE 3-2	COORDINATES OF THE PROPOSED SAMPLING POINTS AT WESTERN PORTION OF ASSESSMENT SITE SRC-1
TABLE 3-3	TESTING METHOD AND REPORTING LIMIT OF THE CHEMICAL ANALYSIS – SOIL
TABLE 3-4	TESTING METHOD AND REPORTING LIMIT OF THE CHEMICAL ANALYSIS – GROUNDWATER
TABLE 3-5	INDUSTRIAL RISK-BASED REMEDIATION GOALS LIMITS FOR SOIL AND GROUNDWATER
TABLE 4-1	QA/QC SAMPLE(S) COLLECTION

LIST OF ANNEXES

ANNEX A	LAYOUT PLAN OF THE PROJECT
ANNEX B	POTENTIALLY CONTAMINATED LAND
ANNEX C	FIGURE 2 OF THE ENVIRONMENTAL PERMITS
ANNEX D	REPRESENTATIVE HISTORICAL AERIAL PHOTOGRAPHS
ANNEX E	SITE WALKOVER CHECKLIST AND PHOTO RECORD
ANNEX F	REGISTERED CHEMICAL WASTE PRODUCER AND RECORDS FROM EPD AND FSD
ANNEX G	PROPOSED SOIL AND GROUNDWATER SAMPLING LOCATIONS
ANNEX H	TYPICAL DRAWING OF GROUNDWATER MONITORING WELL
ANNEX I	HEALTH AND SAFETY PLAN (HASP)
ANNEX J	TEXT OF APPENDIX 8.1 OF EIA REPORT

1 INTRODUCTION

BACKGROUND

- 1.1 Civil Engineering and Development Department is the Project Proponent for the Project “*Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery*” (hereafter referred as “the Project”). The Project is a Designated Project to be implemented under Environmental Permit No. EP-534/2017/A. The layout plan of the Project is shown in [Annex A](#).
- 1.2 To facilitate the Project management, the Project works were separated into three different Contracts as:
- i) *Contract No. CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as “Contract 1”)
 - ii) *Contract No. CV/2017/02 - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as “Contract 2”)
 - iii) *CEDD Contract No. (to be advised)* (hereafter referred as “Contract 3”)

LAND CONTAMINATION ASSESSMENT DURING ENVIRONMENTAL IMPACT STUDY

- 1.3 Based on the desktop study of land contamination assessment in the approved EIA Report of the captioned project, there is one site location identified as potentially contaminated in accordance with the criteria in EPD's *Practice Guide for Investigation and Remediation of Contaminated Land* for land use type of concrete and asphalt production. **Annex B** shows the location of the potentially contaminated site SRC-1. Though SRC-1 covered areas ~ 8,320m² and identified as potentially contaminated site, however, approximate 92 % of the site area (~7,700m²) is located within a private land; the remaining about 8 % of the site area (~620m²) is within government lot (to the southeast of SRC-1).
- 1.4 During the land contamination assessment site survey for the EIA study of the captioned project, only paved ground was observed at southeast of SRC-1 and neither concrete & asphalt production nor open storage activities were observed during the land contamination assessment site survey for the EIA study of the captioned project. Reviewed of historical aerial photos (since Year 1973) also revealed no sign of land contamination. Given the issue on privacy and rights of the land ownership, site inspection and photographs could only been taken outside the boundary of the private lot (relevant *photograph nos. 6363 and 6364 are shown in Figure 2.1c of Appendix 8.1 of EIA Report*) during the surveys. According to peripheral inspection, open storage area and warehouses as well as a concrete factory were observed located within the covering areas of the potentially contaminated site.
- 1.5 According to the EIA study of the captioned project, site investigation of land contamination was considered not required for government lot (the southeast of SRC-1). In addition, according to the latest land resumption programme as advised by Engineer Representative, only the western portion of SRC-1 with an area of approximate 1,120m² inside private lot would require land resumption for the road widening work and utilities construction at Sha Ling Road.
- 1.6 It is recommended that further site visit shall be carried out once the works area for ***Development of Columbarium at Sandy Ridge Cemetery*** is confirmed and site access to the southeast and western portion of SRC-1 are available (e.g. after land resumption) to identify any hot spots for site investigation within the concerned areas.

REQUIREMENT OF LAND CONTAMINATION ASSESSMENT STIPULATE IN ENVIRONMENTAL PERMIT AND ENVIRONMENTAL MONITORING & AUDIT MANUAL

- 1.7 According to *Environmental Permit EP-534/2017/A Condition 2.13* and *Further Environmental Permit FEP-01/534/2017/A Condition 2.12* that Land contamination assessment to the potentially contaminated site as shown in Figure 2 of the Permit shall be carried out when access to this site is available and before the commencement of construction of the relevant part of the Project at this site.

Permit Holder shall submit four hard copies and one electronic copy of the CAP to the Director for approval. No construction works at this site shall be commenced before the approval of the CAP by the Director. All recommendation(s) in the approved CAP shall be implemented.

- 1.8 In accordance with Section 9.3.1.2 of the EM&A Manual and Section 8.12.1.3 of the EIA report requirement, upon completion of SI works, the detailed findings shall be reported in Contamination Assessment Report (CAR) which shall submit to EPD endorse. If contamination has been identified, a Remediation Action Plan (RAP) shall be prepared to formulate appropriate remedial measures to deal with the contamination identified. Following completion of any necessary remediation works, a Remediation Report (RR) shall be prepared to demonstrate adequate clean-up and submit to EPD for approval prior to the commencement of any construction or development works at the contaminated sites identified.
- 1.9 Action-United Environmental Services & Consulting AUES) has been appointed by ***Hsin Chong Tsun Yip Joint Venture (Main Contractor of the Contract 1)*** as the Land Contamination Specialist to carry out the land contamination assessment, including site supervision, relevant report prepare and submission. Sampling will be carried out by the Contractor under supervision by AUES and Resident Engineer. A Hong Kong Laboratory Accreditation Scheme (HOKLAS)-accredited laboratory will be appointed to carry out HOKLAS-accredited chemical analysis.
- 1.10 This CAP is prepared with detailed information on site background, site geology and hydrogeology, proposed sampling and testing methodology, the locations of soil sampling points and groundwater monitoring wells, Quality Assurance/Quality Control (QA/QC) procedures and an implementation schedule for the site investigation in accordance with the EPD requirements. In addition, this CAP serves as an EP submission to fulfill Environmental Permit EP-534/2017/A Condition 2.13 and Further Environmental Permit FEP-01/534/2017/A Condition 2.12
- 1.11 Site investigation (SI) will be commenced upon EPD approved CAP and to be taken for about one and a half week. A Contamination Assessment Report (CAR) or/with Remediation Action Plan (RAP) (if remediation is required) will be prepared and submitted within one month after completed site investigation work and received laboratory analysis results.

REPORT STRUCTURE

- | | |
|------------------|---|
| Section 1 | Introduction |
| Section 2 | General Information of the Designated Assessment Site |
| Section 3 | Sampling Locations and Methodology |
| Section 4 | Quality Auditing (QA) and Quality Checking (QC) Procedure |
| Section 5 | Health and Safety |
| Section 6 | Reporting |

2 GENERAL INFORMATION OF THE DESIGNATED ASSESSMENT SITE

- 2.1 In accordance with *Appendix 8.1 of the EIA Report stipulation*, CAP shall be prepared and submitted for EPD approval after the potentially contaminated Site SRC-1 was taken over. The land contamination assessment will be undertaken based on the following documents:
- “*Guidance Note for Contaminated Land Assessment and Remediation*” issued by EPD on 15 August 2007; and
 - “*Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management*” issued by EPD in December 2007; and
 - “*Practice Guide for Investigation and Remediation of Contaminated Land*” issued by EPD in August 2011; and
 - *Agreement No. CE 1/2013 (CE) Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Design and Construction Final Environmental Impact Assessment Report Appendix 8.1.*

ASSESSMENT SITE

- 2.2 *Sections 2.4.3.1, 2.5.3.3, 3.1.1.1 and 3.2.1.1 as well as Table 2.5 of Appendix 8.1 of the approved EIA Report* are relevant to this CAP. The potentially contaminated land located within the Project is shown in **Annex B**. The designated address based on its long industrial land-use history is considered as potentially contaminated land (i.e. warehousing and open storage area, and concrete factory are respectively observed since early 1990 in accordance with EIA Report).
- 2.3 According to the final layout plan of the Project ***Development of Columbarium at Sandy Ridge Cemetery***, a part of the proposed road widening work of Sha Ling Road is confirmed to be situated in western portion of SRC-1. An area of approximate 1,120m² of western portion of SRC-1 as located inside the private lot to be required resumption to undertake the road widening work of Sha Ling Road and utilities construction works nearby is confirmed by the Engineer Representative. The summarized historical background of potentially contaminated site SRC-1 are presented in **Table 2-1**. Aerial photographs recorded in 1983, 1991, 2000, 2011 and 2017 are provided in **Annex D**.

Table 2-1 Summarized Historical Background of the Potentially Contaminated Site SRC-1

Year	Historical Backgrounds of Potentially Contaminated Site	Potential Polluting Activities
1983	Open storage area of earthen material was observed at SRC-1.	No potential polluting activity
1991	Open storage area of earthen material was observed at western portion of SRC-1. Warehouse type building structures were observed at eastern portion of SRC-1.	No potential polluting activity
2000	Suspected concrete factory building structure was observed at western portion of SRC-1. Warehouse type building structures were observed at the eastern portion of SRC-1.	Storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding; loading and unloading of goods, concrete mixing activities, chemical storage for concrete mixing
2011	Concrete factory was observed at the western portion of SRC-1.	Storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding; concrete mixing activities, chemical storage for concrete mixing
2017	No significant changes for the historical land use of the area were observed as compared with Year 2011.	Storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding; concrete mixing activities, chemical storage for concrete mixing

- 2.4 Given the issue on privacy and rights of the land ownership, site visit cannot be taken at western portion and southeast portion of SRC-1 during EIA studying periods. Hence the EIA Report recommended that once the work areas for the Project confirmed and site access available, further site visiting shall carry out in order to confirm western portion and southeast portion of SRC-1 no change in land-use and to identify any hot spots within the areas.
- 2.5 **Hsin Chong Tsun Yip Joint Venture (Main Contractor of the Contract 1)** and AUES undertaken site visit at both western portion and southeast portion on **7 June 2018**. For southeast portion of SRC-1, no sign of land contamination was observed as it is a paved ground and no material storage nor activities was observed at southern portion of SRC-1 (Photo 12 – 14 in Annex E). In addition, it is observed from the historical aerial photos that the southeast portion of SRC-1 was also a paved ground which no historical potential contamination source was identified.
- 2.6 For western portion of SRC-1, earth material storage area (Photo 6 & 7 in Annex E), concrete admixture chemical storage (Photo 2 & 5 in Annex E), a concrete mixing plant (Photo 4 in Annex E) and an empty substation (Photo 8-11 in Annex E) were observed. No chemical waste storage or diesel storage tank was identified at the site area. Furthermore, the existing ground surface was paved with concrete layer and no crack and oil stain was observed. In addition, according to the historical aerial photos that earthen material open storage area was identified before the operation of concrete mixing activities which the storage of earthen material was not considered as potential contamination source. The potential land contamination source identified at western portion of SRC-1 are therefore the concrete admixture storage, the transformer footprint at the empty substation, the storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding, and the concrete mixing activities at western portion of SRC-1.

WASTE MANAGEMENT

- 2.7 Since the management group of the concrete factory could not be contacted, no waste disposal record can be provided. A site walkover checklist and photo record is provided in **Annex E**. In addition, a registered chemical waste producer was found at the subject site which is consistent to the chemical waste producer registration record summarized in the EIA report. The registered chemical waste producer for the subject site was provided in **Annex E**. As checked the register of Chemical Waste Producers at the Territory Control Office of EPD, the registered chemical waste producer of the subject site is valid.
- 2.8 According to the EIA Report, there were neither records of any accident that involved spillage/leakage of chemical waste nor Dangerous Goods (DG) storage and incidents of spillage/leakage of DG as come from EPD and the Fire Services Department (FSD) before **2010**. The information extracted from *Appendix 8.1 of the EIA Report* is shown in **Annex F**. In addition, written letters to request information of incident record after 2010 were also sent to EPD and FSD. There are also neither records of any DG storage and any accident that involved spillage/leakage of chemical waste and DG according to reply from EPD and from FSD. The letter to EPD and FSD requesting the relevant information and the replied letters from EPD and FSD are provided in **Annex F**.

SITE GEOLOGY AND HYDROGEOLOGY

Site Geology

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

Site Hydrogeology

- 2.10 According to Hong Kong Observatory Ta Kwu Ling Weather Station information (http://www.hko.gov.hk/cis/region_climat/TKL/TKL_mean_e.htm), the average year rainfall recorded between 1986 and 2013 at Sheung Shui/Fanling is about 1,841.7mm. Surface runoff collected by major network of drainage lines is discharged to Sham Chun River. In-situ groundwater level measurements will be conducted during site investigation as far as practicable to collect further information on groundwater level if groundwater is observed during the sampling process.

3 SAMPLING LOCATIONS AND METHODOLOGY

PROPOSED SOIL SAMPLING LOCATION

- 3.1 Based on the site visit on **7 June 2018** at the western portion of potentially contaminated Site SRC-1, no obvious oil stain was observed at the existing ground surface and no chemical waste (i.e. spent lube oil) was stored on site. Moreover, no fuel storage tank and underground utilities was found but concrete admixture chemicals storage and earthen materials stockpile for the concrete mixing activities were observed on the assessment area.
- 3.2 As told by the site staff of the concrete factory, there was no spent lube oil generated during the operation of the concrete mixing and no workshop for plant maintenance was located on site. In addition, no trace of spent lube oil was found at the site area. Since there is no chemical waste (i.e. spent lube oil) stored and no fuel storage tank was installed on site, the potential contamination source at the western portion of SRC-1 would be the concrete admixture chemicals storage, the transformer footprint at the substation, the storage and transfer of residues from physical conversion of earthen materials by sorting, mixing, and grinding, and the concrete mixing activities.
- 3.3 The recommended minimum numbers of sampling points with different area size stated in *Section 2.4.1* of the “*Practice Guide for Investigation and Remediation of Contaminated Land*” is shown in *Table 3-1*.

Table 3-1 Minimum Number of Sampling Points in accordance with the “Practice Guide for Investigation and Remediation of Contaminated Land”

Area of site (m ²)	Minimum number of sampling points
100	3
500	3
1,000	6
2,000	12
4,000	14
5,000	17
8,000	28
10,000	29
30,000	32
90,000	35

- 3.4 As advised by Engineer Representative, the latest land resumption located within the Project site is only the western portion of SRC-1 with an area of approximately 1,120m². Based on site visit observation and the historical aerial photo record, the bottom section of western portion of SRC-1 (area shaded in blue at the sketch shown in Annex G) was open area which no concrete mixing activities and facilities was identified and no sign of land contamination was identified. The sampling locations are therefore proposed at the mid-section and upper section of western portion of SRC-1 where concrete mixing facilities are located and concrete mixing activities are carried out. A total of eight (8) sampling points are proposed to perform site investigation at the western portion of SRC-1. *Table 3-2* listed the proposed sampling locations with coordinates. A figure showing the sampling locations is shown in *Annex G*.

Table 3-2 Coordinates of the Proposed Sampling Points at Western Portion of Assessment Site SRC-1

Western Portion of Assessment Site SRC-1	Sampling Point ID	Contamination Assessment Location	Potential Land Contamination Issue	Co-ordinates	
				Easting	Northing
The Potentially Contaminated Area as located within the Project Site is about 1,120m ²	SP-01	Open space of earthen material stockpiles (north side of the western portion of SRC-1)	Material transfer for concrete mixing	830 934	843 269
	SP-02	At the empty substation (north side of the western portion of SRC-1)	Transformer footprint at the substation	830 926	843 262

Western Portion of Assessment Site SRC-1	Sampling Point ID	Contamination Assessment Location	Potential Land Contamination Issue	Co-ordinates	
				Easting	Northing
	SP-03	Materials stockpiling area of the concrete factory (mid-section of the western portion of SRC-1)	Material transfer for concrete mixing	830 929	843 252
	SP-04	Earthen material loading point (mid-section of the western portion of SRC-1)	Material transfer for concrete mixing	830 932	843 233
	SP-05	Chemical storage area of the concrete factory (mid-section of the western portion of SRC-1)	Contamination from chemical admixture storage	830 929	843 223
	SP-06	Concrete mixing plant (mid-section of the western portion of SRC-1)	Contamination from concrete mixing activities	830935	843215
	SP-07	Chemical storage area of the concrete factory (mid-section of the western portion of SRC-1)	Contamination from chemical admixture storage	830 932	843 208
	SP-08	Open space of the concrete factory (south side of the western portion of SRC-1)	Contamination from concrete mixing activities	830 934	843 194

- 3.5 As observed on site, ground surface of the assessment site is paved with concrete layer and no trace of underground facility such as underground storage tank was found. The potential contamination source at the assessment site was therefore considered as a shallow source and 3m below the existing ground level of final soil sampling depth is proposed for all the sampling locations.

POTENTIAL CONTAMINANTS

- 3.6 In the view of the site observation at western portion of SRC-1, only earthen materials, concrete admixture with secondary containment, a mixing plant for concrete mixing and an empty substation were identified at the assessment site. The potentially contaminating source at the western portion of SRC-1 (except the empty substation) would be the storage of concrete admixture and general concrete mixing activities which heavy metal and volatile organic compounds (VOCs) should not be encountered. The chemical analysis for land contamination assessment (except sampling point SP-02) was therefore proposed as follows:

- Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35
- Volatile Organic Compounds (VOCs) – BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (Total)
- Semi-volatile Organic Compounds (SVOCs) –Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Bis(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene

- 3.7 For the sampling point at the substation (SP-02), the chemical analysis was proposed as follows:

- Metals – Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc
- Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35
- Volatile Organic Compounds (VOCs) – BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (Total)
- Semi-volatile Organic Compounds (SVOCs) –Naphthalene and Phenol
- Polychlorinated Biphenyls (PCBs)

SOIL SAMPLING METHODOLOGY

- 3.8 At each sampling location, one soil sample will be collected at 0.5m, 1.5m and 3.0m below ground level respectively. Soil sampling will be carried out by pit excavation to the depth of 3m below ground level. If groundwater is encountered during the pit excavation, drilling rig will then be used to continue the soil sampling process at the depth of groundwater encountered. A land contamination specialist (i.e. AUES) and Resident Engineer will supervise all sampling process to ensure that no cross contamination or any other forms of interferences is resulted from pit excavation to impact the assessment findings. Moreover, the land contamination specialist would be also responsible to monitor and supervise all soil and/or water sampling.
- 3.9 Excavator or hand digging would be used for pit excavation. Sampling pit excavation would be conducted from existing ground surface to the proposed final depth. All soil samples will be collected using a stainless steel hand-held trowel. One representative soil sample will be collected at each sampling depth (i.e. 0.5m, 1.5m and 3.0m bgl) of each sampling location.
- 3.10 Any visual and olfactory sign will be recorded during soil samples selection. Moreover, a photo-ionizing detector (PID) will be used to test the soil samples for initial screening. The measurements will be recorded for reporting. If high readings of VOC occur at the deepest targeted sample depth, a decision will be made on site by the land contamination specialist to extend the final sampling depth with an additional 1m in depth and an additional sample will be collected. This process will continue until either organic vapour readings are below 100ppm or accepted by the land contamination specialist. Summary of sampling activities and procedures is presented as follows:
- Identify the sampling locations;
 - For safety reason, underground utilities checking at 1.2m below existing ground level will be performed before pit excavate;
 - Samples will be collected and stored in an appropriately prepared and labeled sampling container or plastic bags provided by the laboratory for field screening and laboratory analysis;
 - All samples will be field-screened to determine the maximum contaminant concentrations and the vertical extent of contamination where possible, by:
 - Photo-ionizing detector (PID) reading; and
 - Supported by subjective assessment of headspace vapor concentrations.
 - One representative soil sample will be collected at each sampling depth (i.e. 0.5m, 1.5m and 3.0m bgl) of each sampling location for laboratory analysis;
 - Each sub-sample collected will be put into a sample container or high-density polyethylene bag provided by the HOKLAS laboratory. All samples will be stored in a cool box maintained at a temperature of 4°C without being frozen.
- 3.11 A Chain-Of-Custody (COC) protocol will be followed as part of QA/QC procedures and the completed COC forms will be delivered to the laboratory together with the samples for testing. Samples will be analyzed within 2 days of delivery or within the holding time as advised by the laboratory. Duplicate sample will also be taken once every 20 samples.
- 3.12 All sampling location will be logged by qualified geologist. Necessary information will be included such as:
- Actual depth of samples collected;
 - Depth of the water table measured during sampling if groundwater present;
 - Date and time of sample collection;
 - Sample identification number;
 - Description of sample condition such as soil type, colour, odour and staining, if present;
 - Presence of free products in underground water if any; and
 - Description of soil strata.

Prevent Cross Contamination

- 3.13 In order to prevent cross contamination, no investigation work would be undertaken during raining. Work bund will be erected before commencing pit excavation at each sampling location to prevent surface runoff flowing into the pit or drill hole.
- 3.14 Furthermore, all soil excavated from the sampling pits will be stored nearby using impervious sheets to prevent cross contamination. Soil will be backfilled into the sampling pit immediately after sampling completed.

Soil Sample Chemicals Analysis

- 3.15 All samples and duplicate samples will be delivered to the HOKLAS-accredited laboratory for the chemical testing. As per the “*Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management*” requirements, all chemical analysis methods used for soil assessment should be accredited under HOKLAS. The chemicals analysis method and the reporting limits are shown in **Table 3-3**.

Table 3-3 Testing Method and Reporting Limit of the Chemical Analysis – Soil

Parameter	Methods	Reporting Limit (mg/kg)
a) Metals	USEPA 6020	
• Antimony		1
• Arsenic		1
• Barium		1
• Cadmium		0.2
• Chromium III & VI		1
• Cobalt		1
• Copper		1
• Lead		1
• Manganese		1
• Mercury		0.2
• Molybdenum		1
• Nickel		1
• Tin		1
• Zinc		1
b) Petroleum Carbon Ranges	USEPA 8015/8260	
• Fractions C6 – C8		5
• Fractions C9 – C16		200
• Fractions C17 – C35		500
c) Volatile Organic Compounds (VOCs)	USEPA 8260	
• Benzene		0.2
• Toluene		0.5
• Ethylbenzene		0.5
• Xylenes (total)		2.0
d) Semi-volatile Organic Compounds (SVOCs)	USEPA 8270	
• Acenaphthene		0.5
• Acenaphthylene		0.5
• Anthracene		0.5
• Benzo(a)anthracene		0.5
• Benzo(a)pyrene		0.5
• Benzo(b)fluoranthene		0.5
• Benzo(g,h,i)perylene		0.5
• Benzo(k)fluoranthene		0.5
• Bis(2-Ethylhexyl)phthalate		5.0
• Chrysene		0.5
• Dibenzo(a,h)anthracene		0.5

Parameter	Methods	Reporting Limit (mg/kg)
<ul style="list-style-type: none"> Fluoranthene Fluorene Hexachlorobenzene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Phenol Pyrene 		0.5 0.5 0.2 0.5 0.5 0.5 0.5 0.5
e) Polychlorinated Biphenyls (PCBs)	USEPA8270	0.1

GROUNDWATER SAMPLING METHODOLOGY

Groundwater Monitoring Well Locations

- 3.16 If groundwater encountered at any soil sampling point, water monitoring well will be installed to carry out groundwater collection. If the sampling point has not encountered groundwater during soil sampling, no groundwater well will be installation to conduct water sampling and it will be grouted and reinstated. Location of proposed groundwater wells is same as soil sampling location shown in *Annex G*.

Monitoring Well Installation and Construction

- 3.17 Groundwater monitoring wells will be installed at the designated soil sampling location after soil collection was completed. The casing for construction of monitoring well is minimum 106mm in diameter. The PVC pipe is 50mm in diameter, flush jointed, threaded class 18uPVC with machine slotted sections (0.5 mm slot aperture). All joints make use of threaded casing and no solvent welding will be employed.
- 3.18 The well screen will be installed minimum 0.5m above the water table till more than 3.0m below the top of the water table to cater for seasonal fluctuations of the groundwater table. The bottom end of casing will be fitted with an end-cap to minimize up surging materials entering the well.
- 3.19 A filter pack comprising of 1mm to 2mm size of clean coarse sand will be used. The filter pack will start from the base of the screen to 0.5m above the termination of the slotted casing. A bentonite plug comprising pellet bentonite will be placed above the clean coarse sand layer to a minimum thickness of 300 mm. Above the bentonite plug, grout comprising a mixture of cement, bentonite and potable water will be used to seal the bore to the ground surface. All wells will be completed with concrete from 0.3m below ground surface. The wellheads are in form of manhole cover. All wellheads will be marked with unique monitoring well numbering. The typical drawing of groundwater monitoring well is shown in *Annex H*.

Groundwater Sampling

- 3.20 Upon completed monitoring well installation, the groundwater monitor wells will be to develop as follows.

Monitoring Well Cleaning

- 3.21 Cleaning of the monitoring wells will be carried out to remove silt and drilling fluid residue from the wells with the use of a vacuum pump.

Groundwater Gauging

- 3.22 Groundwater gauging will be conducted to determine the representative groundwater flow direction. The well elevations and locations will be surveyed using the standard surveying method (ie. Hong Kong Grid Coordinates and mPD level of ground surface). Subsequent to surveying, groundwater level and thickness of free product layer (i.e. non-aqueous phase liquids NAPL), if present, will be measured by an interface probe. Well headspace vapor concentrations will be measured using a PID.

Water Sampling

- 3.23 Groundwater will be sampled after installation and development of the monitoring wells. Prior to groundwater sampling, the wells will be purged to remove at least 5 well volumes of stagnant water from the wells in order to collect representative groundwater samples. Prior to sampling, at least three consecutive stable readings of temperature, electrical conductivity and pH value will be obtained. The purging and groundwater sampling will be undertaken from surface to 2.0m below the groundwater level with the use of a Teflon/stainless steel bailer or a mechanical pump.
- 3.24 Between sampling events, all sampling tools or equipment used will be thoroughly decontaminated with laboratory-grade detergent followed by demonized water. All groundwater samples collected will be treated and preserved in same as for soil samples. All laboratory QA/QC and chain of custody procedures will be followed. Duplicate sample will also be taken once every 20 samples.
- 3.25 All groundwater samples collected will be treated and preserved in the identical manner as that for soil samples. All laboratory QA/QC and chain of custody procedures will be properly followed.

Groundwater Sample Chemicals Analysis

- 3.26 Groundwater samples will be delivered to laboratory within 24 hours and analyzed within 2 days of delivery or within the holding time as advised by the laboratory. As per the “*Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management*” requirements, all chemical analysis methods used for groundwater assessment should be accredited under HOKLAS. The chemicals analysis method and the reporting limits are shown in **Table 3-4**.

Table 3-4 Testing Method and Reporting Limit of the Chemical Analysis – Groundwater

Parameter	Methods	Reporting Limit (µg/L)
a) Metals	USEPA 6020	
• Mercury		0.5
b) Petroleum Carbon Ranges	USEPA 8015	
• Fractions C6 – C8		20
• Fractions C9 – C16		500
• Fractions C17 – C35		500
c) Volatile Organic Compounds (VOCs)	USEPA 8260	
• Benzene		5
• Toluene		5
• Ethylbenzene		5
• Xylenes (total)		20
d) Semi-volatile Organic Compounds (SVOCs)	USEPA 8270	
• Acenaphthene		2
• Acenaphthylene		2
• Anthracene		2
• Benzo(b)fluoranthene		1
• Chrysene		1
• Fluoranthene		2
• Fluorene		2
• Hexachlorobenzene		4
• Naphthalene		2
• Phenanthrene		2
• Pyrene		2
e) Polychlorinated Biphenyls (PCBs)	USEPA8270	1

ASSESSMENT GUIDELINES

- 3.27 The western portion of SRC-1 will be part of upgraded Sha Ling Road in future. In accordance with *Guidance Note for Contaminated Land Assessment and Remediation Appendix II*, lower limit of “Industrial or Public Park” of Risk-based Remediation Goals for soil should be used for road land-use. RBRGs for soil and groundwater are listed in **Table 3-5**.

Table 3-5 Proposed Risk-based Remediation Goals for Soil and Groundwater

Parameter		Soil Remediation Goals				Groundwater Remediation Goals	
		Industrial (mg/kg)	Public Parks (mg/kg)	Proposed RBRG (mg/kg)	Soil Saturation Limit Csat (mg/kg)	Industrial (mg/L)	Solubility Limit (mg/L)
Metals	Antimony (Sb)	2.61E+00	9.79E+01	2.61E+00	NA	NA	NA
	Arsenic (As)	1.96E+02	7.35E+01	7.35E+01	NA	NA	NA
	Barium (Ba)	1.00E+04*	1.00E+04*	1.00E+04*	NA	NA	NA
	Cadmium (Cd)	6.53E+02	2.45E+02	2.45E+02	NA	NA	NA
	Chromium III	1.00E+04*	1.00E+04*	1.00E+04*	NA	NA	NA
	Chromium VI	1.96E+03	7.35E+02	7.35E+02	NA	NA	NA
	Cobalt (Co)	1.00E+04*	4.90E+03	4.90E+03	NA	NA	NA
	Copper (Cu)	1.00E+04*	9.79E+03	9.79E+03	NA	NA	NA
	Lead (Pb)	2.29E+03	8.57E+02	8.57E+02	NA	NA	NA
	Manganese (Mn)	1.00E+04*	1.00E+04*	1.00E+04*	NA	NA	NA
	Mercury (Hg)	3.84E+01	4.56E+01	3.84E+01	NA	6.79E+00	NA
	Molybdenum (Mo)	3.26E+03	1.22E+03	1.22E+03	NA	NA	NA
	Nickel (Ni)	1.00E+04*	4.90E+03	4.90E+03	NA	NA	NA
	Tin (Sn)	1.00E+04*	1.00E+04*	1.00E+04*	NA	NA	NA
	Zinc (Zn)	1.00E+04*	1.00E+04*	1.00E+04*	NA	NA	NA
Petroleum Carbon Ranges	Fractions C6 – C8	1.00E+04*	1.00E+04*	1.00E+04*	1.00E+03	1.15E+03	5.23E+00
	Fractions C9 – C16	1.00E+04*	1.00E+04*	1.00E+04*	3.00E+03	9.98E+03	2.80E+00
	Fractions C17 – C35	1.00E+04*	1.00E+04*	1.00E+04*	5.00E+03	1.78E+02	2.80E+00
Volatile Organic Compound (VOCs)	Benzene	9.21E+00	4.22E+01	9.21E+00	3.36E+02	5.40E+01	1.75E+03
	Toluene	1.00E+04*	1.00E+04*	1.00E+04*	2.35E+02	1.00E+04*	5.26E+02
	Ethylbenzene	8.24E+03	1.00E+04*	8.24E+03	1.38E+02	1.00E+04*	1.69E+02
	Xylenes (total)	1.23E+03	1.00E+04*	1.23E+03	1.50E+02	1.57E+03	1.75E+02
Semi-Volatile Organic Compound (SVOCs)	Acenaphthene	1.00E+04*	1.00E+04*	1.00E+04*	6.02E+01	1.00E+04*	4.24E+00
	Acenaphthylene	1.00E+04*	1.00E+04*	1.00E+04*	1.98E+01	1.00E+04*	3.93E+00
	Anthracene	1.00E+04*	1.00E+04*	1.00E+04*	2.56E+00	1.00E+04*	4.34E-02
	Benzo(a)anthracene	9.18E+01	3.83E+01	3.83E+01	NA	NA	NA
	Benzo(a)pyrene	9.18E+00	3.83E+00	3.83E+00	NA	NA	NA
	Benzo(b)fluoranthene	1.78E+01	2.04E+01	1.78E+01	NA	7.53E+00	1.50E-03
	Benzo(g,h,i)perylene	1.00E+04*	5.74E+03	5.74E+03	NA	NA	NA
	Benzo(k)fluoranthene	9.18E+02	3.83E+02	3.83E+02	NA	NA	NA
	Bis(2-Ethylhexyl)phthalate	9.18E+01	9.42E+01	9.18E+01	NA	NA	NA
	Chrysene	1.14E+03	1.54E+03	1.14E+03	NA	8.12E+02	1.60E-03
	Dibenzo(a,h)anthracene	9.18E+00	3.83E+00	3.83E+00	NA	NA	NA
	Fluoranthene	1.00E+04*	7.62E+03	7.62E+03	NA	1.00E+04*	2.06E-01
	Fluorene	1.00E+04*	7.45E+03	7.45E+03	5.47E+01	1.00E+04*	1.98E+00
	Hexachlorobenzene	5.82E-01	7.13E-01	5.82E-01	NA	6.95E-01	6.20E+00
	Indeno(1,2,3-cd)pyrene	9.18E+01	3.83E+01	3.83E+01	NA	NA	NA
	Naphthalene	4.53E+02	9.14E+02	4.53E+02	1.25E+02	8.62E+02	3.10E+01
	Phenanthrene	1.00E+04*	1.00E+04*	1.00E+04*	2.80E+01	1.00E+04*	1.00E+00
	Phenol	1.00E+04*	1.00E+04*	1.00E+04*	7.26E+03	NA	NA
	Pyrene	1.00E+04*	5.72E+03	5.72E+03	NA	1.00E+04*	1.35E-01
	Polychlorinated Biphenyls (PCBs)	7.48E-01	7.56E-01	7.48E-01	NA	5.11E+00	3.10E-02

Remark:

(*) indicates a 'ceiling limit' concentration.

NA Not Applicable

4 QA/QC PROCEDURES

- 4.1 The quality control samples will be collected in the course of soil and groundwater sampling. Duplicate soil samples will be taken. For the groundwater sample, one trip/travel blank, one field blank and duplicate sample will be taken.

Trip/Travel Blank

- 4.2 The trip blank will be prepared in the laboratory using organic-free water. The trip blank will remain unopened and accompanied from the start of sampling to delivery of samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total). The trip blank would be collect and analysis for each groundwater samples delivery event. Number of trip blank depends on number of groundwater delivery trips.

Field Blank

- 4.3 The field blank will be prepared in field using organic-free water by passing the water from a full bottle to an empty bottle at the most contaminated location on site. The field blank accompanied the project samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total). The field blank would be collect for each groundwater sampling day. Number of field blank sample collection depends on the number of days of groundwater sampling.

Duplicate Sample

- 4.4 The duplicate sample(s) will be collected as a split sample from soil and groundwater sample. Chemical analysis is equivalent to the original sample(s). These samples will be delivered to the laboratory as two individual samples without any indication to the laboratory that they have been duplicated. One duplicate sample will be collected for every twenty soil or groundwater samples.

PROCEDURE FOR DECONTAMINATING EQUIPMENT AND SAMPLING TOOLS

- 4.5 Tap water, phosphate-free detergent (Decon[®] 90) and distilled water will be used for cleaning the digging and sampling tools/equipment. The decontamination is required to be conducted as follows:
- All sampling tools/equipment decontamination will be performed before each sampling pit excavation to ensure no cross contamination;
 - All sampling tools/equipment will be decontaminated before next sampling to prevent cross-contamination of samples; and
 - All sampling tools/equipment will be decontaminated before leaving the potential contaminated areas to prevent potentially contaminated soil or water being transported off-site.
- 4.6 The land contamination specialist will supervise all the decontamination work.
- 4.7 Furthermore, equipment blank will be collected to determine potential cross contamination between samples and potential influences from the sampling tools used. It will be collected from assessment site by the sampling tools/equipment rinse to verify the decontamination procedures and background or ambient airborne contaminants on the site. The equipment blank collection will be one per every twenty soil samples or groundwater samples.
- 4.8 According to above procedures, Table 4-1 summarised the QA/QC sample(s) collection.

Table 4-1 QA/QC Sample(s) Collection

QA/QC Sample(s) to be collected from the site	Matrix	Chemical Testing	Proposed Numbers of Sample: 24 soil and 8 water samples)
Trip Blank	Soil	NA	NA
	Water	BTEX	Depends on the delivery event
Field Blank	Soil	NA	NA
	Water	BTEX	Depends on the number of sampling days

QA/QC Sample(s) to be collected from the site	Matrix	Chemical Testing	Proposed Numbers of Sample: 24 soil and 8 water samples)
Duplicate Sample	Soil	Same with original sample	2
	Water		1
Equipment Blank	Soil	Same as groundwater sample	2
	Water		1

5 HEALTH AND SAFETY

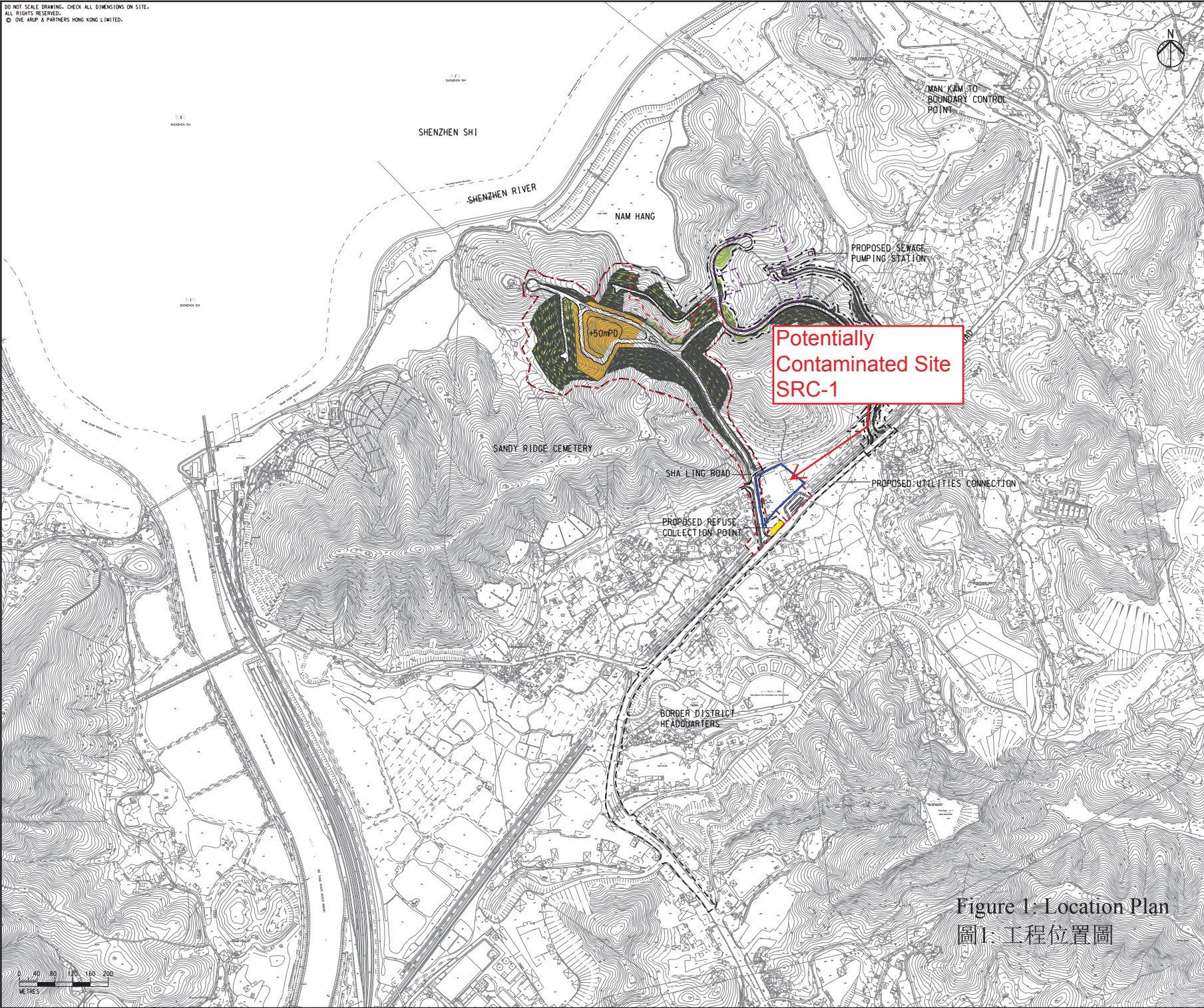
- 5.1 In general, all personnel who are involved in carrying out site investigation works shall comply with the in-house health and safety precautions listed below:
- All site personnel will possess an approved Construction Industry Safety Training Certificate (Green Card);
 - Safety helmets, safety boots, gloves and protective clothing will be provided to all personnel working on site;
 - Eye and ear protector will be provided for concrete layer breaking;
 - Briefing on health and safety requirements will be provided to the site personnel for daily before the SI works;
 - No food, drink, alcohol or drugs will be consumed whilst conducting the SI works on site;
 - Direct skin contact with the contaminated materials will be avoided;
 - Hand-wash basins will be provided and made accessible to all personnel working for the captioned site SI works;
 - The land contamination specialist will be responsible for project implementation. The specialist will also supervise SI work on site.
- 5.2 Since pit excavation will be carried out for soil sampling to the depth of 3m below the existing ground, extra safety precautions and safety measures will be taken to ensure the workers are safe during the pit excavation work and soil sampling work.
- 5.3 The details of Health and Safety Plan (HASP) are shown in ***Annex I***.

6 REPORTING

- 6.1 Upon completion of the site investigation (SI) works, a Contamination Assessment Report (CAR) will be prepared based on the findings of the SI. The chemical analysis results of the sampled soil and groundwater will be assessed compared with the requirements set out in the “*Guidance Note for Contaminated Land Assessment and Remediation*” and the “*Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management*” issued by EPD.
- 6.2 If soil/groundwater of the assessment area is identified contaminated, remediation measures will be proposed. A Remediation Action Plan (RAP) combined with CAR would be submitted to EPD for endorsement and approval, if necessary. After completed remediation work, a Remediation Report (RR) would be prepared and submitted to EPD for endorsement. No construction works shall be commenced at the contaminated area before any required remediation works are completed and before the Remediation Report is approved by EPD.

Annex A

Layout Plan of the Project



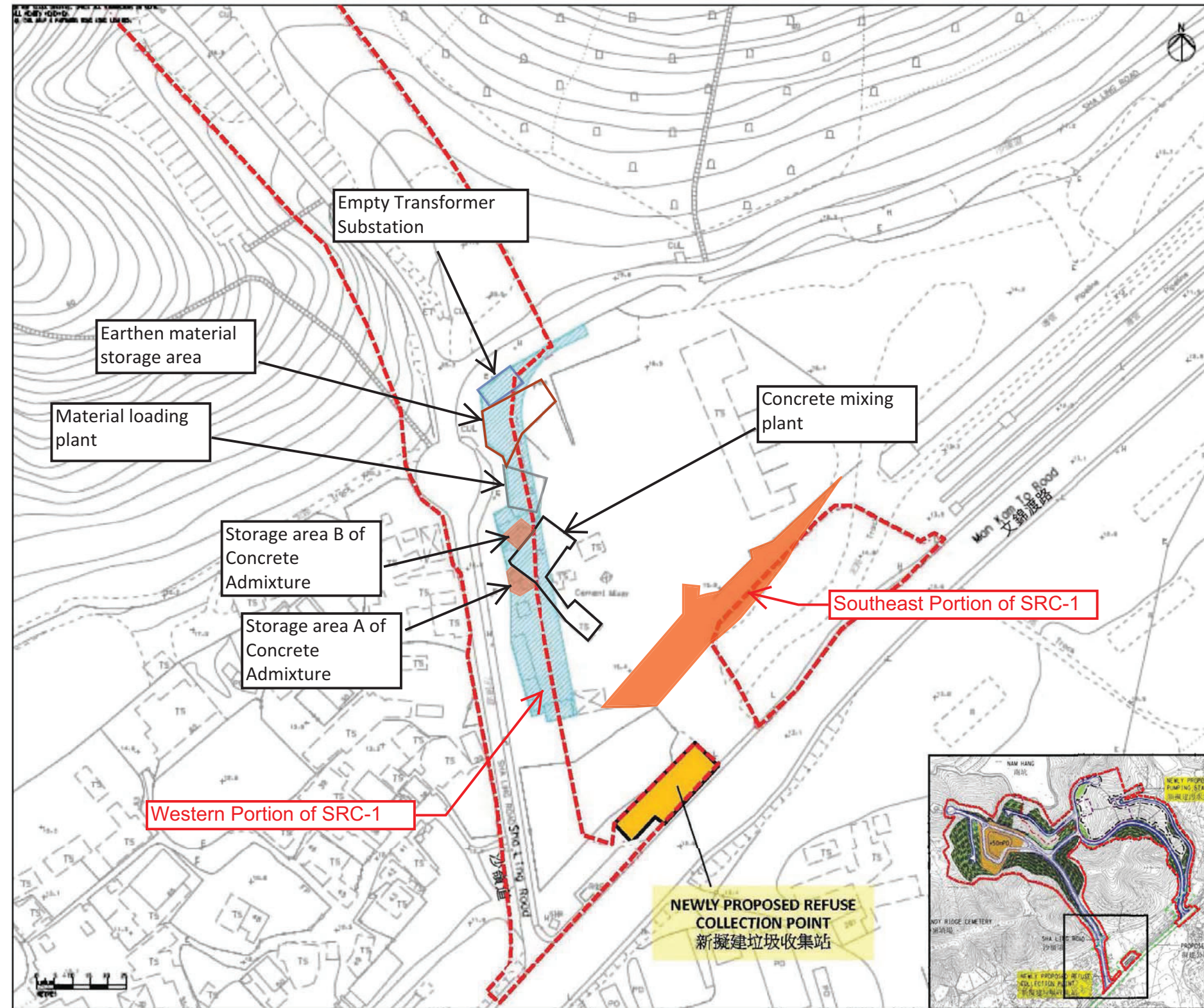
- LEGEND
- Project Boundary
項目範圍
 - Utilities Construction
興建公用設施
 - Proposed Access Road / EVA
擬建場內通道 / 緊急通道
 - Proposed Platforms for Columbarium
擬建工地平整工程用以興建沙嶺墳場骨灰龕
 - Proposed Cut / Fill Slope
斜坡工程
 - Proposed Sewage Pumping Station
擬建污水泵房
 - Proposed Refuse Collection Point
擬建廢物回收站
 - Project Boundary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

B SECOND ISSUE		GL	10/18
A FIRST ISSUE		GL	08/18
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title:			
Agreement No. CE 1/2013(CE)			
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction			
Drawing title			
Drawing no. Figure 1			
Rev. A			
Drawn	Date	Checked	Approved
GL	08/18	EL	FC
Scale	AS SHOWN	Status	PRELIMINARY
COPYRIGHT RESERVED			
CEDD 土木工程拓展署 Civil Engineering and Development Department			

Figure 1: Location Plan
圖1: 工程位置圖

Annex B

Potentially Contaminated Land



Legend

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

Rev	Description	By	Date
E			
D			
C			
B			

Consultant
AUES

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

Drawing title
**Layout Plan for
Assessment Site**

Drawing no.	Rev.
Drawn	Date
Checked	Approved
Scale	Sheet

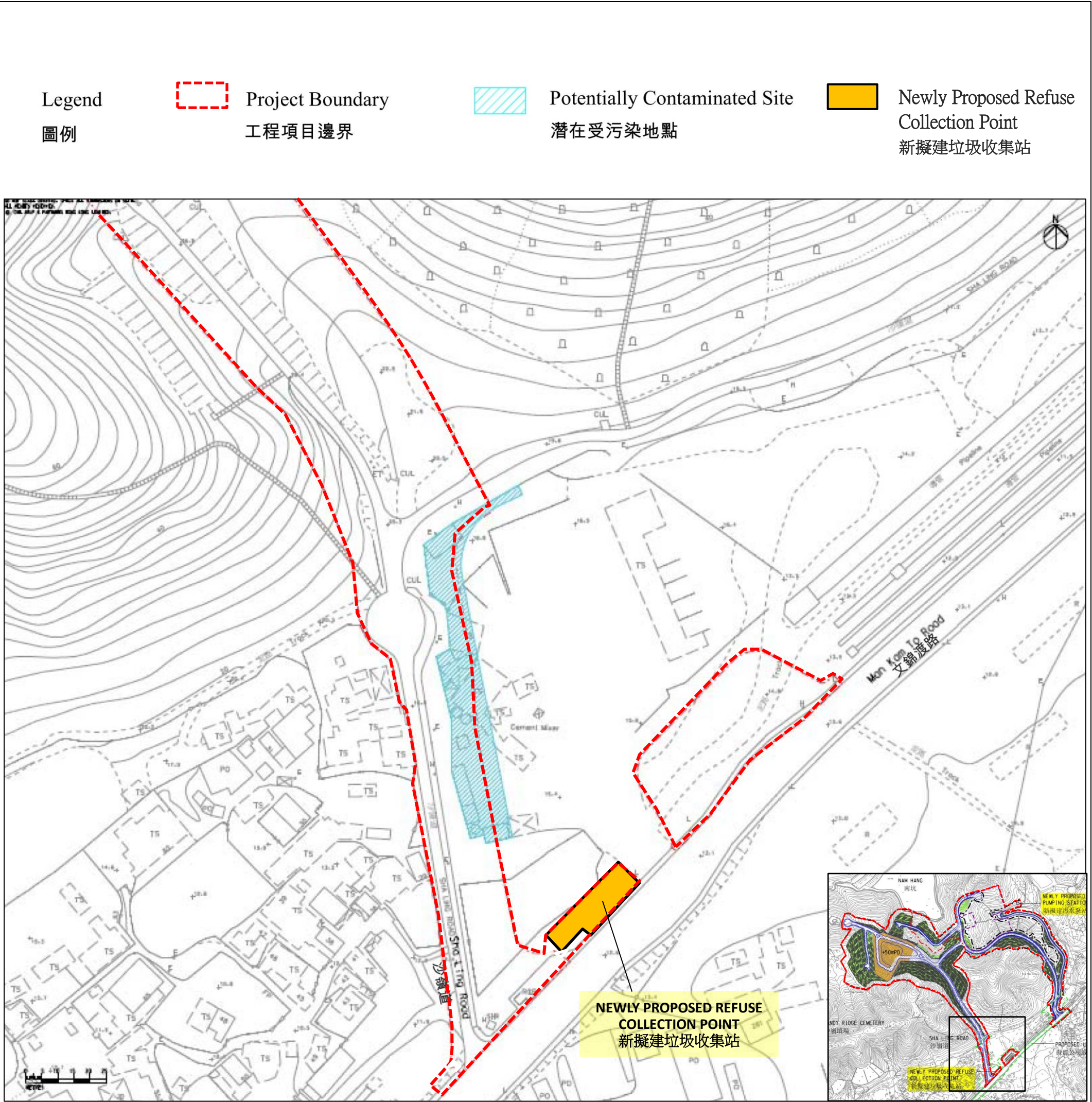
COPYRIGHT RESERVED



土木工程發展署
Civil Engineering and
Development Department

Annex C

Figure 2 of the Environmental Permits



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

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

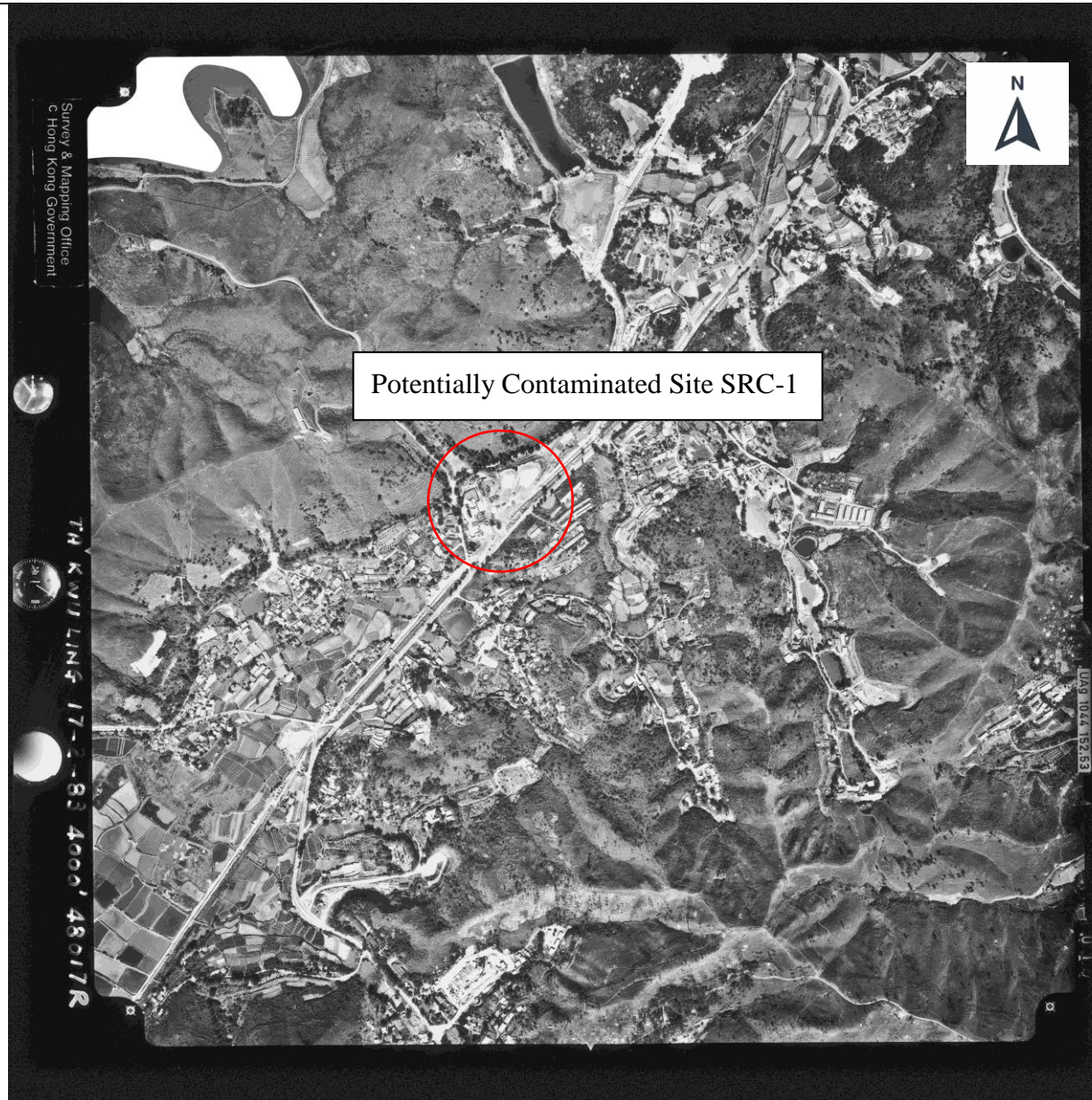
(This figure was prepared based on Figure 2 of Environmental Permit No.: FEP-01/534/2017 and Figure 1 attached to the VEP Application No.: VEP-555/2018)
(本圖是根據環境許可證編號 FEP-01/534/2017 圖 2 及更改環境許可証申請文件編號 VEP-555/2018 所隨附的圖 1 編制)

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

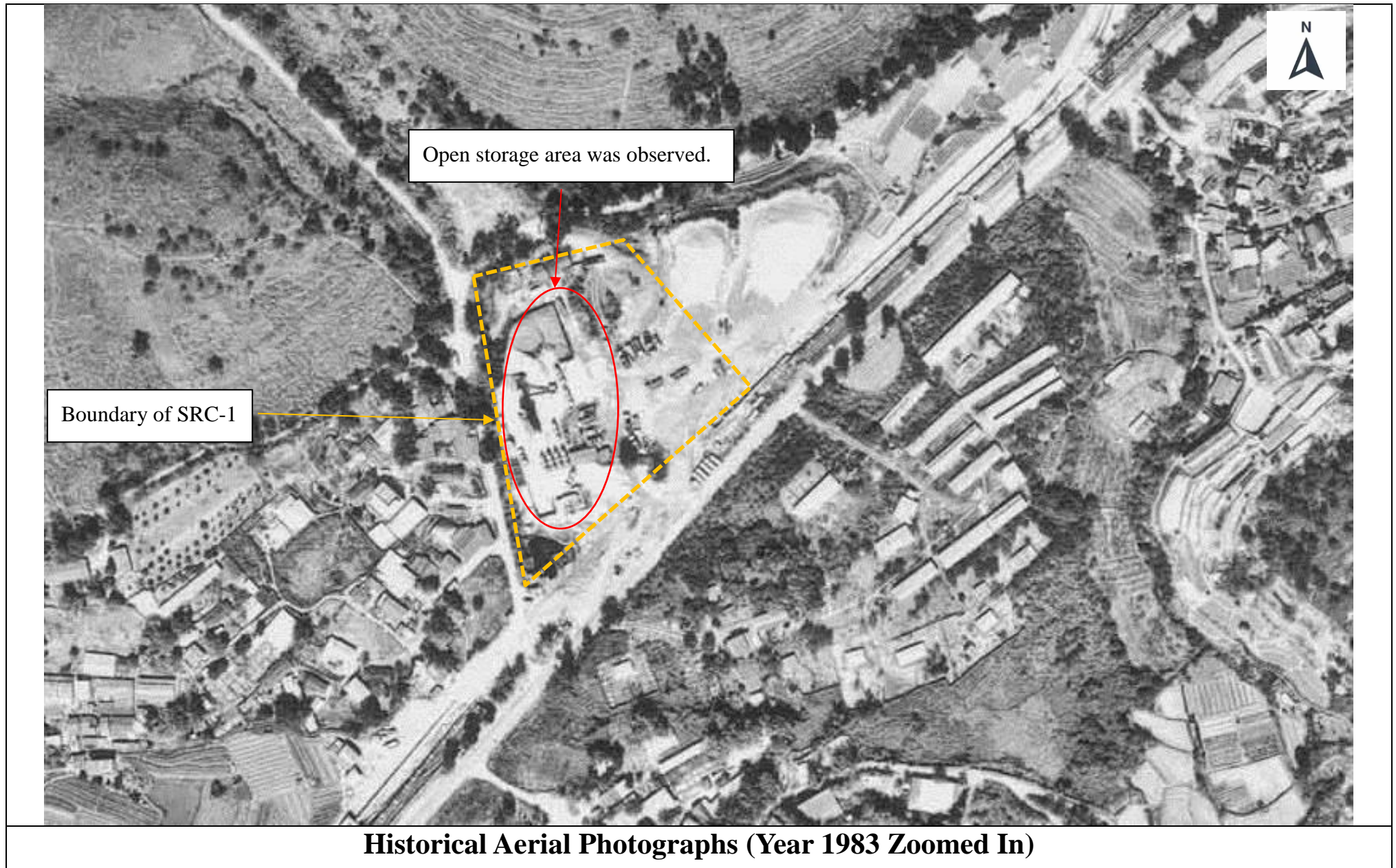


Annex D

Representative Historical Aerial Photographs

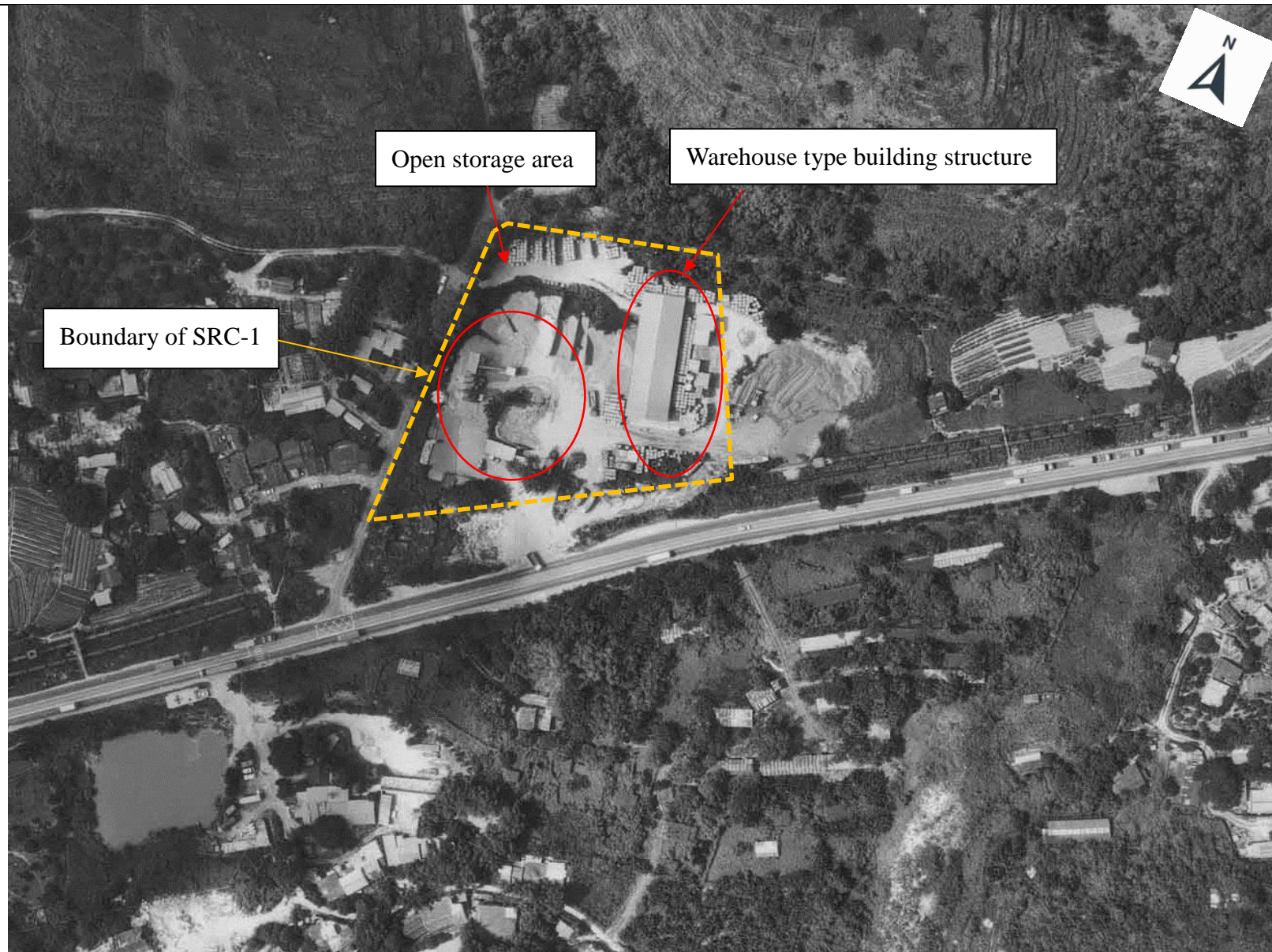


Historical Aerial Photographs (Year 1983)





Historical Aerial Photographs (Year 1991)



Historical Aerial Photographs (Year 1991 Zoomed In)





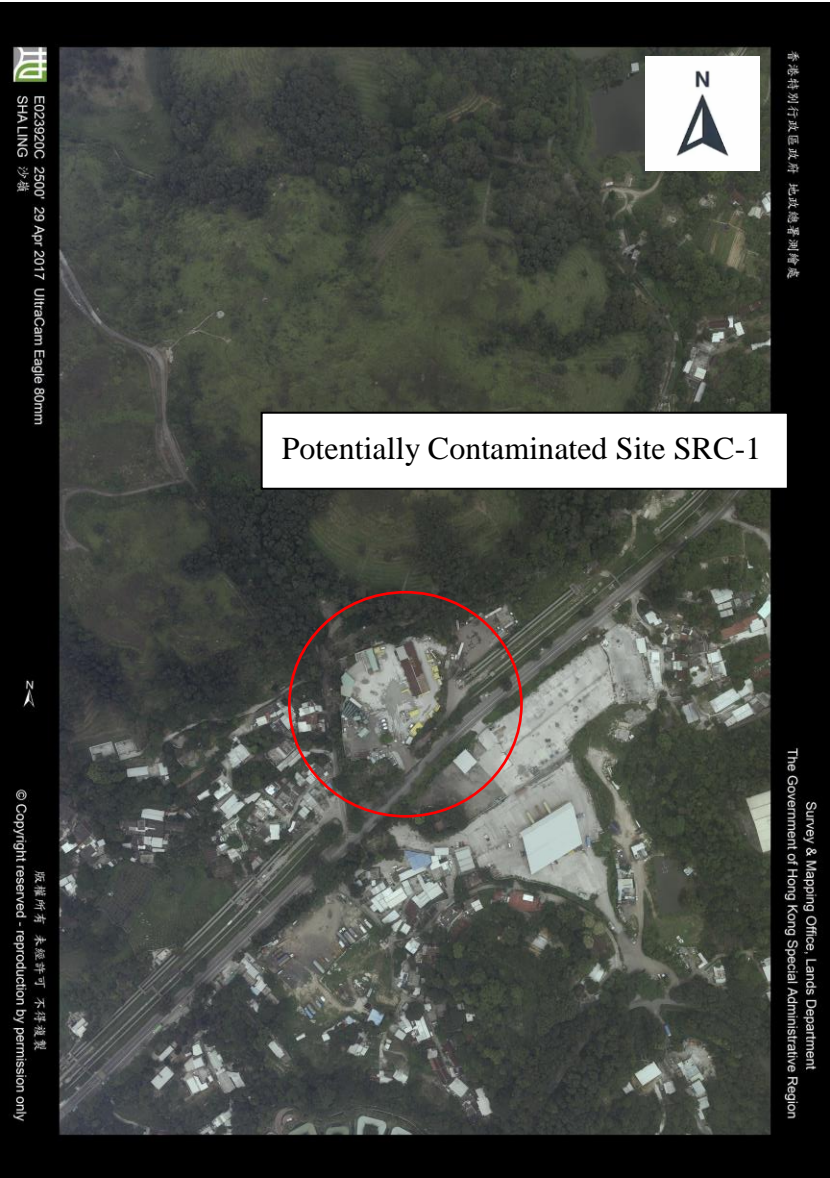
Historical Aerial Photographs (Year 2000 Zoomed In)



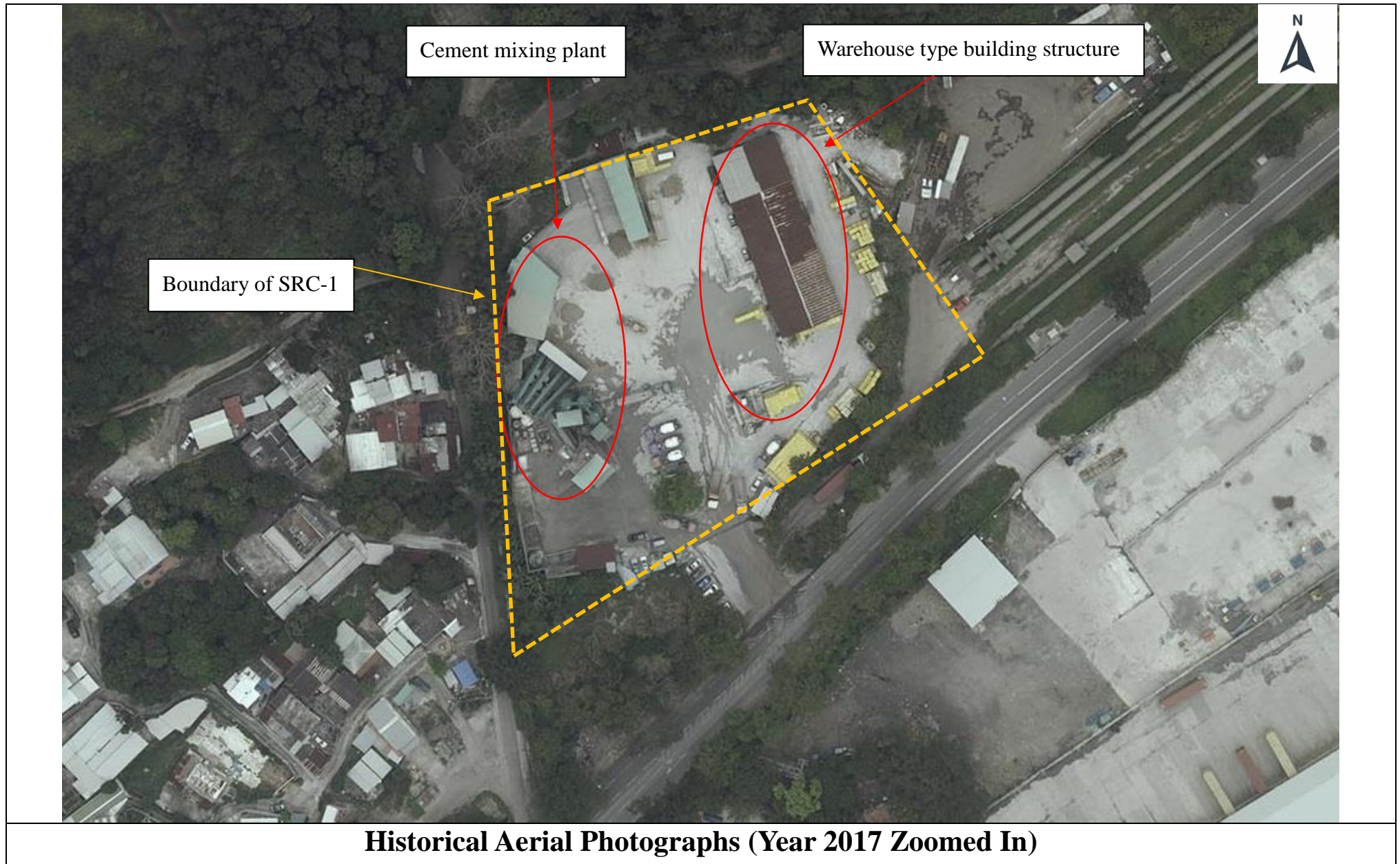
Historical Aerial Photographs (Year 2011)



Historical Aerial Photographs (Year 2011 Zoomed In)



Historical Aerial Photographs (Year 2017)



Annex E

Site Walkover Checklist, Photo Record and Registered Chemical Waste Producer

Location: Western portion of SRC-1 (Concrete batching plant in Sha Ling)

Date of site visit: 7 June 2018

GENERAL SITE DETAILS

Site Owner / Client:	China Concrete Company Limited
Property Address:	Lot No. 551 Sb. R.P. In D.D. 89, Man Kam To Road, Sha Ling, NT
Person conducting the questionnaire:	Mr. Chung (Site staff worked in the concrete batching plant)

SITE ACTIVITIES

Ready mixed concrete supply service

SITE DESCRIPTION

What is the total site area:	The total site area of Western Portion of SRC-1 is about 1120m ²
What area of the site is covered by buildings (%):	Only mixing plant and cargo container present on site. No building was built on site.
Please list all current and previous owners/occupiers if possible.	Current owner: China Concrete Company Limited Previous: NA
Is a site plan available? If yes, please attach	Site plan was not available
Are there any other parties on site as tenants or sub-tenants?	NA
Surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.	North: Sandy Ridge Cemetery South: Man Kam To Road East: Water Pipes West: Village Houses
The topography of the area	Flat Terrain
The size and location of the nearest residential communities	Village houses to the west of the Area
Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?	No.

Site Walkover Checklist for Land Contamination Assessment
Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
1. What are the main activities/operations at the above address?	Yes	Ready mixed concrete supply service
2. How long have you been occupying the site?	Yes	Not provided
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	Yes	The site prior to occupancy should be government land.
4. Prior to your occupancy, who occupied the site?	No	--
5. What were the main activities/operations during their occupancy?	No	--
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. 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.)	Yes	Concrete admixture for concrete mixing.
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	No	--
13. Has the facility produced a separate hazardous substance inventory?	No	--
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 many are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)?	No	--
16. Do you have any underground storage tanks? (If yes, please provide details.)	No	--
<ul style="list-style-type: none"> • 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? 		

Site Walkover Checklist for Land Contamination Assessment

Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
<ul style="list-style-type: none"> 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?	Yes	Dispose offsite and collected by licensed waste collector.
20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	No	--
21. Have any spills occurred on site? (If yes, please provide details.) <ul style="list-style-type: none"> 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? 	No	--
22. Do you have any records of major renovation of your site or rearrangement 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.)?	No	--
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 for Land Contamination Assessment
Observations

	Yes/No	Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	Yes	Stored with secondary containment
2. What are the conditions of the bund walls and floors?	Yes	Concrete paved and in good condition
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.)	No	--
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.)	No	No oil stains was observed.
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	Concrete admixture for concrete mixing.

Location: Southeast portion of SRC-1 (Government Lot)

Date of site visit: 7 June 2018

GENERAL SITE DETAILS

Site Owner / Client:	HKSAR Government
Property Address:	NA (Southeast of Lot No. 551 Sb. R.P. In D.D. 89, Man Kam To Road, Sha Ling, NT)
Person conducting the questionnaire:	NA

SITE ACTIVITIES

It is a paved ground and no site activity was observed.

SITE DESCRIPTION

What is the total site area:	The total site area of Southeast Portion of SRC-1 is about 620m ²
What area of the site is covered by buildings (%):	No building structure was observed.
Please list all current and previous owners/occupiers if possible.	Current owner: HKSAR Government Previous: NA
Is a site plan available? If yes, please attach	NA
Are there any other parties on site as tenants or sub-tenants?	NA
Surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.	North: Sandy Ridge Cemetery South: Man Kam To Road East: Water Pipes West: Village Houses
The topography of the area	Flat Terrain
The size and location of the nearest residential communities	Village houses to the west of the Area
Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?	No.

Site Walkover Checklist for Land Contamination Assessment
Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
1. What are the main activities/operations at the above address?	--	NA
2. How long have you been occupying the site?	--	NA
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	--	NA
4. Prior to your occupancy, who occupied the site?	--	NA
5. What were the main activities/operations during their occupancy?	--	NA
6. Have there been any major changes in operations carried out at the site in the last 10 years?	--	NA
7. Have any polluting activities been carried out in the vicinity of the site in the past?	--	NA
8. Has the site ever been used as a petrol filling station/car service garage?	--	NA
9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	--	NA
10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.)	--	NA
11. Are any chemicals used in your daily operations? (If yes, please provide details.)	--	NA
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	--	NA
13. Has the facility produced a separate hazardous substance inventory?	--	NA
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.)	--	NA
15. How many are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)?	--	NA
16. Do you have any underground storage tanks? (If yes, please provide details.) <ul style="list-style-type: none"> 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? 	--	NA

Site Walkover Checklist for Land Contamination Assessment

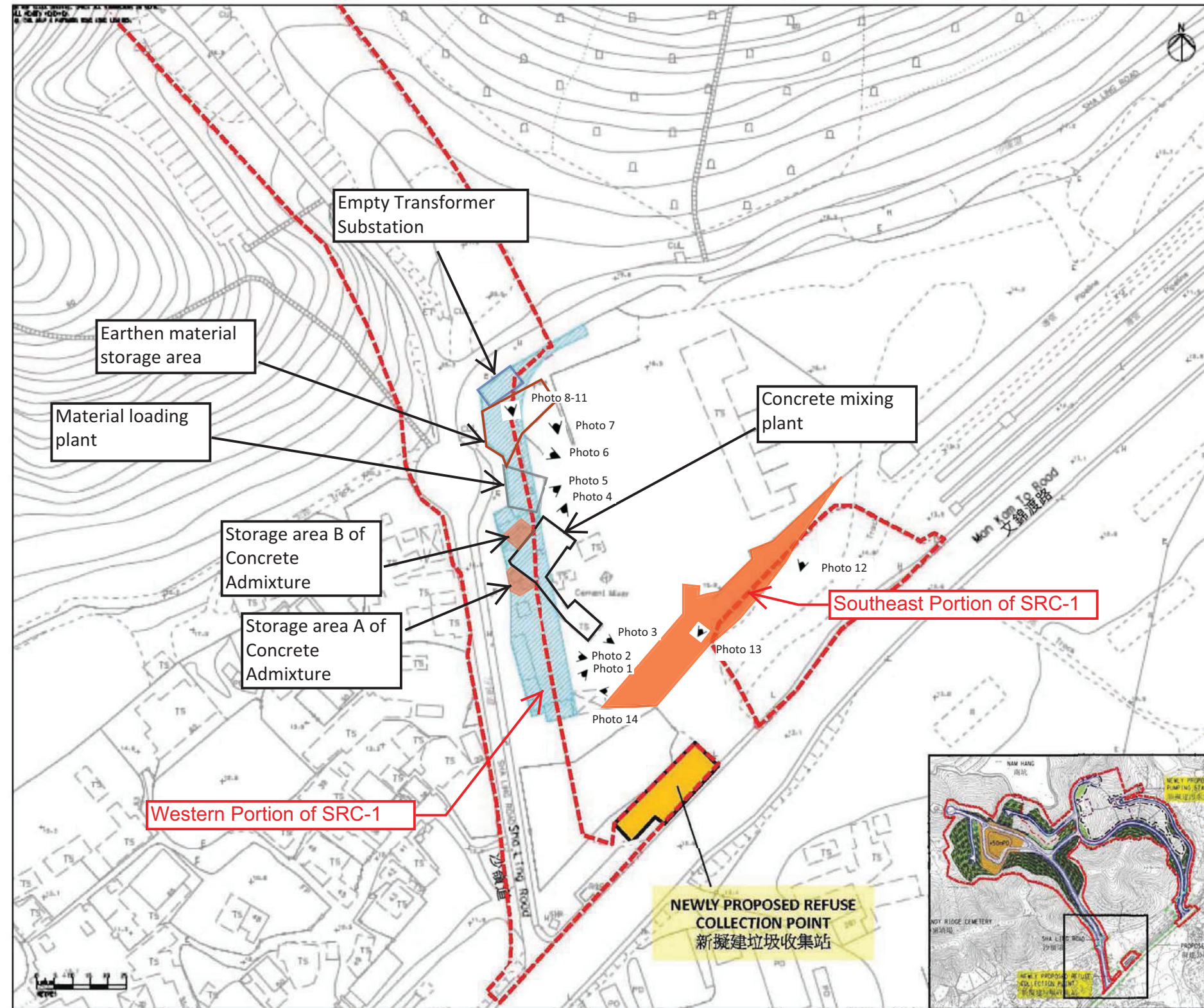
Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
<ul style="list-style-type: none"> 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?	--	NA
18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	--	NA
19. How are the wastes disposed of?	--	NA
20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	--	NA
21. Have any spills occurred on site? (If yes, please provide details.) <ul style="list-style-type: none"> 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? 	--	NA
22. Do you have any records of major renovation of your site or rearrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.)	--	NA
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	--	NA
24. Are there any known contaminations on site? (If yes, please provide details.)	--	NA
25. Has the site ever been remediated? (If yes, please provide details.)	--	NA

Site Walkover Checklist for Land Contamination Assessment

Observations

	Yes/No		Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	--	NA	
2. What are the conditions of the bund walls and floors?	--	NA	
3. Are any surface water drains located near to drum storage and unloading areas?	--	NA	
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	--	NA	
5. Is there a storage site for the wastes?	--	NA	
6. Is there an on-site landfill?	--	NA	
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	--	NA	
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	--	NA	
9. Are there any potential off-site sources of contamination?	--	NA	
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	--	NA	
11. Are there any sumps, effluent pits, interceptors or lagoons on site?	--	NA	
12. Any noticeable odours during site walkover?	--	NA	
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?	--	NA	



Legend

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

Rev	Description	By	Date

Consultant

AUES

Contract No. and Title

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

Drawing title

Layout Plan for Assessment Site


Drawing no.	Rev.

Drawn	Date	Checked	Approved

Scale

Signature

COPYRIGHT RESERVED



土木工程發展署
Civil Engineering and Development Department

Western Portion of SRC-1



Photo 1 – Staff room

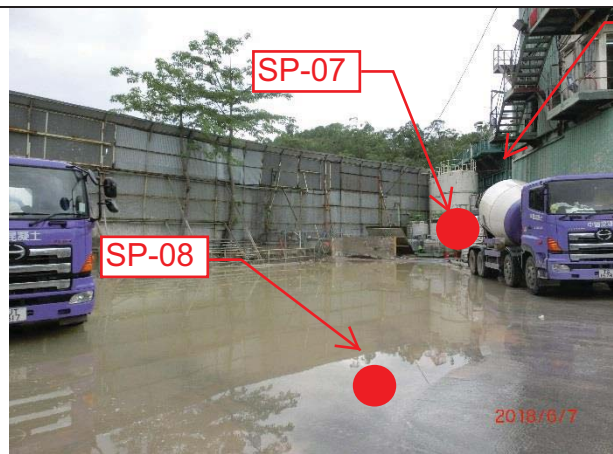


Photo 2 – Open Space and Storage area A for concrete admixture

Concrete
admixture
Storage
Area



Photo 3 – Site Office



Photo 4- Concrete Mixing Plant



Photo 5 –Storage area B for concrete admixture



Photo 6 – Sand and Aggregate Storage Area

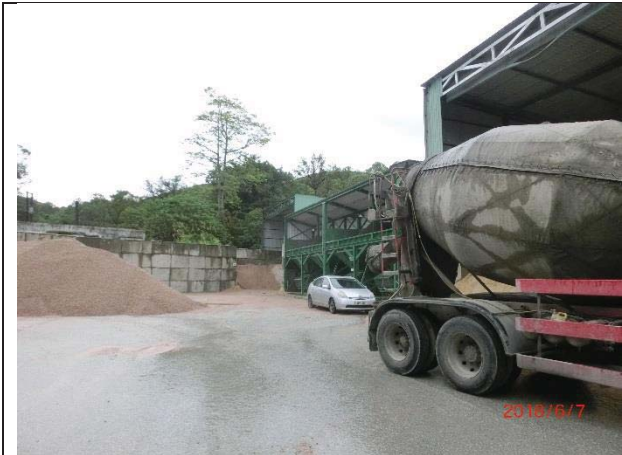


Photo 7 - Sand and Aggregate Storage Area



Photo 8 – Transformer Substation



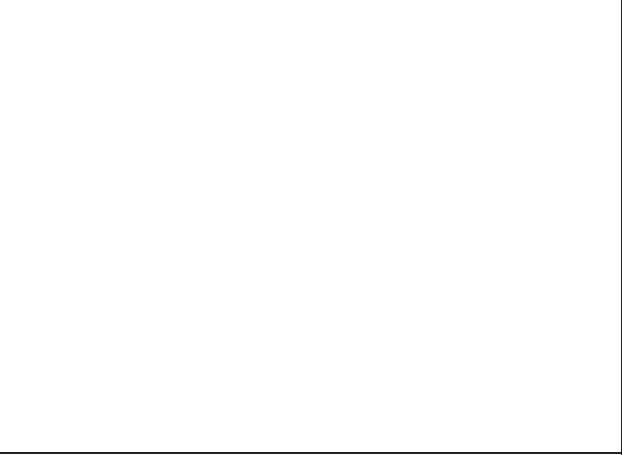
Photo 9 - Empty room of Substation



Photo 10 – Empty room of Substation



Photo 11 – Empty room of Substation



Southeast Portion of SRC-1



Photo 12 – Paved Road at Southeast Portion of SRC-1



Photo 13 – Paved Road at Southeast Portion of SRC-1



Photo 14 – Paved Road at Southeast Portion of SRC-1

Environmental Protection Department
環境保護署Waste Disposal Ordinance (Chapter 354)
香港法例第354章廢物處置條例Waste Disposal (Chemical Waste) (General) Regulation
廢物處置(化學廢物)(一般)規例Registration of Waste Producer
廢物產生者登記證

To: Chemical Waste Producer 化學廢物產生者	Full Name (English) 全名(英文)	China Concrete Company Limited	
	(Chinese) (中文)	中國混凝土有限公司	
	I.D. Card No. (if any) 身份證號碼:(如有者)	---	
	Business Reg. Cert. No. (if any) 商業登記證號碼:(如有者)	31083023-000-06-15-1	
	Address for Correspondence 通訊地址: 40/F., 118 Connaught Road West, Hong Kong 香港干諾道西118號40樓		
Tel. No. 電話:	2793 1313	Fax No. 圖文傳真:	2357 1530

With reference to your application dated 08 / 09 / 2004 for registration as a Waste Producer under the Waste Disposal (Chemical Waste) (General) Regulation, the Waste Producer Number, WPN 3 6 9 2 - 6 4 1 - C 3 3 2 5 - 0 2 is assigned to you in respect of the location or premises listed below:

前於 2004 年 09 月 08 日根據廢物處置(化學廢物)(一般)規例而來信,申請登記為廢物產生者,茲特配予廢物產生者編號第 3 6 9 2 - 6 4 1 - C 3 3 2 5 - 0 2 號,予下開地點或處所: —

Location or Premises where the waste is produced 產生廢物的地點或處所	Name of Establishment 機構名稱:	China Concrete Company Limited 中國混凝土有限公司
	Business Reg. Cert. No. (if any) 商業登記證號碼:(如有者)	31083023-002-06-15-3
	Nature of Business 業務性質:	Ready Mixed Concrete Supply
	Major chemical waste types 主要化學廢物種類:	Spent Lubricating Oil
	Address 地址: Lot 551 SB & RP in D.D.88, Man Kam To Road, Sha Ling, New Territories	



Sharon
(TSAL Hei-lok, Sharon)
for Director of Environmental Protection
環境保護署署長(蔡希樂代行)

Date
日期 10 / 07 / 2015

WARNING: Any registered waste producer who fails to inform the Director of Environmental Protection of any change in his registration particulars commits an offence and is liable on conviction to a fine of \$10,000.

警告: 任何已登記的廢物產生者,若其登記資料有任何改變而不知會環境保護署署長,即屬違法,被定罪者最高罰款港幣10,000元。

(Nov 2012)

Annex F

Records from EPD and FSD

We would be grateful if you could furnish us the above information for our assessment before the end of September 2013. If you require any further information, please do not hesitate to contact the undersigned or our Miss. Emily Li at 29084379 or E-mail emily.li@arup.com.

Yours faithfully



Davis Lee
Project Manager

Encl. Figures 1.1 and 1.2

cc CEDD - Ms. Sharon S P Yeung E/42 (w/o)

ARUP

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
t +852 2528 3031
d +852 2268 3627
f +852 2268 3955
davis.lee@arup.com
www.arup.com

Our ref 231448/6.7/DL/AW/PC/EW/CC/0040

BY HAND

Fire Services Department
Fire Services Headquarters Command
Planning Group (PG)
9th Floor, Fire Services HQ Building
1 Hong Chong Road, Tsim Sha Tsui East
Kowloon

Attention: Director of Fire Services

19 September 2013

Dear Madam ,

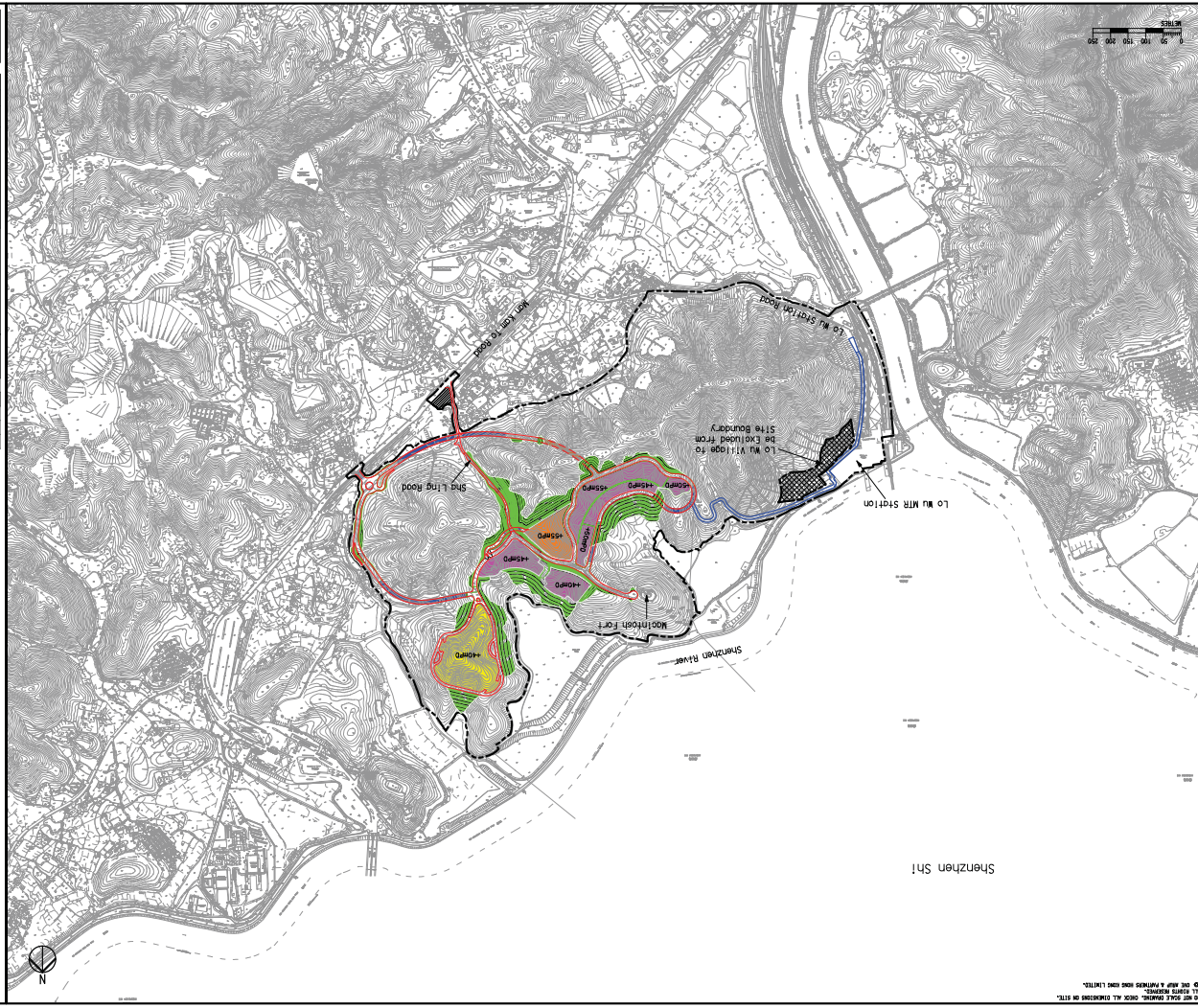
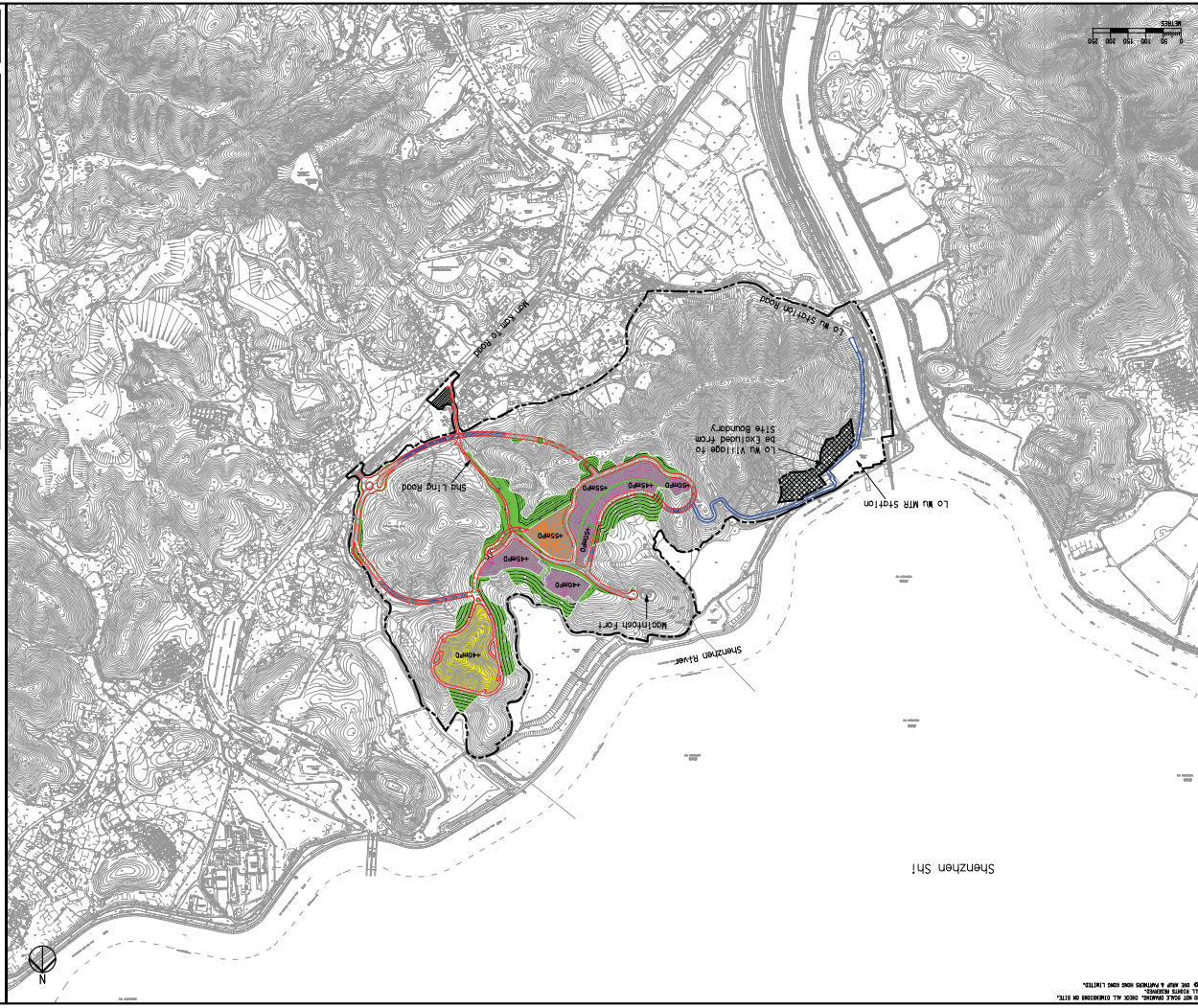
**Agreement No. CE 1/2013 (CE)
Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction**

Request for Information of Dangerous Goods

We are appointed by CEDD for the captioned Assignment of Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery. One of the main objectives of the Assignment is to undertake an Environmental Impact Assessment (EIA) in accordance with the EIA Study Brief (No. ESB-257/2013). The study area is enclosed for your reference (**Figure 1.1 and 1.2**).

As part of the Environmental Impact Assessment, we are required to review the historical and present land use around the Study Area, and evaluate any potential land contamination issues in the concerned areas (i.e. EIA Study Brief Boundaries in Sandy Ridge Cemetery and Choi Yuen Road in Sheung Shui) as shown in the attached **Figures 1.1 and 1.2**. We would appreciate it if you could kindly provide the following information for our land contamination assessment:

- The records of Dangerous Goods License issued to the concerned areas;
- Any past and present information related to the use and/or storage of dangerous goods in the concerned areas; and
- Past and present incident records of the concerned areas.



消防處
香港九龍尖沙咀東部廣道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (129) in FSD GR 6-5/4 R Pt. 4
來函檔號 YOUR REF. : 231448/6.7/DL/AW/PC/EW/CC/0040
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

ARUP
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong.
(Attn: Mr. Davis LEE)

Dear Mr. LEE,

Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction
Request for Information of Dangerous Goods & Incident Records

I refer to your letter which was received by this office on
7.10.2013 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. However, please be advised that due to time lapse, this Department can only provide the following information for your requested information:

- (i) Dangerous Goods Licence Record: from the year of 1990 to present moment.
- (ii) Incident Record: Past three years of fire and special services incidents.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(LO Kit-hung, Eric)
for Director of Fire Services

#0154 231448

Job No.	231448
File No.	6.7
By:	
Date	6.7
Reply Ref.:	
Action Required:	
Received	11 OCT 2013
Initis.	PM
Action	
Info.	
Copy	

By fax (2268 3955) only

7 October 2013

消防處
香港九龍尖沙咀東部廣道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (171) in FSD GR 6-5/4 R Pt. 4
來函檔號 YOUR REF. : 231448/6.7/DL/AW/PC/EW/CC/0040
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

ARUP
Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong.
(Attn: Mr. Davis LEE)

Dear Mr. LEE,

Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 19.9.2013 regarding the captioned request and reply below in response to your questions seriatim:-

1. There are licensed dangerous goods stores at the captioned address. Please refer to Appendix A for details.
2. According to our record, no incident record was found at the aforesaid location with your given conditions.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(CHAN Derek Armstrong)
for Director of Fire Services

#0175 231448

Job No.	231448
File No.	6.7
By:	
Date	6.7
Reply Ref.:	
Action Required:	
Received	29 OCT 2013
Initis.	PM
Action	
Info.	
Copy	

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
t +852 2528 3031
d +852 2268 3627
f +852 2268 3955
davis.lee@arup.com
www.arup.com

BY HAND

Fire Services Department
Fire Services Headquarters Command
Management Group (MG)
9th Floor, Fire Services HQ Building
1 Hong Chong Road, Tsim Sha Tsui East,
Kowloon, Hong Kong

Attention: Mr. CHAN Derek Armstrong
(Asst Div Offr (Management Group)1)

5 November 2013

Dear Sirs,

Agreement No. CE 1/2013 (CE)
Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
Design and Construction

Request for Information of Dangerous Goods

We refer to your letter dated 24 October 2013 (ref.: 171) in FSD GR 6-5/4 R Pt.4) regarding the provided information of Dangerous Goods (DGs) within our project site. According to your list, there is one identified DGs with its type, method of storage and total quantity. We would like to request for further information of the corresponding area (Area 1, 2, 3 or 4 as indicated in **Figure 1.1**) having storage of this DGs.

We would be grateful if the above information could be made available for our assessment before 15 November 2013. If you require any further information, please do not hesitate to contact the undersigned or our Miss, Emily Li at 29084379 or E-mail emily.li@arup.com.

Yours faithfully

[Signature]

Davis Lee
Project Manager

Encl. Figure 1.1

cc. CEDD – Ms. Sharon S P Yeung E/42 (w/e)



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS

消防處

本處編號 OUR REF. : (206) in FSD GR 6-5/4 R Pt. 4
 來函編號 YOUR REF. : 231448/6.7/DL/AW/EW/CC/0075
 電子郵件 E-mail : hkfsdeng@hkfsd.gov.hk
 圖文傳真 FAX NO. : 2739 5879
 電話 TEL NO. : 2733 7741

12 November 2013

By fax (2268 3955) only

Dear Mr. LEE,

Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Design and Construction

I refer to your letter which was received by this office on 12.11.2013 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. However, please be advised that due to time lapse, this Department can only provide Dangerous Goods Licence Record from the year of 1990 to present moment.

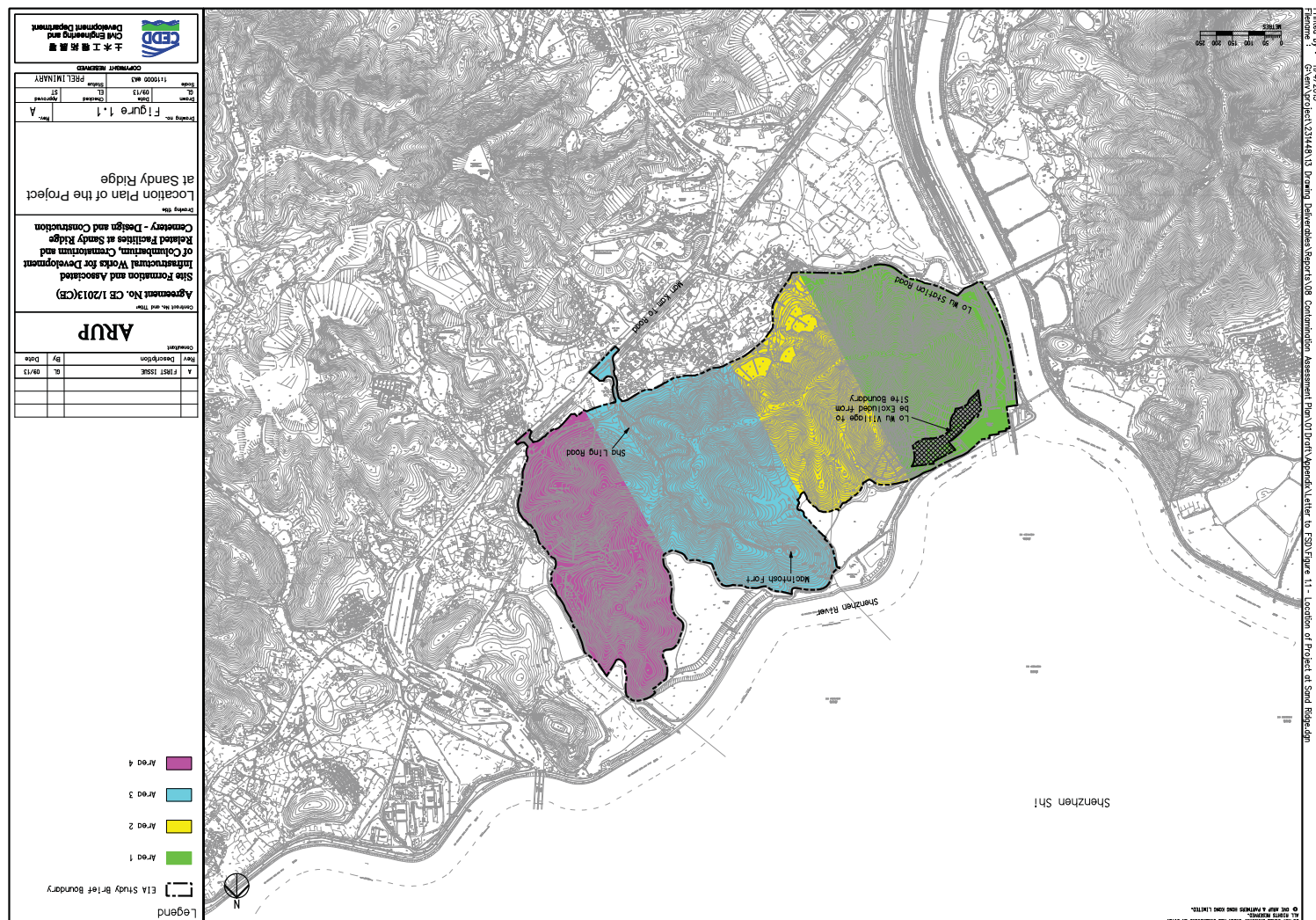
If you have further questions, please feel free to contact the undersigned. 1

Yours sincerely,

(Derek Armstrong CHAN)
for Director of Fire Services

ARUP	Lab No.	Date
Reply Ref:	Bar	
Action Required:		
Received	13 NOV 2013	
Intls.		
Action		
Info.		
Cost		

Ref. number and date should be quoted in reference to this letter
 日 提 及 本 信 時 請 引 就 編 號 及 日 期



消防處

香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (45) in FSD GR 6-5/4 R Pt. 5
來函檔號 YOUR REF. : 231448/6.7/DL/AW/EW/CC/0075
電子郵件 E-mail : hkfcsdq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

ARUP

Level 5 Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong,
Kowloon, Hong Kong.
(Attn: Mr. Davis LEE)

20 November 2013

Dear Mr. LEE,

Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 5.11.2013 regarding the captioned subject.

The dangerous goods store was in Area 3 as indicated in Figure 1.1
of your letter.

If you have further questions, please feel free to contact the
undersigned.

Yours sincerely,


(CHAN Derek Armstrong)
for Director of Fire Services

#0228

ARUP	Job No.	231448
Reply Ref.	File No.	6.7
Action Required:	By:	Date
Received	27 NOV 2013	
Initia.		
Action		
Info.		
Copy		

Ref. number and date should be quoted in reference to this letter
凡提及本信時請引建編號及日期

Our ref 23144/6.7/EC/DL/AW/PC/AC/CC/0145

BY HAND

Fire Services Department
Fire Services Headquarters Command
Management Group (MG)
9th Floor, Fire Services HQ Building
1 Hong Chong Road, Tsim Sha Tsui East
Kowloon

Attention: Mr. CHAN Derek Armstrong
(Asst Div Offr (Management Group))

12 June 2014

Dear Sir,

Agreement No. CE 1/2013 (CE)
Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction

Request for Information of Dangerous Goods

We are appointed by CEDD for the captioned consultancy study of Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery. One of the objectives of the Study is to undertake an EIA in accordance with the EIA Study Brief (No. ESB-271/2014).

As part of the Environmental Impact Assessment Study, we are required to review the historical and present land use around the area, and evaluate any potential land contamination issues in the concerned area. The area of concern is Lin Ma Hang Road as shown in the attached Figure 1.1 and along Man Kam To Road as shown in Figure 1.2 and Figures 1.2a to 1.2c. We would appreciate it if you could kindly provide the following information for our land contamination assessment:

- The records of Dangerous Goods License issued to the concerned areas;
- Any past and present information related to the use and/or storage of dangerous goods in the concerned areas; and
- Past and present incident records of the concerned areas.

As shown in the attached Figure 1.1, the Study Area has been divided into four areas of concern (Area A to D). If, due to privacy restrictions, the exact location of a premise related to the information request cannot be provided, please specify which area the premise occupies.

ARUP

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
t +852 2528 3031
d +852 2268 3627
f +852 2268 3955
davis.lee@arup.com
www.arup.com

Please note that this letter supersedes the previous Request for Information (our ref: 231448/6.7/DL/AW/PC/AC/CC/0142) dated 5 June 2014.

It would be appreciated if the following information is available for our assessment on or before 26 June 2014. If you require any further information, please do not hesitate to contact the undersigned or our Mr. David Rollinson at 22683115 or E-mail david.rollinson@arup.com.

Yours faithfully

André

Davis Lee
Project Manager

Encl. Figures 1.1, 1.2 and 1.2a to 1.2c

cc. CEDD, CE/LW – Mr. WOO Tai On, Gabriel (w/e)



CDPD
Civil Engineering and
Development Department

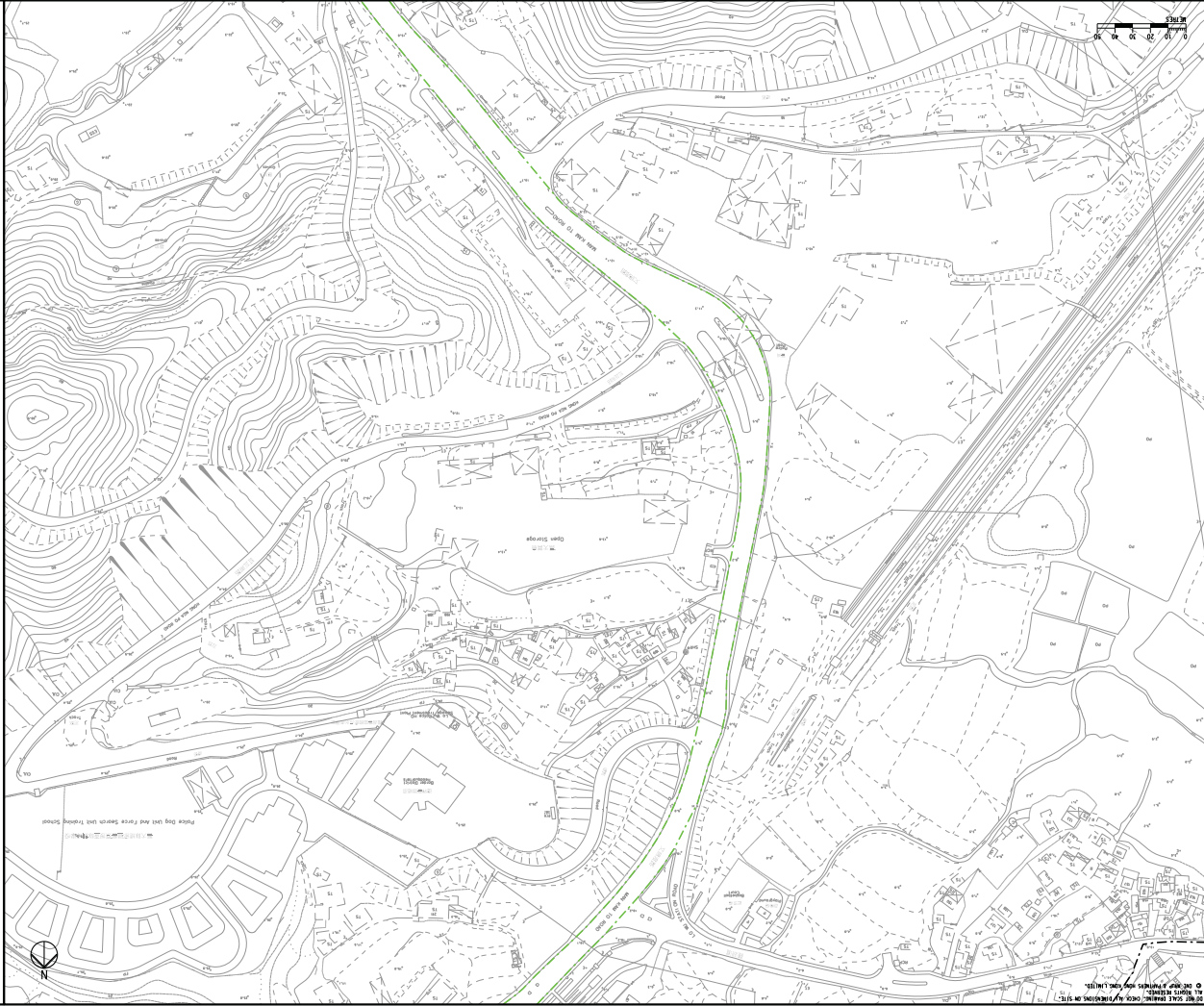
COMPONENT INFORMATION

Scale: 1:2000 A43
Drawing No: 13200
Drawing Date: 06/14
Drawing Title: F Figure 1.2c
Drawing Sheet: 4 of 4
Drawing Location: Location Plan of the Project along Man Kam To Road
Drawing Description: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction
Contract No. and Title: Agreement No. CE I/2013(CE)
Contractor: ARUP
Contractor's Representative: A F 1951 1556
Contractor's Representative's Name: By Date

Legend

Study Area

EIA Study Brief Boundary



CDPD
Civil Engineering and
Development Department

COMPONENT INFORMATION

Scale: 1:2000 A43
Drawing No: 13200
Drawing Date: 06/14
Drawing Title: F Figure 1.2b
Drawing Sheet: 3 of 4
Drawing Location: Location Plan of the Project along Man Kam To Road
Drawing Description: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction
Contract No. and Title: Agreement No. CE I/2013(CE)
Contractor: ARUP
Contractor's Representative: A F 1951 1556
Contractor's Representative's Name: By Date

Legend

Study Area

EIA Study Brief Boundary

Appendix G

Relevant Correspondence with Environmental Protection Department

Our ref 231448/6.6/DL/AW/PC/EW/CC/0039

BY HAND

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Shatin Government Offices,
1 Sheung Wo Che Street, Sha Tin,
New Territories, Hong Kong.

Attention: Ms. FONG Wai Lan, Shirley

19 September 2013

Dear Madam ,

Agreement No. CE 1/2013 (CE) Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery – Design and Construction

Request for Information of Chemical Waste Producer and Chemical Spillage Accident

We are appointed by CEDD for the captioned Assignment of Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery. One of the main objectives of the Assignment is to undertake an Environmental Impact Assessment (EIA) in accordance with the EIA Study Brief (No. ESB-257/2013). The study area is enclosed for your reference (**Figure 1.1 and 1.2**).

As part of the Environmental Impact Assessment, we are required to review the historical and present land use around the Study Area, and evaluate any potential land contamination issues in the concerned areas (i.e. EIA Study Brief Boundaries in Sandy Ridge Cemetery and Choi Yuen Road in Sheung Shui) as shown in the attached **Figures 1.1 and 1.2**. We would appreciate it if you could kindly provide the following information for our land contamination assessment:

- The records of Chemical Waste Producers Registration of the concerned areas; and
- Past and present chemical spillage/ leakage records of the concerned areas.

ARUP

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
t +852 2528 3031
d +852 2268 3627
f +852 2268 3955
davis.lee@arup.com
www.arup.com

We would be grateful if you could furnish us the above information for our assessment before the end of September 2013. If you require any further information, please do not hesitate to contact the undersigned or our Miss. Emily Li at 29084379 or E-mail emily.li@arup.com.

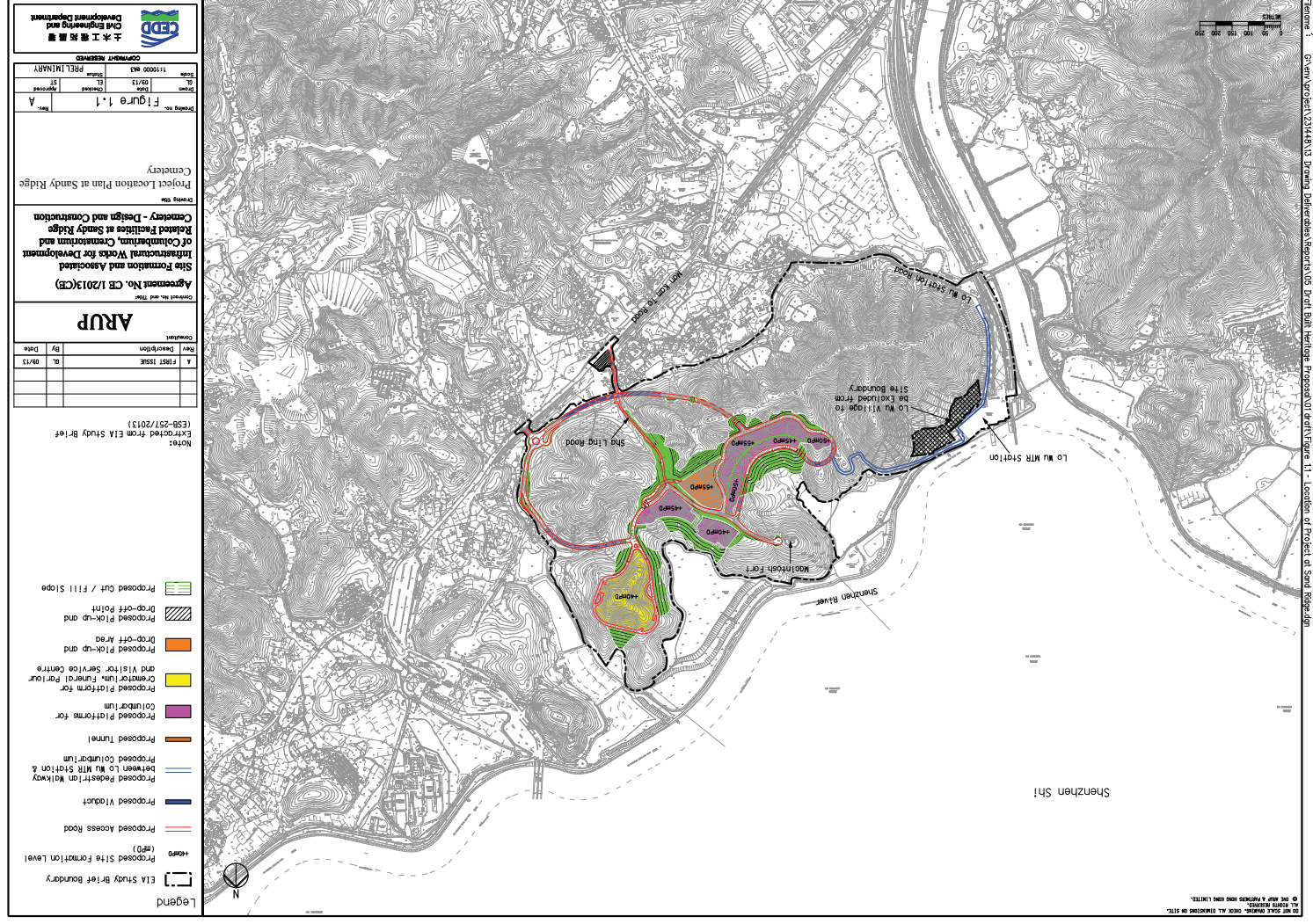
Yours faithfully

✓✓✓

Davis Lee
Project Manager

Encl. Figures 1.1 and 1.2

cc CEDD - Ms. Sharon S P Yeung E/42 (w/o)



主理檔案
 YOUR REF:
 主理函檔案
 YOUR REF:
 電話
 TEL. NO.:
 圖文傳真
 FAX NO.:
 網址
 HOMEPAGE

231448/6.6/DL/ΛW/PC/EW/CC/0039
2158 5832
2685 1133

網 址
HOMEPAGE: <http://www.epd.gov.hk/>

Rev. fax only: 2268 3955)

23 Sept 2013

#0083

ARUP	Lab No. 24329
Refy Ref:	Lab No.
Action Required:	By: Date 66

Received 24 SEP 2013

Initis.	Initialed
Action	
Info.	
Copy	

ARUP
Level 5, Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
(Attn: Mr. Davis LEE)

Dear Mr. LEE,

Request for information for Chemical Waste Producer and Chemical Spillage Accident at EIA Study Brief Boundaries in Sandy Ridge Cemetery and Choi Yuen Road, Sheung Shui

... to your letter dated 19 September 2013.

This Regional Office has no record keeping of accidents or leakage of dangerous goods or chemicals. You may like to check with other relevant parties or departments for such information as appropriate.

In so far as chemical waste producers are concerned, a registry of chemical waste producers is available in our Territorial Control Office. Please contact Mr. DO Yuen Tung at 2835 1017 for

Should you have any query on the matter, please contact the undersigned at 2158 5832.

Yours sincerely,

(Shirley WL FONG)

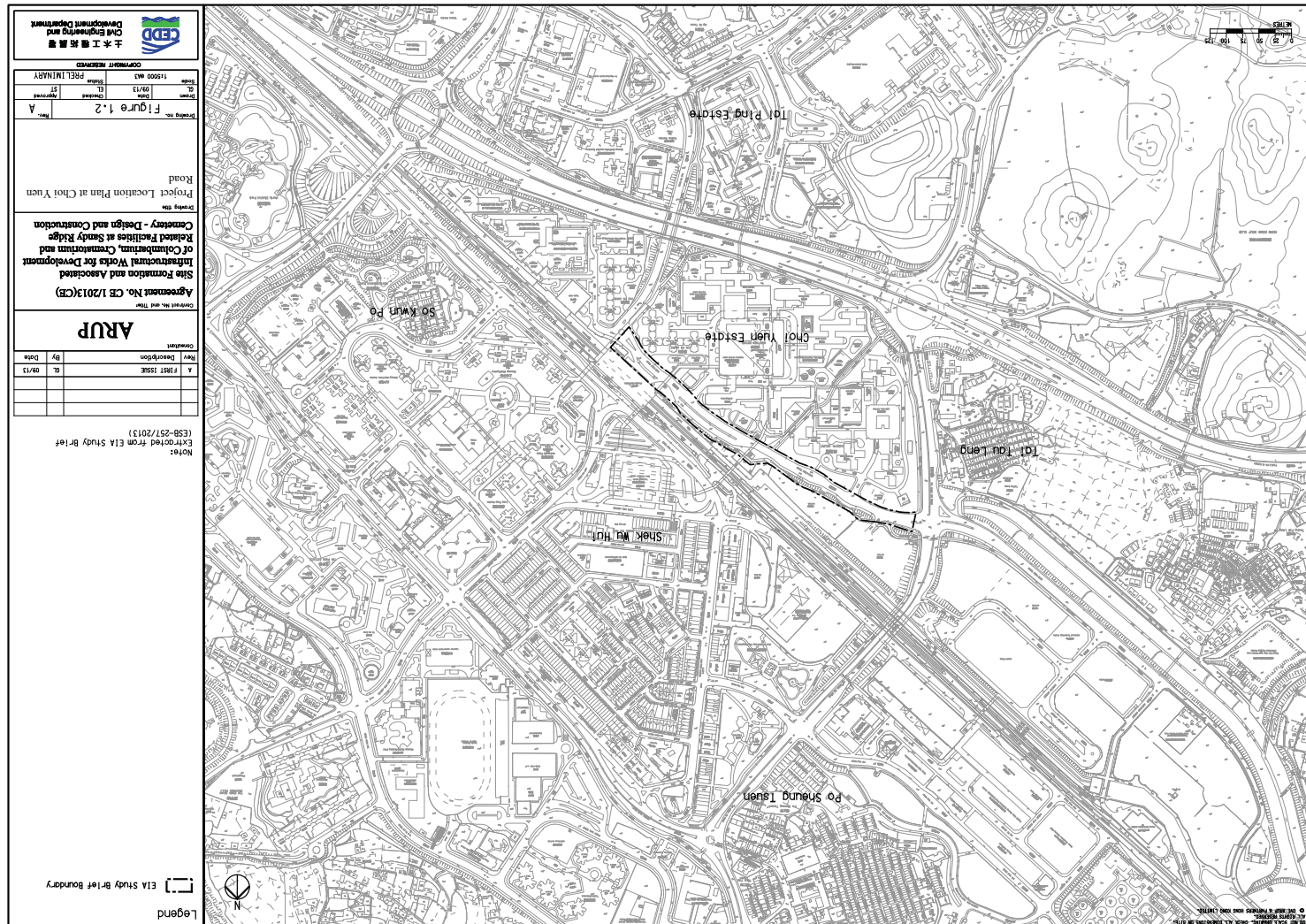
Regional Office (North)

Director of Environmental Protection

Fax: 2305 0453

Mr. DO Yuen-tung

 再造紙
 RECYCLED PAPER



Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
t +852 2528 3031
d +852 2268 3627
f +852 2268 3955
davis.lee@arup.com
www.arup.com

BY HAND

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Shatin Government Offices,
1 Sheung Wo Che Street, Sha Tin,
New Territories, Hong Kong.

Attention: Miss. TSAL Hei Lok, Sharon
(Env Protection Offr(Regional N)33)

12 June 2014

Dear Madam,

Agreement No. CE 1/2013 (CE)
Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
- Design and Construction

Request for Information of Chemical Waste Producer and Chemical Spillage
Accident

We are appointed by CEDD for the captioned consultancy study of Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery. One of the objectives of the Study is to undertake an EIA in accordance with the EIA Study Brief (No. ESB-271/2014).

As part of the Environmental Impact Assessment Study, we are required to review the historical and present land use around the area, and evaluate any potential land contamination issues in the concerned area. The area of concern is Lin Ma Hang Road as shown in the attached **Figure 1.1** and along Man Kam To Road as shown in **Figure 1.2** and **Figures 1.2a to 1.2c**. We would appreciate it if you could kindly provide the following information for our land contamination assessment:

- The records of Chemical Waste Producers Registration of the concerned areas; and
- Past and present chemical spillage/leakage records of the concerned areas.

As shown in the attached **Figure 1.1**, the Study Area has been divided into four areas of concern (Area A to D). If, due to privacy restrictions, the exact location of a premise related to the information request cannot be provided, please specify which area the premise occupies.

Please note that this letter supersedes the previous Request for Information (our ref: 23144/6.6/DL/AW/PC/AC/CC/0141) dated 5 June 2014.

It would be appreciated if the following information is available for our assessment on or before 26 June 2014. If you require any further information, please do not hesitate to contact the undersigned or our Mr. David Rollinson at 22683115 or E-mail david.rollinson@arup.com.

Yours faithfully

Davis Lee
Project Manager

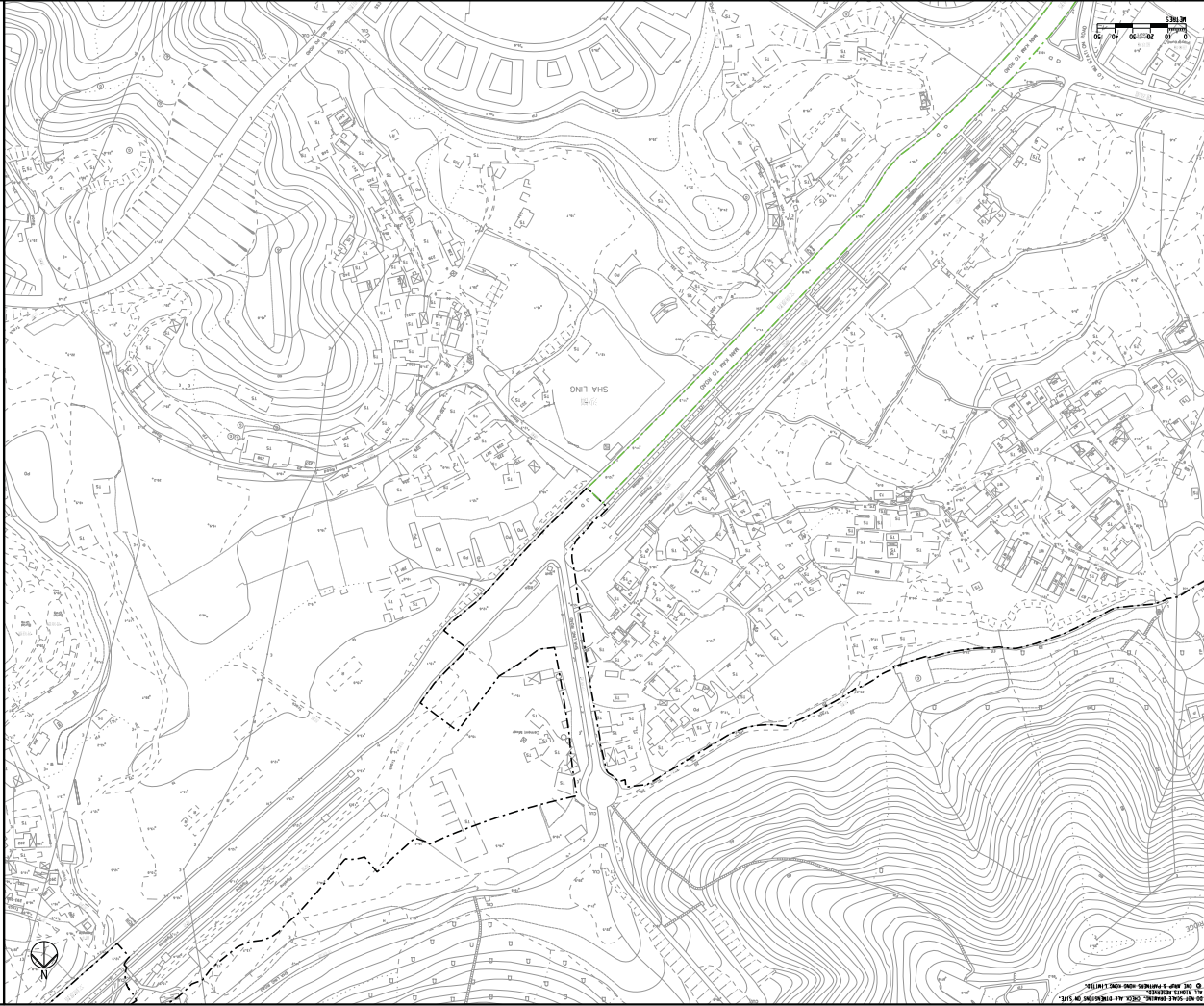
Encl. Figures 1.1, 1.2 and 1.2a to 1.2c
cc. CEDD, CE/LW – Mr. WOO Tai On, Gabriel (w/e)



NOT SCALE DRAWING. ONLY AS SHOWN ON SITE.
DO NOT COPY, REPRODUCE, OR TRANSMIT IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.

Legend
--- EIA Study Brief Boundary
--- Study Area

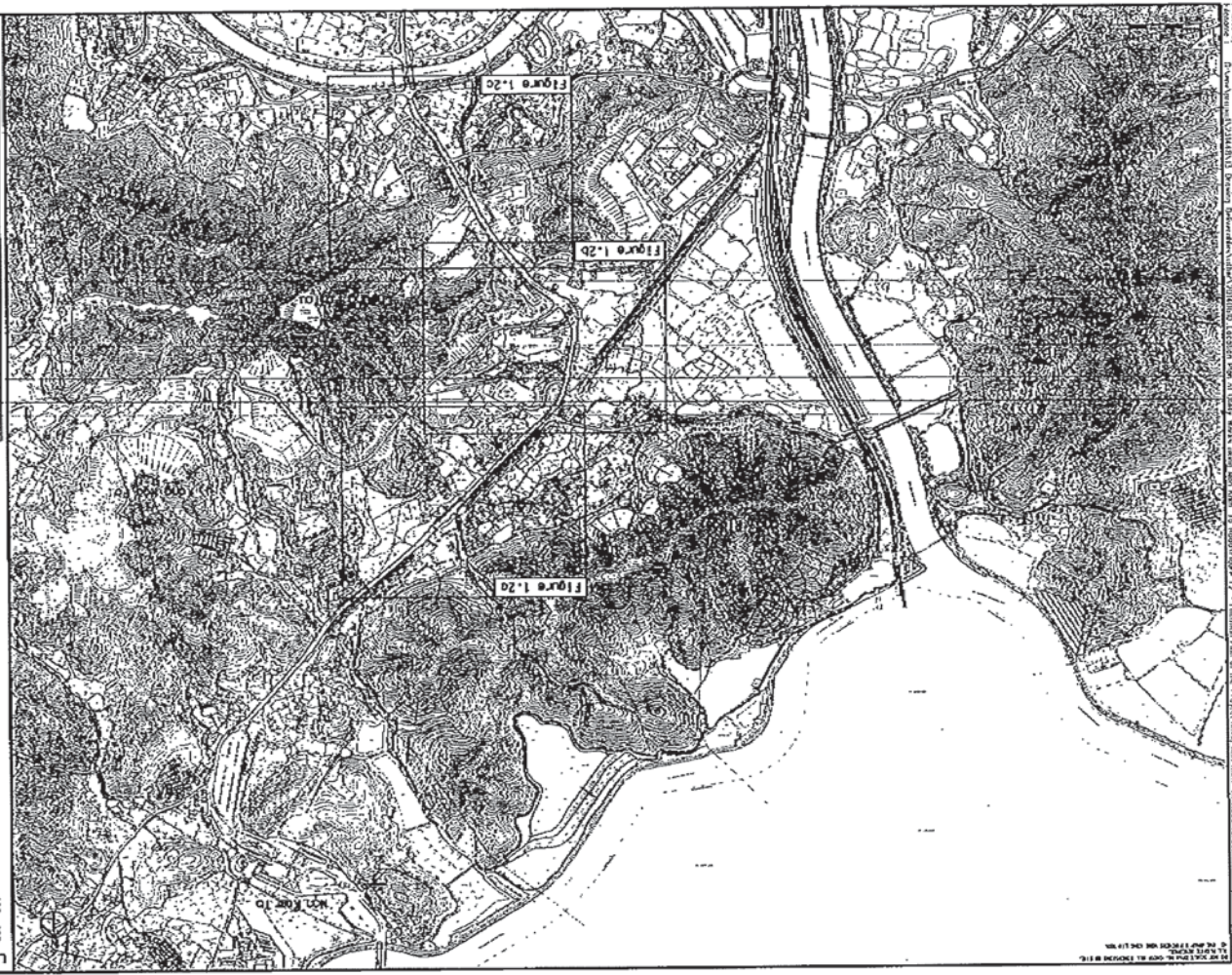
CDPD Civil Engineering and Development Department 土木工務發展處	
COMPILED BY: PRELIMINARY	
Scale: 1:2000	Sheet: 13
Drawn: 06/14	Checked: 06/14
By: 06/14	By: 06/14
Drawing No. Figure 1.2b	
Sheet 3 of 4	
Location Plan of the Project along Man Kam To Road (Sheet 3 of 4)	
Drawing Title	
Century - Design and Construction	
Related Facilities at Sandy Ridge	
Infrastructural Works for Development	
Site Formation and Associated	
Agreement No. CE I/2013(CE)	
Contract No. and Title	
ARUP	
Consultant	
Rev: 1556	Description: 06/14
By: 06/14	By: 06/14



NOT SCALE DRAWING. ONLY AS SHOWN ON SITE.
DO NOT COPY, REPRODUCE, OR TRANSMIT IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.

Legend
--- EIA Study Brief Boundary
--- Study Area

CDPD Civil Engineering and Development Department 土木工務發展處	
COMPILED BY: PRELIMINARY	
Scale: 1:2000	Sheet: 13
Drawn: 06/14	Checked: 06/14
By: 06/14	By: 06/14
Drawing No. Figure 1.2a	
Sheet 2 of 4	
Location Plan of the Project along Man Kam To Road (Sheet 2 of 4)	
Drawing Title	
Century - Design and Construction	
Related Facilities at Sandy Ridge	
Infrastructural Works for Development	
Site Formation and Associated	
Agreement No. CE I/2013(CE)	
Contract No. and Title	
ARUP	
Consultant	
Rev: 1556	Description: 06/14
By: 06/14	By: 06/14



CEED
Civil Engineering and
Development Engineering

Figure 1.2
(Sheet 1 of 4)
Location Plan of
the Project along
Liu Ma Hang Road

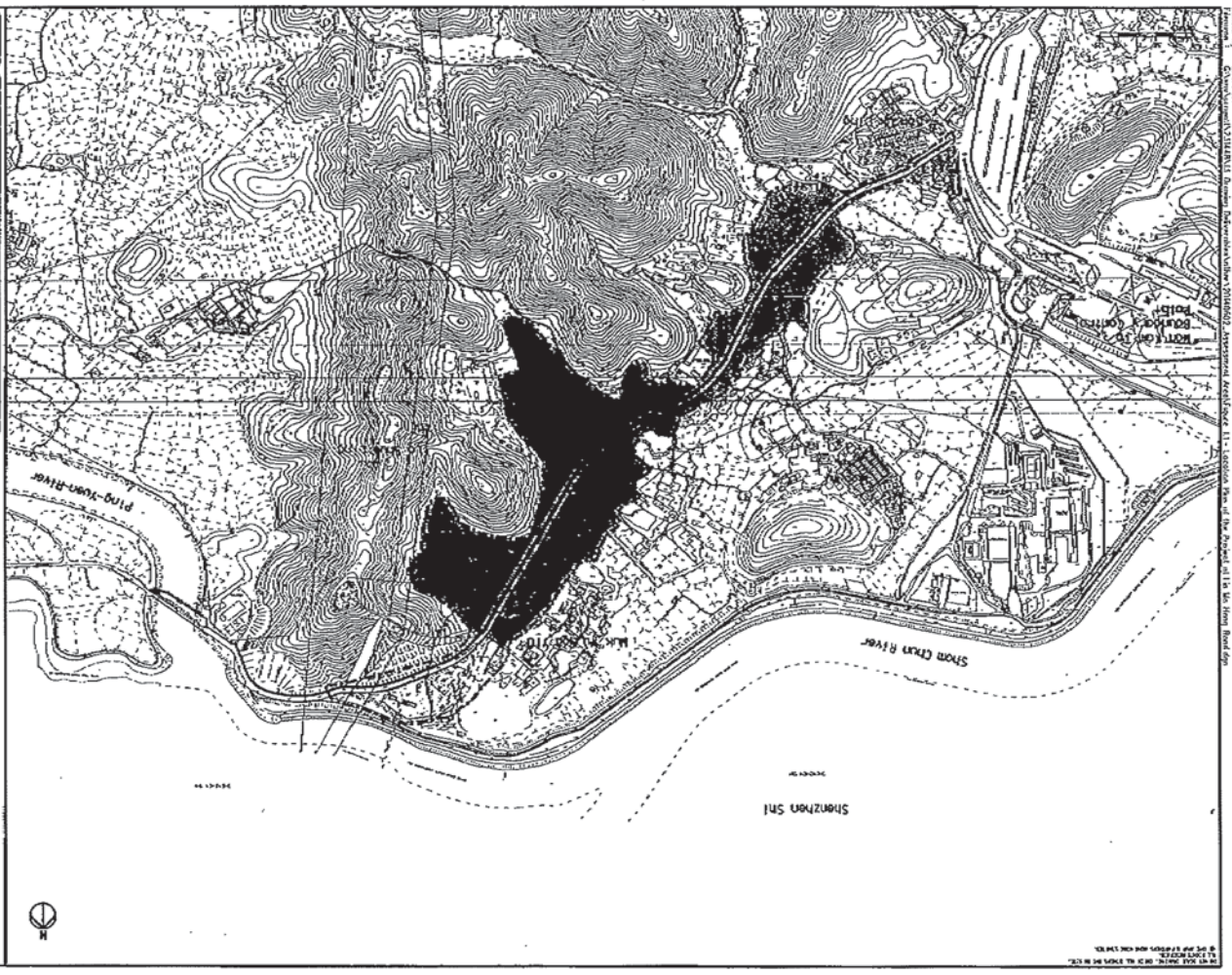
Site Formation and Associated
Infrastructure Works for Development
of Commercial, Residential and
Community - Design and Construction
Related Facilities at Study Bridge

ARUP

Legend

- Study Area
- Site Study Bridge Boundary

Item	Scale	Unit	Value
1	1:1000	M	1000
2	1:1000	M	1000
3	1:1000	M	1000



CEED
Civil Engineering and
Development Engineering

Figure 1.1
(Sheet 1 of 4)
Location Plan of
the Project along
Liu Ma Hang Road

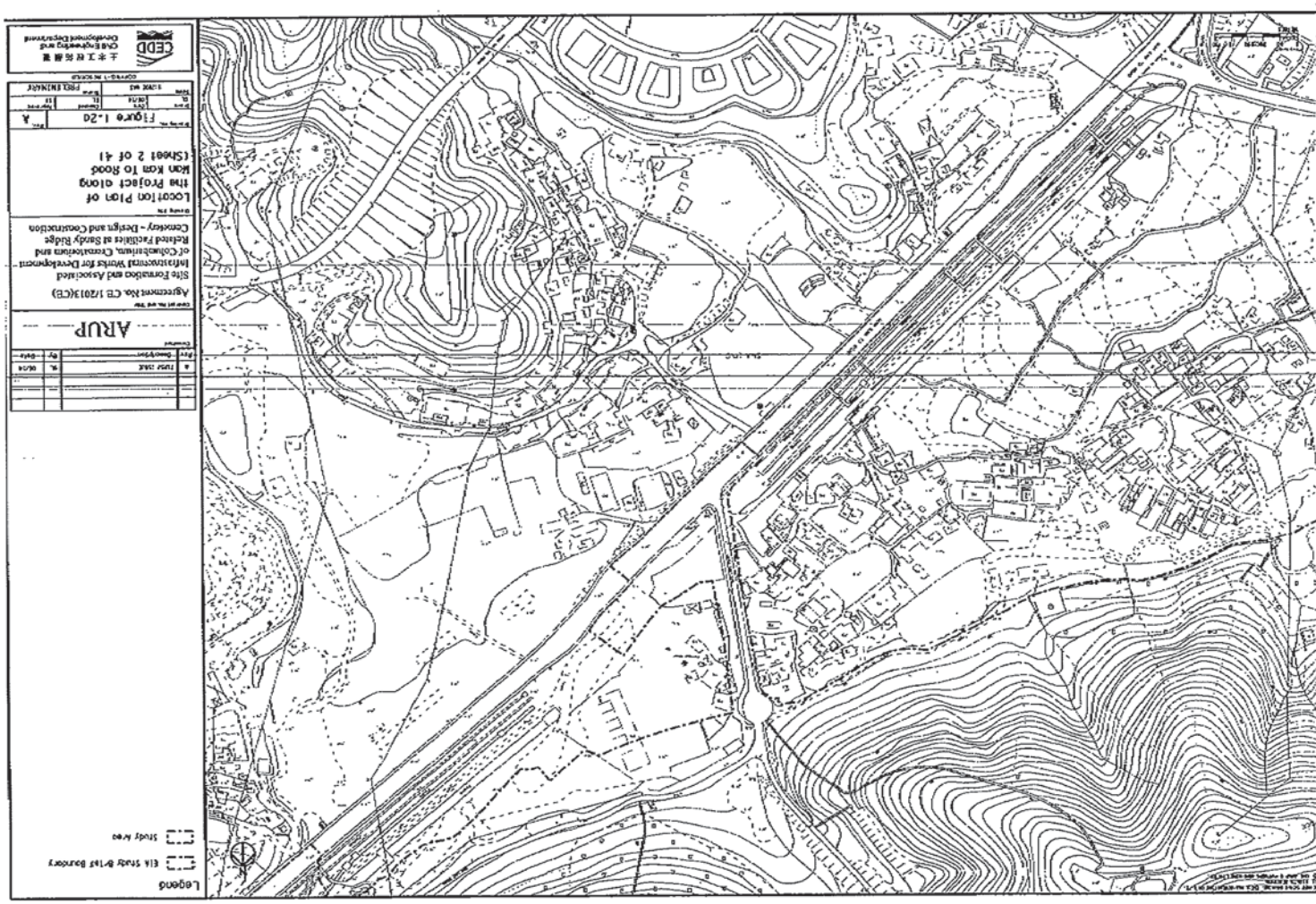
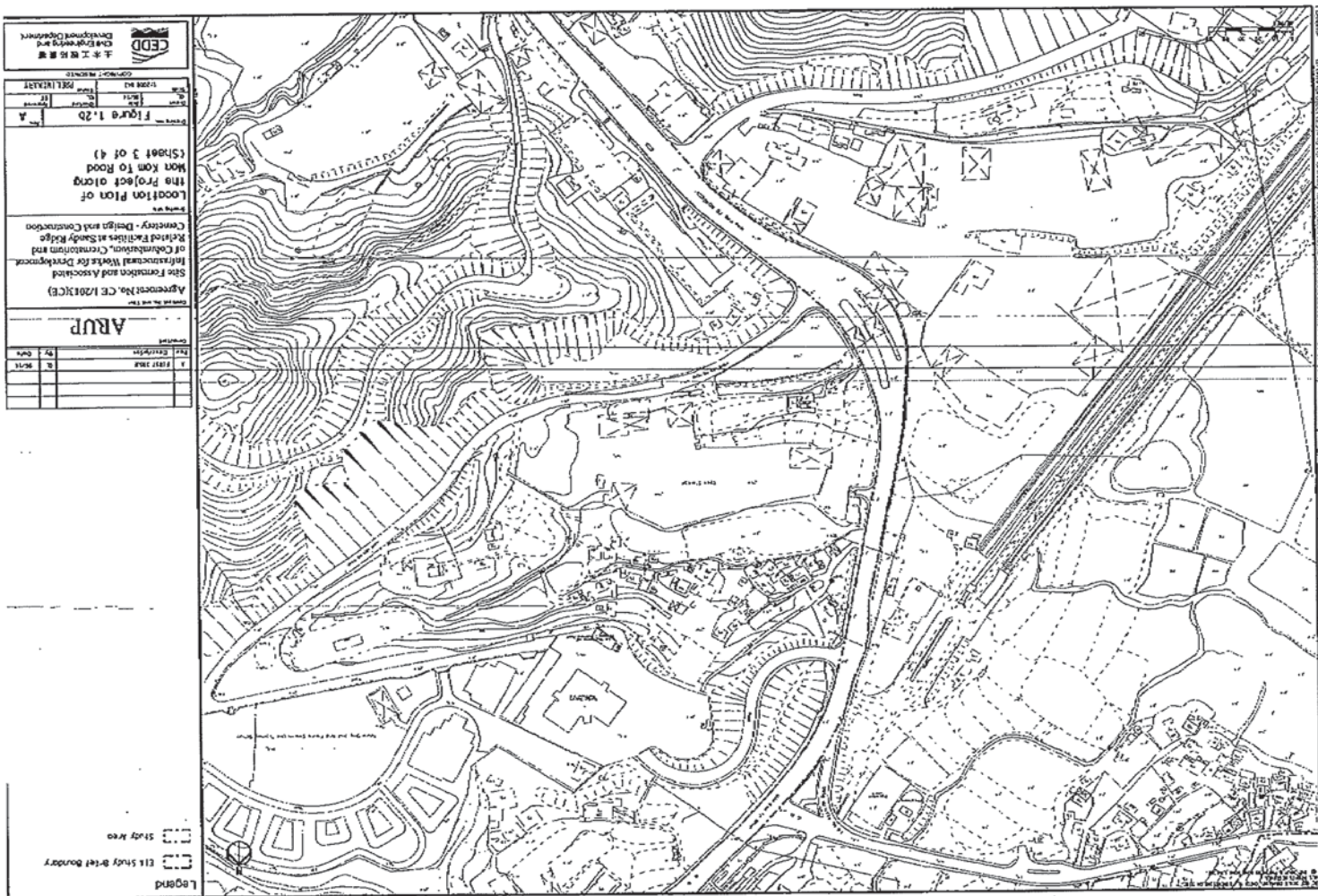
Site Formation and Associated
Infrastructure Works for Development
of Commercial, Residential and
Community - Design and Construction
Related Facilities at Study Bridge

ARUP

Legend

- Study Area
- Site Study Bridge Boundary

Item	Scale	Unit	Value
1	1:1000	M	1000
2	1:1000	M	1000
3	1:1000	M	1000



231448/6.6/DL/AW/P¹C/AC/CC/0141

5 June 2014

Page 2 of 2

We would be grateful if you could furnish us the above information for our assessment on or before 20 June 2014. If you require any further information, please do not hesitate to contact the undersigned or our Mr. David Rollinson at 22683115 or E-mail david.rollinson@arup.com.

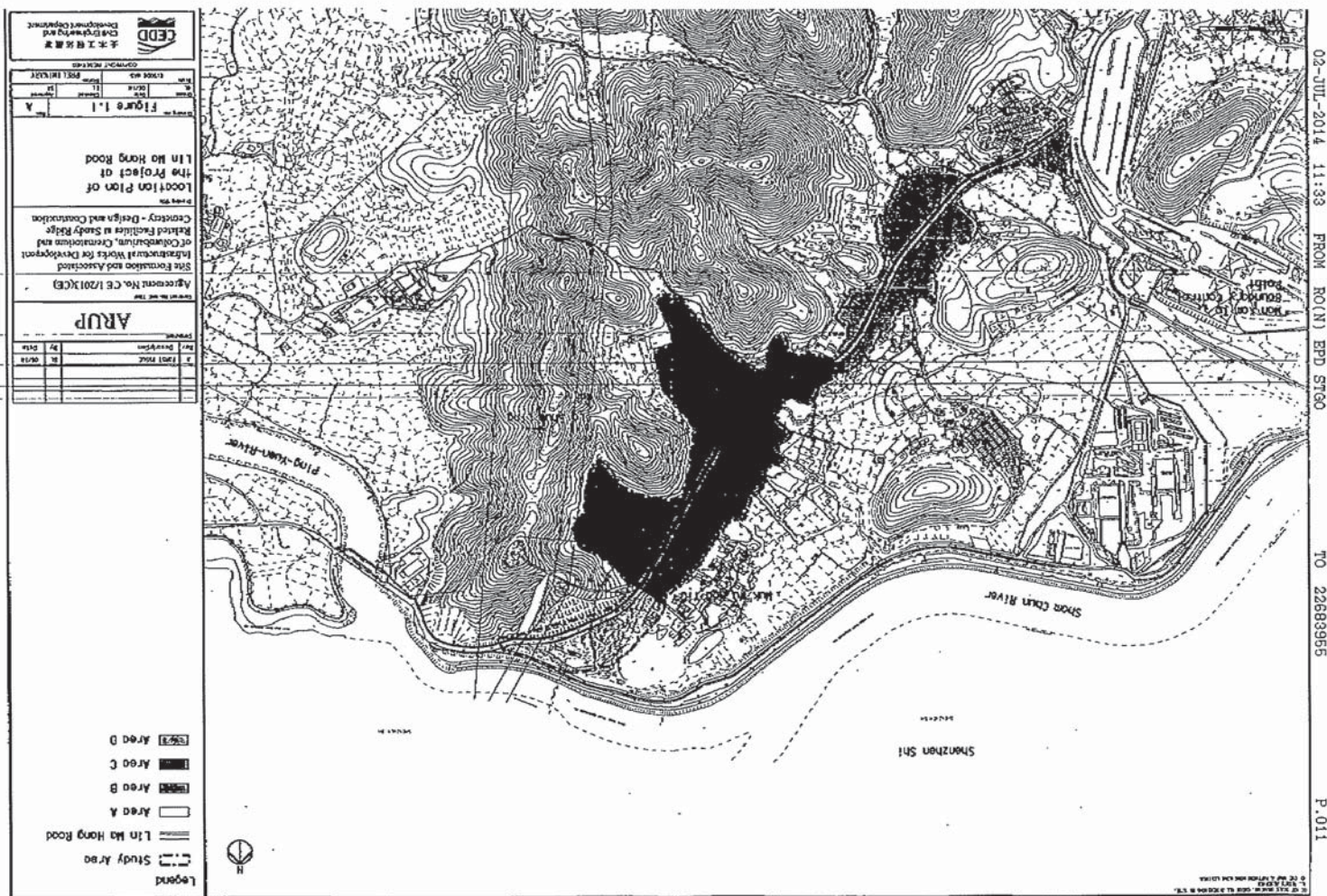
Yours faithfully

Water

Davis Lee
Project Manager

Encl. Figures 1.1;

c.c. CEDD - Mr. WOO Tai On, Gabriel (w/e)



Our ref 231448/6.6/DL/A/W/JT/CC/0341

BY HAND

Environmental Protection Department
Regional Office (North)
7th floor, Chinachem Tsuen Wan Plaza,
455-457 Castle Peak Road,
Tsuen Wan, New Territories.

Attention: Mr. CHAN Wai Kuen. David

16 September 2015

Dear Sir,

Agreement No. CE 1/2013 (CE)
Site Formation and Associated Infrastructural Works for Development of Columbarium,
Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Request for Information of Chemical Waste Producer and Chemical Spillage Accident

We are appointed by CEDD for the captioned consultancy study of Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery. One of the objectives of the Study is to undertake an EIA in accordance with the EIA Study Brief (No. ESB-271/2014). The project location in Sandy Ridge and Lin Ma Hang Road are shown in **Figures 1.1 and 1.2**.

As part of the Environmental Impact Assessment Study, we are required to review the historical and present land use around the area, and evaluate any potential land contamination issues. An off-site office and barging point have been added in the current EIA study as shown in the attached **Figures 1.3 and 1.4** respectively. We would appreciate if you could provide the followings for our supplementary information for the Contamination Assessment Plan:

- The records of Chemical Waste Producers Registration of the off-site office and barging point; and
- Past and present chemical spillage/leakage records of the off-site office and barging point.

We would be grateful if the information above is available on or before 25 September 2015. If you require any further information, please do not hesitate to contact the undersigned or our Dr Elvis Lau at 2268 4382 or e-mail elvis.lau@arup.com.

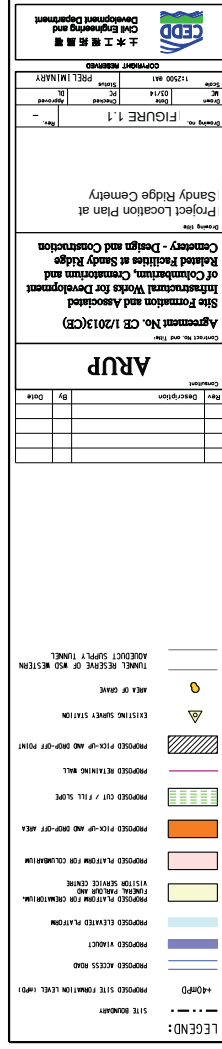
Yours faithfully

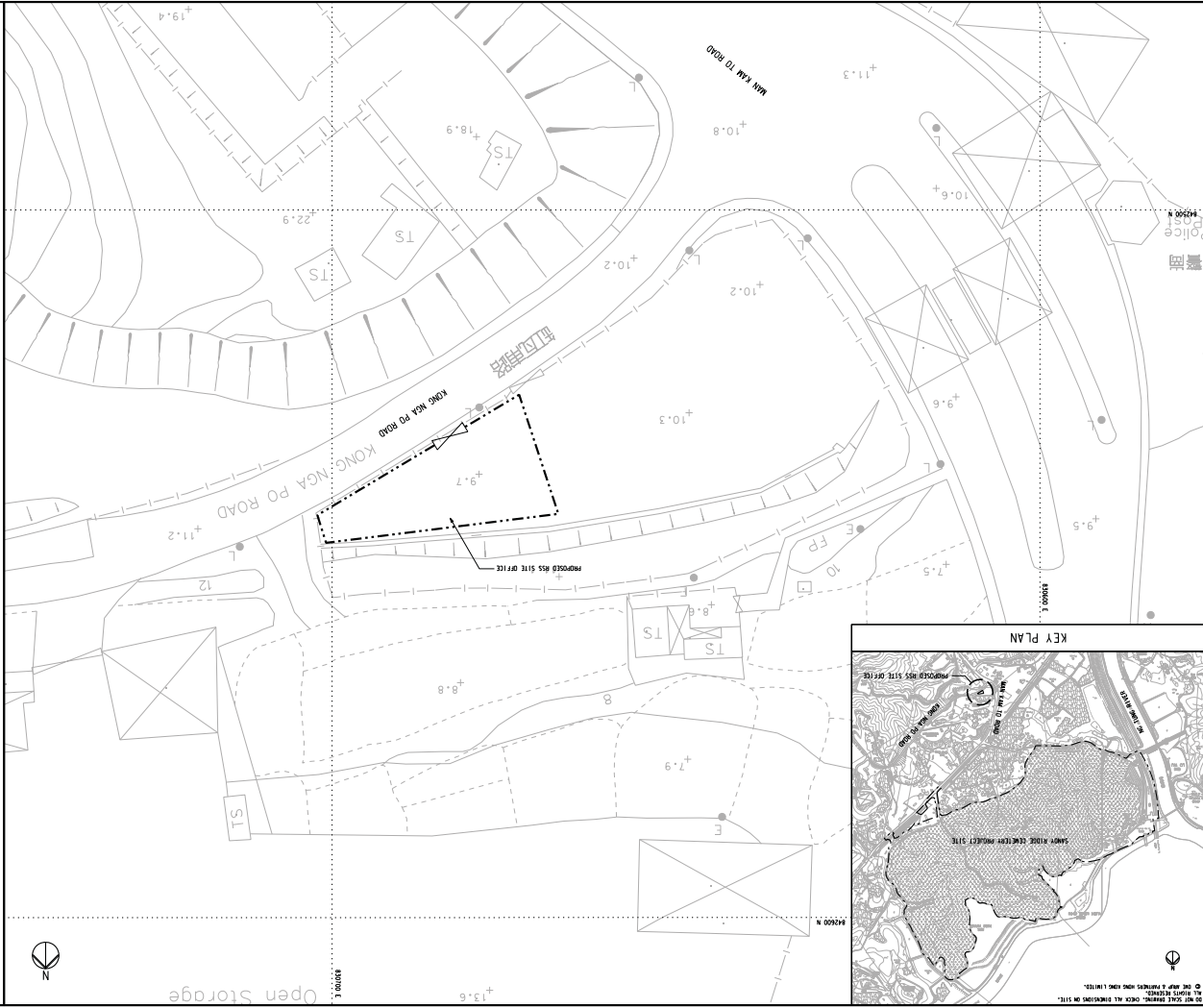
David Lee

Davis Lee
Project Manager

Encl. Figures 1.1, 1.2, 1.3 and 1.4

cc CEDD, CE/LW - Attn: Mr. WOO Tai On, Gabriel (w/c)

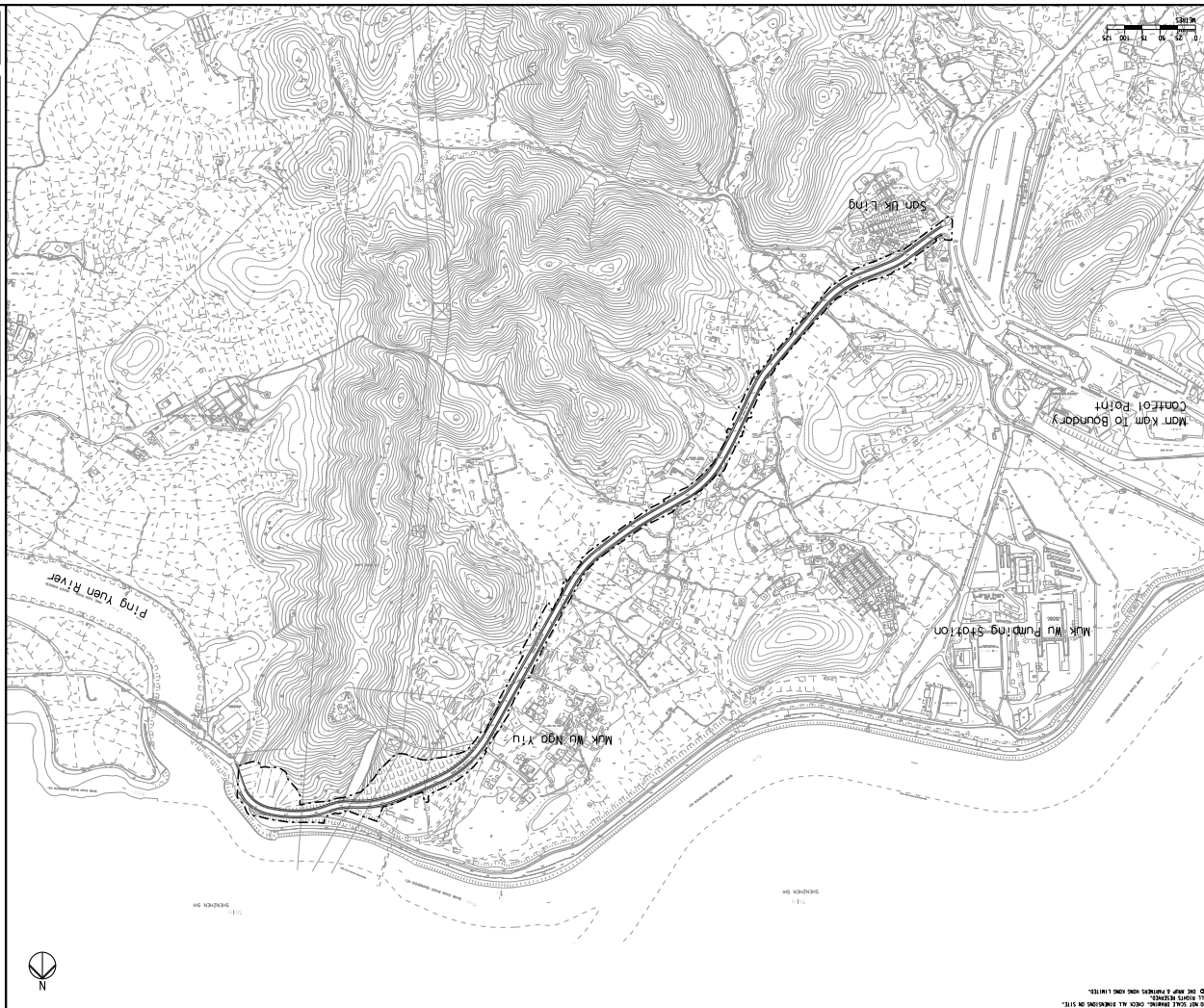




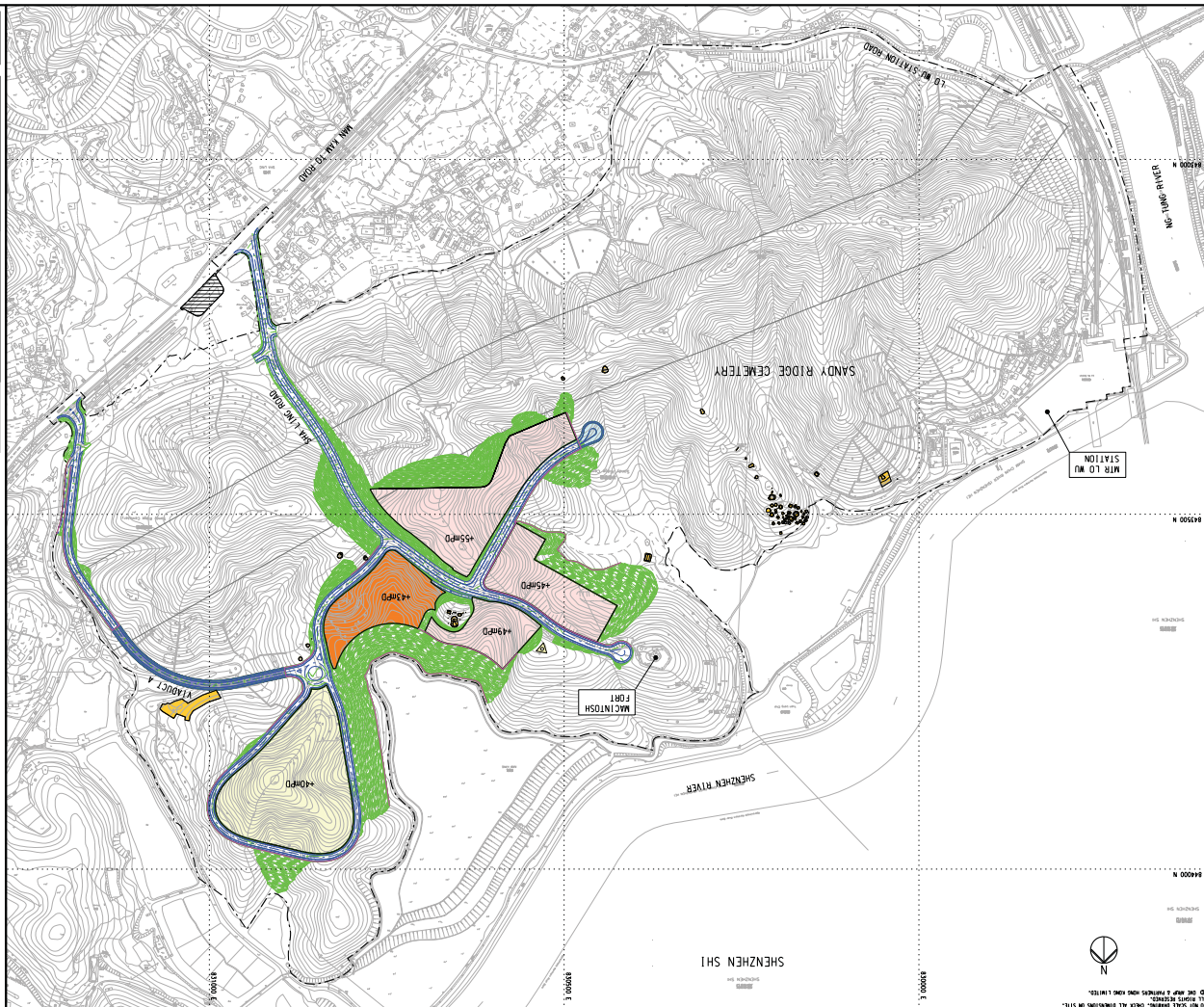
CDPD Civil Engineering and Development Department	
COMMITMENT REQUIRED	
Scale	1:2500
Sheet	1/1
Drawn	07/15
Checked	07/15
Approved	07/15
Fig. No.	Figure 1.3
PROPOSED RHS SITE OFFICE	
Drawing Title	
Contract No. and Title	
Agreement No. CE I/2013(CE)	
Site Formation and Associated Infrastructure Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Century - Design and Construction	
ARUP	
Rev.	Description
By	Date
1	
2	
3	
4	

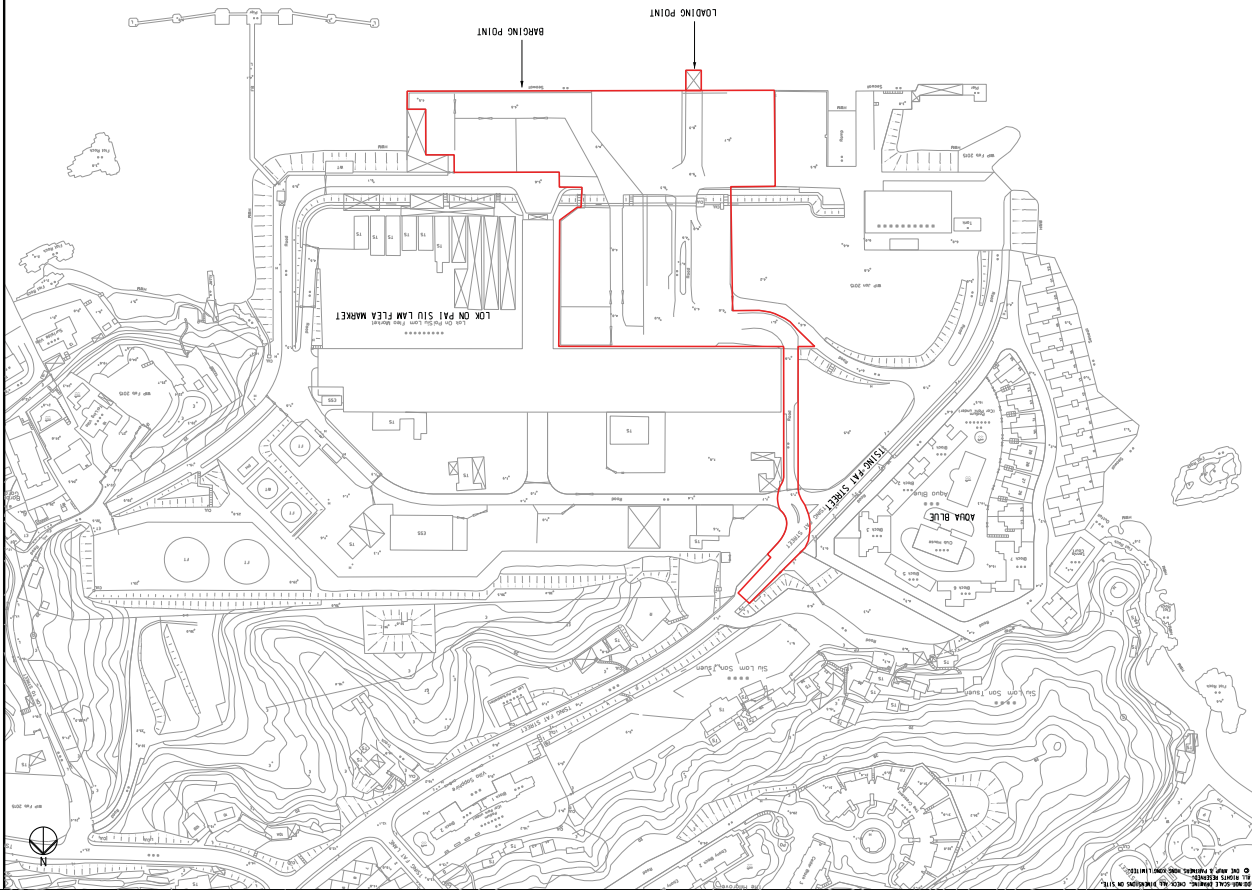


CDPD Civil Engineering and Development Department	
COMMITMENT REQUIRED	
Scale	1:5000
Sheet	1/1
Drawn	07/14
Checked	07/14
Approved	07/14
Fig. No.	Figure 1.2
Project Location Plan	
Drawing Title	
Contract No. and Title	
Agreement No. CE I/2013(CE)	
Site Formation and Associated Infrastructure Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Century - Design and Construction	
ARUP	
Rev.	Description
By	Date
1	
2	
3	
4	

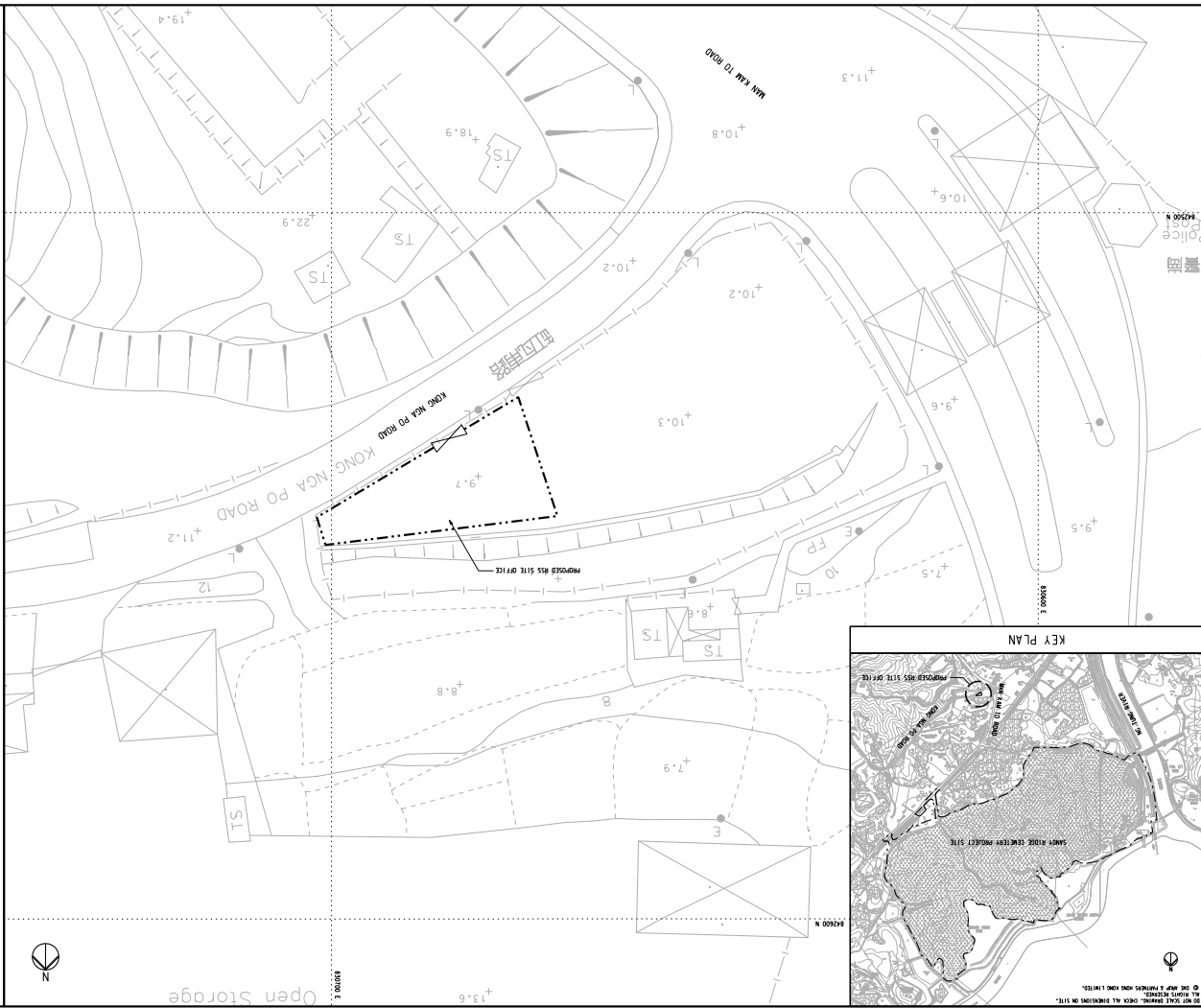


No. 15/17/16	Date 05/11/16	By [Signature]	Date 05/11/16	ARUP	Checked by and Title [Signature]	Agreement No. CE I/2013(CF)	Site Formation and associated Infrastructure Works for Development of Catchment, Construction and Related Facilities at Sandy Ridge Cemetery - Design and Construction	Drawing Title Project Location Plan of Lin Ma Hong Road	Drawing No. 1.2	Drawing No. 1.2	Scale 1:10000	Date 11/11/16	By [Signature]	Date 11/11/16	Checked by [Signature]	Date 11/11/16	By [Signature]	Date 11/11/16	Project/Drawings PEEL/1/1/16	Approved by [Signature]	CONTRACT AGREEMENT	CEDD Civil Engineering and Development Department 土木工程發展處
-----------------	------------------	-------------------	------------------	------	-------------------------------------	-----------------------------	--	---	--------------------	--------------------	------------------	------------------	-------------------	------------------	------------------------------	------------------	-------------------	------------------	---------------------------------	-------------------------------	--------------------	--

[illegible]



CEPD Civil Engineering and Development Department	
COMMITMENT RESOLUTION	
Scale	1:2000
Drawn	12/08/15
Checked	12/08/15
Approved	12/08/15
Figure No.	1.4
Rev.	A
Location of Borjig Point	
Design Title	
Century - Design and Construction	
Related Facilities at Sandy Ridge	
of Columbarium, Crematorium and	
Infrastructure Works for Development	
Site Formation and Associated	
Agreement No. CB 1/2013(CE)	
ARUP	
Rev.	1
Description	15/08/15
By	15/08/15
Date	



CEPD Civil Engineering and Development Department	
COMMITMENT RESOLUTION	
Scale	1:2000
Drawn	12/08/15
Checked	12/08/15
Approved	12/08/15
Figure No.	1.3
Rev.	A
PROPOSED R55 SITE OFFICE	
Design Title	
Century - Design and Construction	
Related Facilities at Sandy Ridge	
of Columbarium, Crematorium and	
Infrastructure Works for Development	
Site Formation and Associated	
Agreement No. CB 1/2013(CE)	
ARUP	
Rev.	1
Description	15/08/15
By	15/08/15
Date	

NOTE: 1. APPROXIMATE HEIGHT OF STRUCTURES TO BE ERECTED WITHIN PROPOSED R55 SITE OFFICE AREA IS 10M.

LEGEND:

- PROPOSED R55 SITE OFFICE AREA
- PROPOSED VEHICULAR ACCESS POINT

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsing Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (125) in FSD GR 6-5/4 R Pt. 10
來函檔號 YOUR REF. : 231448/6.7/DL/AW/JT/CC/0342
電子郵件 E-mail : hkfdsdq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

ARUP
Level 5,
Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
(Attn: Mr. Davis Lee, Project Manager)

8 October 2015

Dear Mr. LEE,

**Site Formation and Associated Infrastructural Works for Development of
Columbarium, Crematorium and Related Facilities at
Sandy Ridge Cemetery - Design and Construction
Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 16.9.2015 regarding the captioned request and reply below in response to your questions seriatim:-

1. Dangerous goods approval has been granted in respect of the captioned address. Please refer to **Appendix A** for details.
2. No record of incidents of spillage / leakage of dangerous goods was found at the aforesaid location with your given conditions.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

20715

Register No.	Job No.	File No.	File Original	Yes / No
	231448		Scanned	6.7
Received 13 OCT 2015				
Initia.	Action	Info.	Copy	
PM				

(LEE Kui-hung)
for Director of Fire Services

**Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction
Request for Information of Dangerous Goods & Incident Records**

Item	Types of DG	Quantity	Storage Method	Remarks
1.	Oxygen	10 Cylinders	DG Store	Cancelled
2.	Acetylene	10 Cylinders	DG Store	Cancelled
3.	Petrol	200 Litres	DG Store	Cancelled
4.	Refrigerant (R 22)	10 Cylinders	DG Store	-
5.	Diesel	50,000 Litres	AG Tank	Cancelled
6.	Styrene	6,000,000 Litres	Storage Tank	-
7.	Styrene	6,000,000 Litres	Storage Tank	-
8.	Diesel	4,000 Litres	UG Tank	-
9.	Diesel	4,000 Litres	UG Tank	-

本署檔案
 OUR REF:
 來函檔案
 YOUR REF: 231448/6/DL/AW/JT/CC/0341
 電話
 TEL NO.: 2158 5832
 傳真號碼
 FAX NO.: 2685 1133
 網址
 HOMEPAGE: <http://www.epd.gov.hk/>

Environmental Protection Department
 Environmental Compliance Division
 Regional Office (North)
 10/F, Shatin Government Offices,
 1 Shaung Wo Che Road,
 Sha Tin, New Territories,
 Hong Kong.

環境保護署
 環保法規管理科
 區域辦事處(北)
 香港新界沙田
 上禾輋路一號
 沙田政府合署10樓

(By fax only: 2268 3955)
 16 October 2015

#0777

ARUP	JOB No.	231448
Level 5, Festival Walk	File No.	
80 Tat Chee Avenue	By:	Date
Kowloon Tong, Kowloon	Action Required:	6/6
(Attn.: Mr. Davis LEE)	Received	16 OCT 2015
	Initia.	
	Action	
	Info.	
	Copy	

Dear Mr. LEE,

**Request for information for Chemical Waste Producer and Chemical Spillage Accident
in Sandy Ridge and Lin Ma Hang Road**


I refer to your letter dated 16 September 2015.

This Regional Office has no record of accidents of spillage/leakage of chemicals of the concerned location. You may need to check with other relevant parties/departments for such information as appropriate.

In so far as chemical waste producers are concerned, a registry of chemical waste producers is available in the Territory Control Office. Please contact Mr. HO Shui-lun, Aaron at 2835 1017 for making an appointment to view the records.

Should you have any query on the matter, please contact the undersigned at 2158 5832.

Yours sincerely,


 (Sharon TSAI)
 Regional Office (North)

For Director of Environmental Protection

cc. TCG (Attn.: Mr. HO Shui-lun, Aaron) Fax: 2305 0453

Our Ref: TCS00881/18/300/L0192

**Fire Services Department
New Territories Regional Office**

Room 402, 4/F, West Wing,
Tsim Sha Tsui Fire Station,
333 Canton Road, Kowloon

8 November 2018
By Post

Dear Sir/ Madam,

**CEDD Contract No. CV/2016/10 - Site Formation and Associated Infrastructural
Works for Development of Columbarium at Sandy Ridge Cemetery
Request for Information of Dangerous Goods & Incident Records**

We are appointed by Hsin Chong Tsun Yip Joint Venture as a consultant to conduct a Land Contamination Assessment at the concerned areas of the captioned Project.

As part of the Land Contamination Assessment, we are required to evaluate any potential land contamination issues in the concerned areas. We would like to enquire whether your department has any record since 2010 regarding 1.) Dangerous goods stores at the captioned assessment site; and 2.) Leakage/ spillage of chemical materials incident at the captioned assessment site. The record will be used as the supporting information in the land contamination assessment.

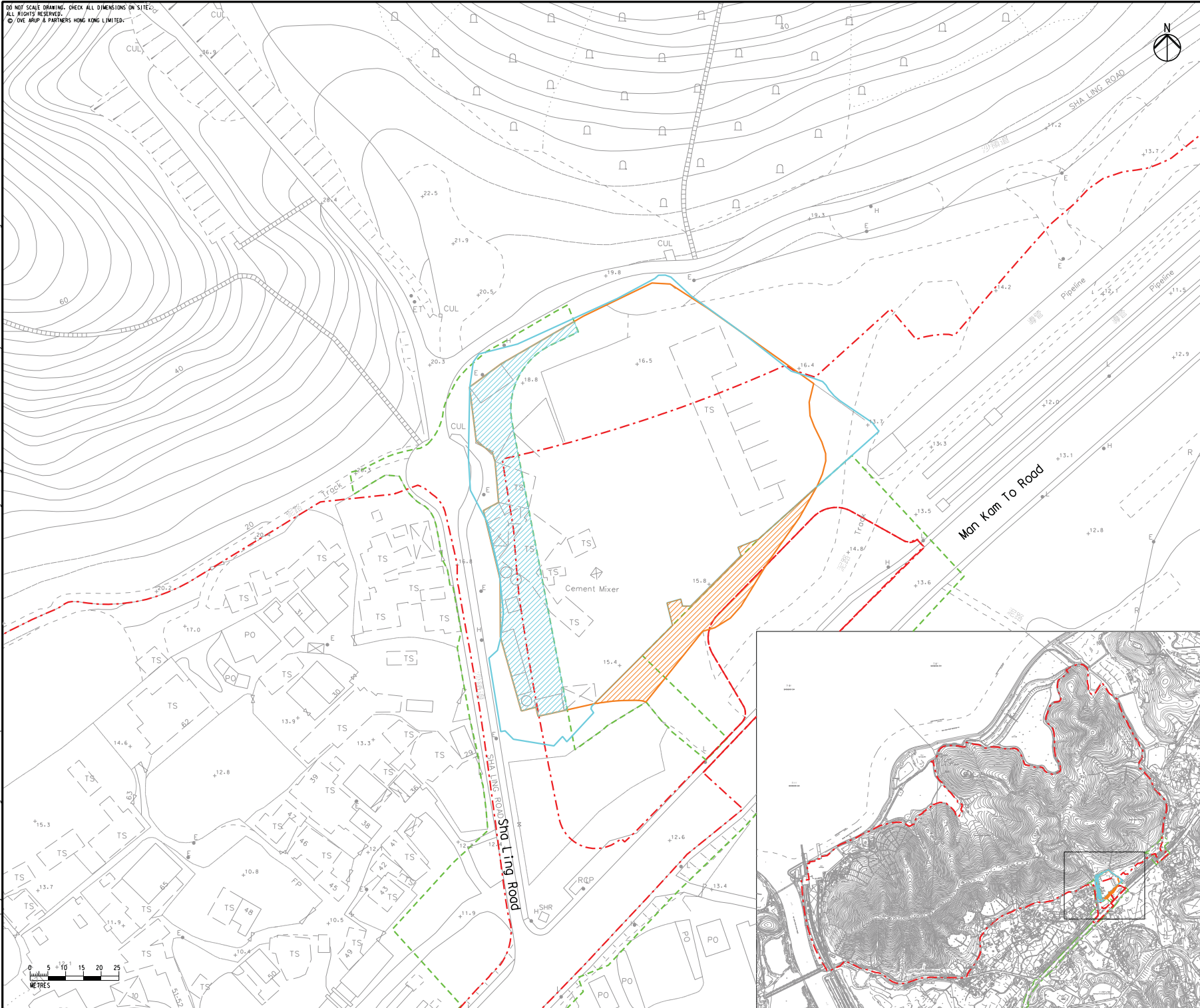
Enclosed please find the layout plan of the captioned areas (shaded in light blue and orange) for your information.

It is much appreciated if you can provide the requested information. Should you have any enquiries, please do not hesitate to contact the undersigned at **Tel: 2959-6059** or **Fax: 2959-6079**.

Yours Faithfully,
For and on Behalf of
Action-United Environmental Services & Consulting

T.W. Tam
Environmental Team Leader
Encl.

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© OVE ARUP & PARTNERS HONG KONG LIMITED.



- Legend
- Project Boundary
 - Utilities Construction
 - Private Lot Boundary
 - Location of Potentially Contaminated Site
 - Potentially Contaminated Site Requires Land Resumption within Private Lot
 - Potentially Contaminated Site within Government Lot

E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	10/14
C	THIRD ISSUE	GL	09/14
B	SECOND ISSUE	GL	07/14
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)


Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction

Drawing title

Location of Potentially Contaminated Site SRC-1

Drawing no. Figure 3.1		Rev. E	
Drawn	Date	Checked	Approved
GL	02/16	EL	ST
Scale	1:1000	Status	PRELIMINARY

COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and Development Department

Printed by : 2/22/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\08 Contamination Assessment\Plan\02 Final\Figures\Figure 3.1 Location of Potentially Contaminated Site SRC-1.dgn

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (79) in FSD GR 6-5/4 R Pt. 21
來函檔號 YOUR REF. : TCS00881/18/300/L0192
電子郵件 E-mail : hkfsdcnq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7743

22 November 2018

AUES
Unit A, 20/F, Gold King Industrial Building,
35-41 Tai Lin Pai Road,
Kwai Chung, New Territories, Hong Kong.
(Attn: Mr. T. W. TAM, Environmental Team Leader)

By fax (2959 6079) only

Dear Mr. TAM,

**CEDD Contract No. CV/2016/10 – Site Formation and
Associated Infrastructural Works for Development
of Columbarium at Sandy Ridge Cemetery
Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 8.11.2018 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. However, please be advised that due to time lapse, this Department can only provide the following information for your requested information:

- (i) Dangerous Goods Licence Record: from the year of 2010 to present moment.
- (ii) Incident Record: Past three years of fire and special services incidents.

Please also submit the appointment letter from your client for record.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(TANG Long-kiu)
for Director of Fire Services

消防處

香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (135) in FSD GR 6-5/4 R Pt. 21
來函檔號 YOUR REF. : TCS00881/18/300/L0192
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

2959 6079

14 December 2018

AUES

Unit A, 20/F, Gold King Industrial Building,
35-41 Tai Lin Pai Road,
Kwai Chung, New Territories, Hong Kong.

(Attn: Mr. T. W. TAM, Environmental Team Leader)

Dear Mr. Tam,

**CEDD Contract No. CV/2016/10 – Site Formation and
Associated Infrastructural Works for Development
of Columbarium at Sandy Ridge Cemetery
Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 8.11.2018 regarding the captioned request and
reply below in response to your questions:-

Please be advised that neither records of dangerous goods license,
fire incidents nor incidents of spillage / leakage of dangerous goods were
found in connection with the given conditions of your request at the subject
location.

If you have further questions, please feel free to contact the
undersigned.

Yours sincerely,

(TANG Long-kiu)
for Director of Fire Services

Our Ref: TCS00881/18/300/L0193

**Environmental Protection Department
Regional Office (North)**

10/F., Sha Tin Government Offices,
No.1 Sheung Wo Che Road, Sha Tin,
New Territories.

8 November 2018
By Post

Dear Sir/ Madam,

CEDD Contract No. CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

We are appointed by Hsin Chong Tsun Yip Joint Venture as a consultant to conduct a Land Contamination Assessment at the concerned areas of the captioned Project.

As part of the Land Contamination Assessment, we are required to evaluate any potential land contamination issues in the concerned area. We would like to enquiry whether your department has any record since 2010 regarding 1.) Chemical Waste Producers Registration; and 2.) Leakage/ spillage of chemical materials incident at the captioned assessment site. The record will be used as the supporting information in the land contamination assessment.

Enclosed please find the layout plan of the captioned areas (shaded in light blue and orange) for your information.

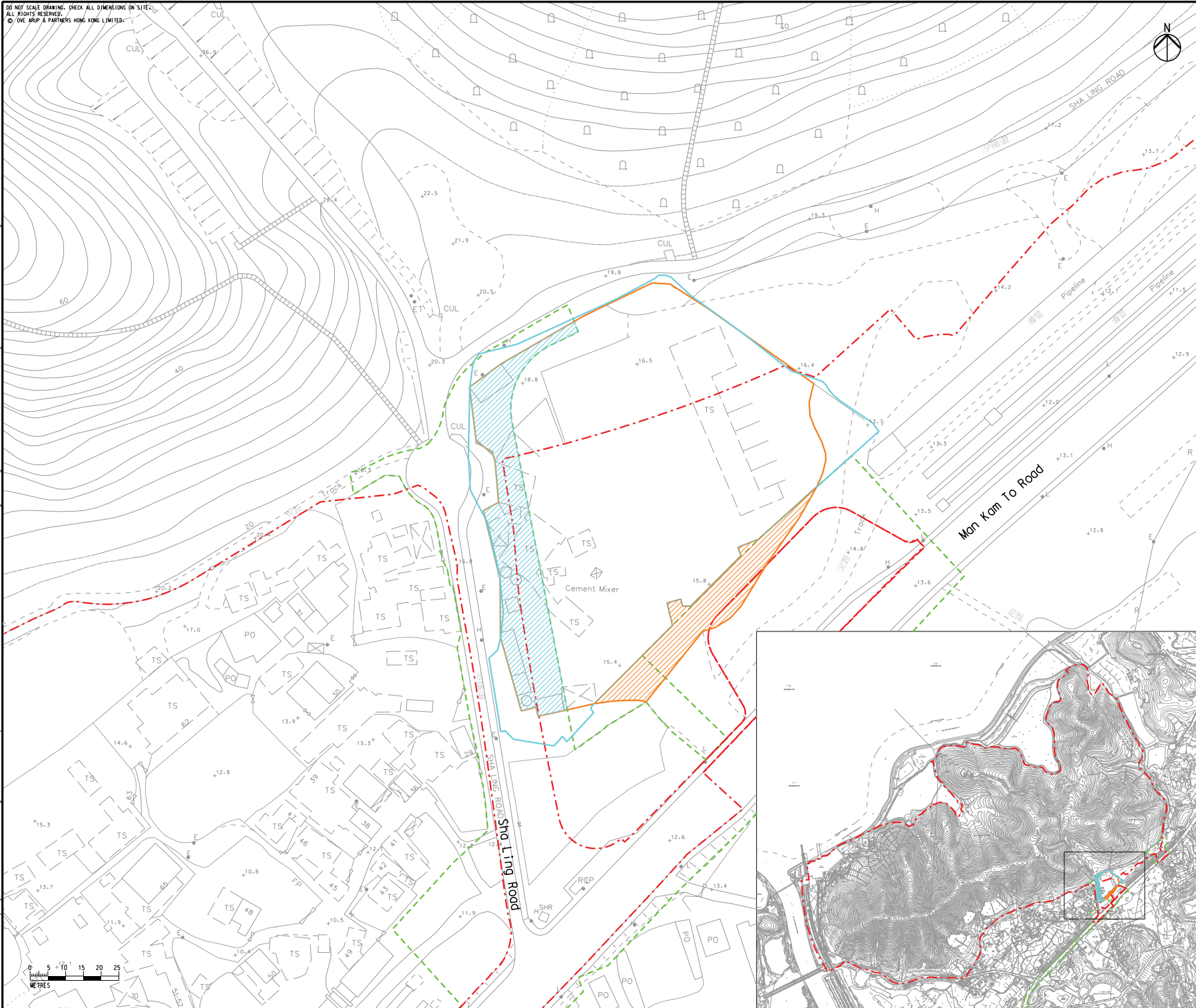
It is much appreciated if you can provide the requested information. Should you have any enquiries, please do not hesitate to contact the undersigned at **Tel: 2959-6059** or **Fax: 2959-6079**.

Yours Faithfully,
For and on Behalf of
Action-United Environmental Services & Consulting



T.W. Tam
Environmental Team Leader
Encl.

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© OVE ARUP & PARTNERS HONG KONG LIMITED.



Legend

- Project Boundary
- Utilities Construction
- Private Lot Boundary
- Location of Potentially Contaminated Site
- Potentially Contaminated Site Requires Land Resumption within Private Lot
- Potentially Contaminated Site within Government Lot

E	FIFTH ISSUE	GL	02/16
D	FOURTH ISSUE	GL	10/14
C	THIRD ISSUE	GL	09/14
B	SECOND ISSUE	GL	07/14
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)
Site Formation and Associated
Infrastructural Works for Development
of Columbarium, Crematorium and
Related Facilities at Sandy Ridge
Cemetery - Design and Construction

Drawing title

Location of Potentially
Contaminated Site SRC-1

Drawing no.	Figure 3.1	Rev.	E
Drawn	Date	Checked	Approved
GL	02/16	EL	ST
Scale	1:1000	Status	PRELIMINARY

COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and
Development Department

本署檔案
OUR REF :
來函檔案
YOUR REF : TCS00881/18/300/L0193
電話
TEL NO : 2158 5842
圖文傳真
FAX NO : 2685 1133
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Shatin Government Offices,
1 Sheung Wo Che Road,
Sha Tin, New Territories,
Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路一號
沙田政府合署 10 樓

15 November 2018

Aues
Unit A, 20/F, Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung,
New Territories
(Attn: Mr. T.W. Tam)

Dear Mr. Tam,

Re: CEDD Contract No. CV/2016/10 – Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

I refer your letter dated 8 November 2018 about the captioned. Our reply is as below:-

- (a) For the register of Chemical Waste Producers, a registry is available at our Territory Control Office at Wan Chai. Please contact our Mr. Aaron HO, Chief Environmental Protection Inspector, at Tel.: 2835 1017 for details;
- (b) For the records of reported accidents of spillage/leakage of chemicals at the areas specified in the Site Location Plan of your letter, please be informed that there is no reported chemical spillage accidents in our record.

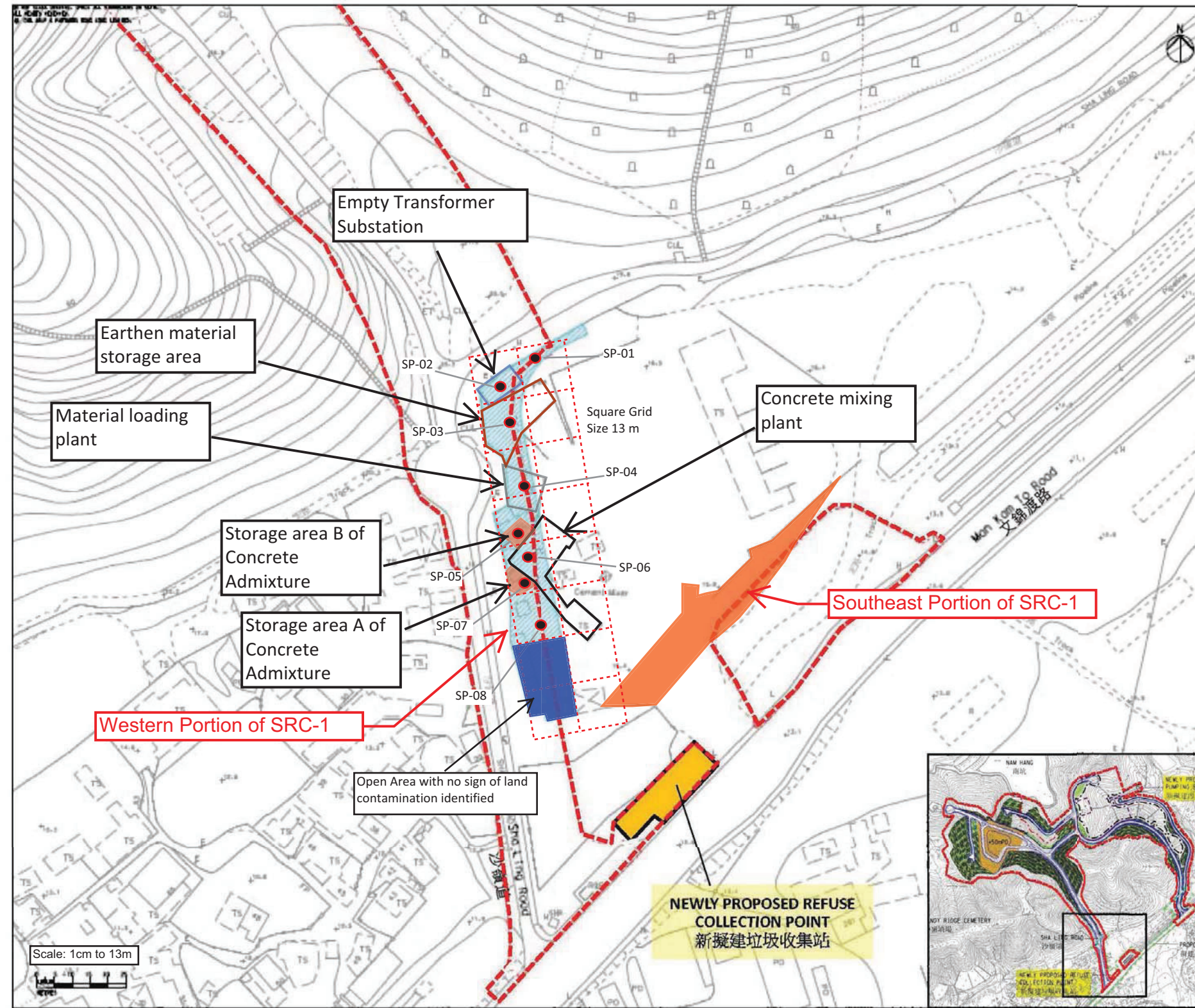
Please contact me at 2158 5842 should you have any questions.

Yours faithfully,

David
(CHOW Ka-shing, David)
for Director of Environmental Protection

Annex G

Proposed Soil and Groundwater Sampling Locations



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

E			
D			
C			
B			
Rev	Description	By	Date

Consultant

AUES

Contract No. and Title

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

Drawing title

Proposed Sampling Location

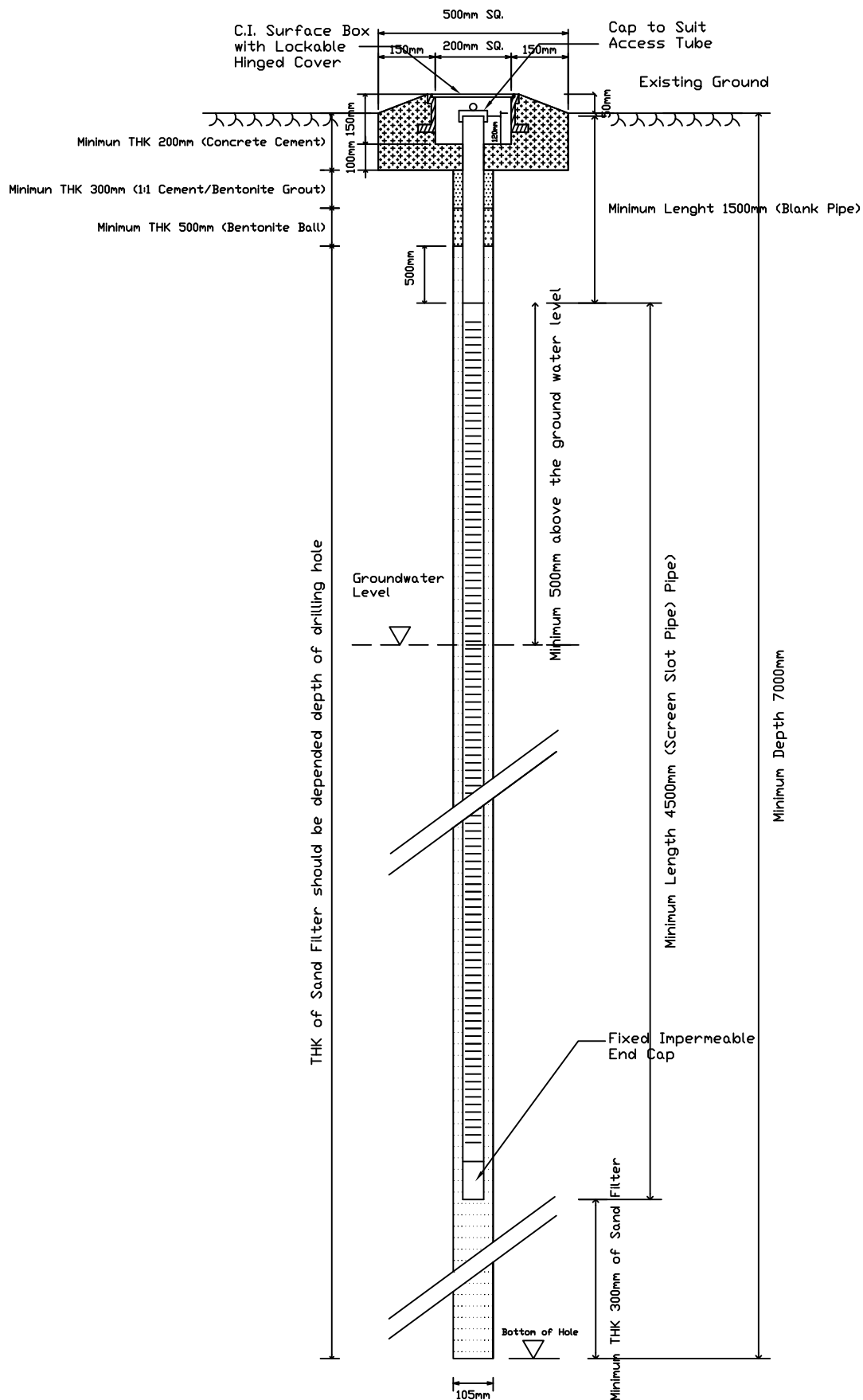
Drawing no.		Rev.	
Drawn	Date	Checked	Approved
Scale		Signatures	

COPYRIGHT RESERVED

CEDD 土木工程發展署
Civil Engineering and Development Department

Annex H

Typical Drawing of Groundwater Monitoring Well



Not to Scale

Typcial Drawing of Groundwater Well Structure

AUES

Well No:

Final Depth:

Reduced Level:

Co-ordinate

Installation Date:

Annex I

Health and Safety Plan (HASP)

Health And Safety Plan (HASP) of Land Contamination Assessment Work

- 1 **Project Description:** The assessment is intended to determine whether the sites is contaminated and if so assess the extent of contamination before commencement of any major works on site. The work will involve collection and analysis of representative soil and groundwater samples.
- 2 **Site History:** Referred to relevant sections of the Land Contamination Assessment Report incorporated the site histories extracted from the EIA Report.
- 3 **H&S Hazards:**
 - Supervision of SI work: (inhalation of contaminants, eye irritation, noise nuisance, body injury by equipment, muscle fatigue by prolonged standing, mosquito borne diseases, sunstroke due to hot weather)
 - On-Site Assessment: (inhalation of contaminant, poisoning by ingestion, eye irritation, muscle fatigue by prolonged standing, mosquito borne diseases, sunstroke due to hot weather)
 - On-Site Sampling: (inhalation of contaminants, eye irritation, poisoning by ingestion, muscle fatigue by prolonged standing, mental stress by repetitive movement, mosquito borne diseases, sunstroke due to hot weather)
 - In-Situ Measurement: (inhalation of contaminants, poisoning by ingestion, eye irritation, body injury by equipment, muscle fatigue by prolonged standing, mental stress by repetitive movement, mosquito borne diseases, sunstroke due to hot weather)
- 4 **Key Personnel:**
 - T.W. Tam (Land Contamination Specialist)
 - Frankie Lam (Environmental Officer of the Contract 1)
- 5 **Receptor** The worker
- 6 **Level of Protection:** Level 2*
 - Hard hat;
 - Safety shoes;
 - Eye Protector;
 - Ear Protector;
 - Full protective clothing;
 - Respirator; and
 - Rubber glove.

** Depending on actual site conditions, the assessment specialist will determine and see if the protection level can be adjusted.*
- 7 **Decontamination Procedures:** The decontamination procedures will be implemented in accordance with the final approved Contaminated Assessment Plan (CAP).
- 8 **Designation Work Areas** The assessment works will be carried out in accordance with the approved Contaminated Assessment Plan (CAP).

Health And Safety Plan (HASP) of Land Contamination Assessment Work

- | | | |
|----|---|---|
| 9 | Types & Levels of Expected Contamination: | Potential contamination may relate to products available at the assessment area including TPH, VOCs and SVOCs. Significant of other contaminant is not expected on site. |
| 10 | Monitoring Requirements: | Potential contamination on site is monitored by Photo-Ionizing Detector (PID) as well as visual inspection by qualified assessor. |
| 11 | Emergency Phone No: | <ul style="list-style-type: none">• Police: 999 or Sheung Shui Division (Tel: 3661 1672)• Fire: Sheung Shui Fire Station (Tel:2670 7682)• Hospital: North District Hospital: (Tel: 2683 8888) |
| 12 | Location & Routes to the Nearest Medical Facility: | Fanling Ambulance Depot (Tel: 2669 2250) |

Annex J

Text of Appendix 8.1 of EIA Report

Civil Engineering and Development
Department

Agreement No. CE1/2013 (CE)

**Site Formation and Associated
Infrastructural Works for
Development of Columbarium,
Crematorium and Related
Facilities at Sandy Ridge Cemetery
– Design and Construction**

Land Contamination Assessment
Report

231448-REP-028-04

Draft Final (Rev. 2) | February 2016

Document Verification

ARUP

Job title		Agreement No. CE 1/2013 (CE) Site Formation and Associated Infrastructural Works Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge- Cemetery - Design and Construction		Job number 231448	
Document title		Land Contamination Assessment Report		File reference 4.3	
Document ref		231448-REP-028-04			
Revision	Date	Filename	Draft		
Draft 1	13/12/13	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Various	Franki Chiu	Davis Lee
		Signature			
Draft 2	22/9/14	Filename	Draft final		
		Description			
			Prepared by	Checked by	Approved by
		Name	Various	Franki Chiu	Davis Lee
		Signature			
Draft 3	28/10/14	Filename	Draft Final (Rev. 1)		
		Description			
			Prepared by	Checked by	Approved by
		Name	Various	Franki Chiu	Davis Lee
		Signature			
Draft 4	29/02/16	Filename	Draft Final (Rev. 2)		
		Description			
			Prepared by	Checked by	Approved by
		Name	Various	Franki Chiu	Davis Lee
		Signature			

Issue Document Verification with Document
☒

Contents

	Page
1 Introduction	1
1.1 Project Background	1
1.2 EIA Study Brief	1
1.3 Project Area	2
1.4 Objectives	3
1.5 Statutory Legislation and Evaluation Criteria	3
2 Desktop Review	5
2.1 General	5
2.2 Aerial Photographs and Historical Landuse	5
2.3 Site Geology	9
2.4 Site Survey	9
2.4.2 Western Access Road to MTR Lo Wu Station and Lo Wu Village	10
2.4.3 Access Road to Macintosh	10
2.4.4 Eastern Access Road to Sandy Ridge Cemetery	10
2.4.5 Choi Yuen Road	10
2.4.6 Lin Ma Hang Road	11
2.4.7 Man Kam To Road	11
2.5 Other Relevant Information	11
2.5.2 Fire Services Department	12
2.5.3 Environmental Protection Department	12
2.6 Future Landuses	15
3 Potentially Contaminated Site	16
3.1 Identification of Potentially Contaminated Site	16
3.2 Proposed Site Investigation for Potentially Contaminated Site	16
3.3 Re-appraisal of the Potentially Contaminated Site	16
3.4 Re-appraisal of the Area	17
3.5 Submission Requirements of CAP, CAR, RAP and RR	17

Figures

- Figure 1.1 Location of Project at Sandy Ridge
- Figure 1.2 Road Improvement Works at Choi Yuen Road
- Figure 1.3 Road Widening Works at Lin Ma Hang Road
- Figure 1.4 Utilities Construction along Man Kam To Road
- Figure 2.1 Photo Records at Sandy Ridge (Sheet 1 of 6)
- Figure 2.1a Photo Records at Sandy Ridge (Sheet 2 of 6)
- Figure 2.1b Photo Records at Sandy Ridge (Sheet 3 of 6)
- Figure 2.1c Photo Records at Sandy Ridge (Sheet 4 of 6)
- Figure 2.1d Photo Records at Sandy Ridge (Sheet 5 of 6)
- Figure 2.1e Photo Records at Sandy Ridge (Sheet 6 of 6)
- Figure 2.2 Photo Records at Choi Yuen Road
- Figure 2.3 Photo Records at Lin Ma Hang Road (Sheet 1 of 4)
- Figure 2.3a Photo Records at Lin Ma Hang Road (Sheet 2 of 4)
- Figure 2.3b Photo Records at Lin Ma Hang Road (Sheet 3 of 4)
- Figure 2.3c Photo Records at Lin Ma Hang Road (Sheet 4 of 4)
- Figure 2.4 Photo Records along Man Kam To Road (Sheet 1 of 3)
- Figure 2.4a Photo Records along Man Kam To Road (Sheet 2 of 3)
- Figure 2.4b Photo Records along Man Kam To Road (Sheet 3 of 3)
- Figure 3.1 Location of Potentially Contaminated Site SRC-1

Appendices

- Appendix A Historical Aerial Photographs – Sandy Ridge
- Appendix B Historical Aerial Photographs – Choi Yuen Road
- Appendix C Historical Aerial Photographs – Lin Ma Hang Road
- Appendix D Historical Aerial Photographs – Man Kam To Road
- Appendix E Site Walkover Checklists
- Appendix F Relevant Correspondence with Fire Services Department
- Appendix G Relevant Correspondence with Environmental Protection
Department

1 Introduction

1.1 Project Background

- 1.1.1.1** With a growing aging population in Hong Kong, the number of deaths and the corresponding number of cremations have been rising gradually every year, resulting in an increasing public demand for columbarium facilities. Based on past data, the average annual numbers of deaths and cremations in the next 20 years (i.e. from 2013 to 2032) are estimated to be about 53,000 and 49,900 respectively.
- 1.1.1.2** Upon completion of the latest reprovisioning projects of Wo Hop Shek and Cape Collinson Crematoria by late 2014, the total annual capacity of all public cremators will be increased from 38,000 sessions to 53,000 sessions. This will sufficiently meet the cremation demand up to around 2025.
- 1.1.1.3** There is genuine need to construct new crematoria at Sandy Ridge Cemetery to address the demand beyond 2024. As for columbarium, the supply of public niches is uncertain after the completion of the Diamond Hill Columbarium extension and the new public columbarium at Kiu Tau Road in the Wo Hop Shek Cemetery in April and July 2012 providing about 1,500 and 43,700 new niches respectively. Hence, there is a need to construct new columbarium facilities at the Sandy Ridge Cemetery to meet public demand.
- 1.1.1.4** The Sandy Ridge Cemetery is one of the 24 potential sites for columbarium development in 18 districts announced in three batches in July 2010, December 2010 and April 2011 respectively. Furthermore, it is planned to provide synergistic one-stop services at the Sandy Ridge Cemetery by including at least a funeral parlour and a visitor service centre so as to maximise the convenience to the public. The proposed public C&C development project at the Sandy Ridge Cemetery will be by far of the largest scale of similar public facilities in Hong Kong.

1.2 EIA Study Brief

- 1.2.1.1** The Project Profile (No. PP-482/2013) was submitted by the Project Proponent to EPD for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1)(a) of the Environmental Impact Assessment Ordinance (EIAO) on 18 February 2013. The EIA Study Brief (EIA Study Brief No.: ESB-257/2013) was formally issued by EPD on 26 March 2013.
- 1.2.1.2** Subsequent to the issue of the EIA Study Brief No. ESB-257/2013 in March 2013, the traffic and transport arrangement has been reviewed. In addition to the road widening works at Choi Yuen Road, road

widening works along Lin Ma Hang Road are also required within the adjacent areas at Sandy Ridge. Hence, given all these changes, a new Project Profile (PP-503/2014) was submitted to EPD on 13 March 2014. The EIA Study Brief No. 271/2014 was issued by EPD on 23 April 2014.

- 1.2.1.3** The EIA Study Brief sets out the purposes and objectives of the EIA study, the scope of environmental issues which shall be addressed, the requirements that the EIA study to fulfil the necessary procedural and reporting requirements. The Project Proponent shall demonstrate in the EIA report that the criteria in the relevant sections of the Technical Memorandum on Environmental Impact Assessment Process of the EIAO (TM-EIAO) and EIA Study Brief are complied with.

1.3 Project Area

- 1.3.1.1** As described in the EIA Study Brief (ESB-271/2014), the Project comprises site formation and infrastructural works for the development of C&C facilities at Sandy Ridge Cemetery. Those works include the followings:

- Site formation of about 10 hectares of land for development of C&C facilities at the Sandy Ridge Cemetery;
- Associated environmental mitigation measures, landscaping works, geotechnical works, drainage and sewerage works, waterworks, roadworks including tunnel, viaducts and improvement works to existing road network in North District, and other utility services, etc.;
- A pedestrian walkway between MTR Lo Wu Station and the columbarium facilities at the Sandy Ridge Cemetery and associated works including a mini concourse and modification works at MTR Lo Wu Station; and
- Widening the eastbound of Choi Yuen Road near MTR Sheung Shui Station from 1-lane to 2-lane carriageway (widening by about 3m) for about 400m length.
- Widening a section of Lin Ma Hang Road (about 1km in length) from 6.5m to 7.3m.

- 1.3.1.2** The Layout Plans for the proposed development are shown in **Figures 1.1 to 1.3**. The proposed land platform for the C&C facilities at Sandy Ridge Cemetery are shown in **Figure 1.1**, the proposed pick-up/ drop-off facility at MTR Sheung Shui Station is shown in **Figure 1.2** and the section of Lin Ma Hang Road that requires widening is shown in **Figure 1.3**

- 1.3.1.3** Construction work for utilities installation will be undertaken along Man Kam To Road. As illustrated in **Figure 1.4**, the works would be wholly confined to Man Kam To Road.

1.4 Objectives

1.4.1.1 The purpose of this Land Contamination Assessment Report (Report) is to provide information, guidance and instruction to characterise land contamination and identify where contaminants are or may be present before the construction of the project site. In accordance with Section 3.4.5 of the EIA Study Brief No. ESB-271/2014, the objectives of this Report are:

- To provide an account of the present landuse within project site boundary and relevant past landuse history in relation to possible land contamination;
- To identify areas of potential contamination and the associated impacts, risks or hazards; and
- To identify the chemicals of concern and scoping of requirements for sampling and laboratory testing of soil and groundwater samples, if required.

1.5 Statutory Legislation and Evaluation Criteria

1.5.1.1 This Report is prepared in accordance with the following Technical Memorandum and Guidance Notes:

- Annex 19 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIA), Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3: Potential Contaminated Land Issues), EPD, 1997;
- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD, 2007;
- Guidance Notes for Contaminated Land Assessment and Remediation, EPD, 2007; and
- Practice Guide for Investigation and Remediation of Contaminated Land, EPD, 2011.

1.5.1.2 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.

1.5.1.3 The EPD's Guidance Notes include a summary of the general steps of a contamination assessment study.

1.5.1.4 Under the *Practice Guide for Investigation and Remediation of Contaminated Land* and the Annex 19 of the TM-EIAO, a number of potentially contaminating historical landuses should be considered, including boat / ship building or repairing, chemical manufacturing / processing plants, dangerous goods stores, concrete and asphalt production, golf courses, motor vehicle / equipment depots, repairing and service centres, open area storage, petrol filling stations, petroleum products and coal industrial operations (including oil depots and gas works), power plants, individual power generation units, scrap yards, steel mills / metal workshops, waste recycling workshops, car dismantling workshops, dumping ground and landfill, which have the potential to cause or have caused land contamination.

2 Desktop Review

2.1 General

2.1.1.1 A desktop study has been conducted to review past and present landuses, activities and installations within the EIA Study Brief Boundaries at Sandy Ridge, Choi Yuen Road, Lin Ma Hang Road and Man Kam To Road that may have potential for land contamination,

2.1.1.2 The following documents have been reviewed and used as background materials for the preparation of this assessment:

- Selected historical aerial photographs between 1973 and 2010;
- Hong Kong Geological Survey Map; and
- Outline Zoning Plan.

2.2 Aerial Photographs and Historical Landuse

2.2.1.1 Selected historical aerial photographs between 1973 and 2010 of the areas within the EIA Study Brief Boundary at Sandy Ridge (the Area), Choi Yuen Road, Lin Ma Hang Road and along Man Kam To Road have been reviewed in order to ascertain any historical landuse with the potential for land contamination. The findings of the selected historical aerial photographs of the Area at Sandy Ridge, Choi Yuen Road, Lin Ma Hang Road and along Man Kam To Road are summarized in **Tables 2.1 to 2.4** and the aerial photographs are given in **Appendices A to D** respectively.

Table 2.1 Summary of historical aerial photographs for Sandy Ridge

Year	Description
1973	<ul style="list-style-type: none"> • The area consisted of natural terrain occupying the southern part, middle part and eastern part of the Area. • Macintosh Fort was observed in the northern part of the Area. • Scattered cemeteries were observed in the Area. • Lo Wu Train Station was observed in the northwestern part of the Area. • Agricultural land and village houses were observed below the southern boundary of the Area. • Ng Tung River was observed along the western boundary of the Area. • Shenzhen River was along the northern boundary of the Area. • Fish pond was observed next to the northwestern boundary of the Area. • The Lo Wu Village located beside Lo Wu Train Station was observed (excluded from the Area).
1983	<ul style="list-style-type: none"> • Lo Wu Train Station was observed in the northwestern

Year	Description
	<p>part of the Area and extended with one more building.</p> <ul style="list-style-type: none"> • Ng Tung River was observed along the western boundary of the Area and the lower part of its stream had re-alignment. • Fish pond was observed next to the northwestern boundary of the Area and two small parts of areas at its upper corner had been extended. • No significant changes for the historical land use of other features were observed as compared with Year 1973.
1993	<ul style="list-style-type: none"> • At the far southeastern end of the Area, warehouse type building structures were observed. • Lo Wu Train Station was observed in the northwestern part of the Area and developed into a larger building. • Ng Tung River was observed along the western boundary of the Area and had been widened. • Fish pond was observed next to the northwestern boundary of the Area and one small part of area at its southeastern corner had been reclaimed. • No significant changes for the historical land use of other features were observed as compared with Year 1983.
2000	<ul style="list-style-type: none"> • No significant changes for the historical land use were observed as compared with Year 1993.
2005	<ul style="list-style-type: none"> • At the far southeastern end of the Area, the area with warehouse type building structures had been changed to an open storage area. • Shenzhen River was along the northern boundary of the Area and had been widened. • Ng Tung River was observed along the western boundary of the Area and had been further widened. • Fish pond was observed next to the northwestern boundary of the Area and most of its area had been reclaimed. • No significant changes for the historical land use of other features were observed as compared with Year 2000.
2010	<ul style="list-style-type: none"> • At the far southeastern end of the Area, the open storage area had been built up with warehouse type building structures. • Fish pond was observed next to the northwestern boundary of the Area. A small piece of reclaimed land had been changed to a fish. • No significant changes for the historical land use of other features were observed as compared with Year 2000.

Table 2.2 Summary of historical aerial photographs for Choi Yuen Road

Year	Description
1973	<ul style="list-style-type: none"> The Choi Yuen Road had not been built up. Farmland and village houses were observed instead within the Area. Farmlands were observed at the western part from the Area. Village houses were observed at the northern and southern parts from the Area. Shek Wu Hui marketplace was observed at the far northeastern part from the Area.
1983	<ul style="list-style-type: none"> The Choi Yuen Road had been built up within the Area. Sheung Shui Train Station had been built up at the eastern part of the Area. Construction in progress was changed from farmlands and was observed at the southern and northern parts from the Area. Choi Yuen Estate was observed at the southern part from the Area.
1993	<ul style="list-style-type: none"> Landmark North shopping centre had been built up at the northeastern part from the Area. Choi Po Court had been built up from the previous construction in progress at the southern part from the Area. Open car park was observed at the northern part from the Area. No significant changes for the historical land use of other features were observed as compared with Year 1983.
2000	<ul style="list-style-type: none"> No significant changes for the historical land use were observed as compared with Year 1993.
2005	<ul style="list-style-type: none"> No significant changes for the historical land use were observed as compared with Year 2000.
2010	<ul style="list-style-type: none"> No significant changes for the historical land use were observed as compared with Year 2005.

Table 2.3 Summary of historical aerial photographs for Lin Ma Hang Road

Year	Description
1973	<ul style="list-style-type: none"> Lin Ma Hang Road had not yet been constructed. Farmland, San Uk Ling, natural terrain and village houses were observed within the Area.
1983	<ul style="list-style-type: none"> Lin Ma Hang Road had been constructed. No significant changes for the historical land use of other features were observed as compared with Year 1973.

Year	Description
1993	<ul style="list-style-type: none"> Man Kam To border crossing facilities were under construction. Several areas of horticultural activities were observed. No significant changes for the historical land use of other features were observed as compared with Year 1983.
2000	<ul style="list-style-type: none"> The construction of the Man Kam To bordering crossing facilities had been completed. No significant changes for the historical land use of other features were observed as compared with Year 1993.
2005	<ul style="list-style-type: none"> No significant changes in historical land use were observed as compared with Year 2000 along Lin Ma Hang Road.
2010	<ul style="list-style-type: none"> Several open areas were observed either side of Lin Ma Hang Road. No significant changes for the historical land use of other features were observed as compared with Year 2005.

Table 2.4 Summary of historical aerial photographs for Man Kam To Road

Year	Description
1973	<ul style="list-style-type: none"> Man Kam To Road, village houses and farmland were observed within the Area.
1983	<ul style="list-style-type: none"> No significant changes in historical land use were observed as compared with Year 1973 along Man Kam To Road.
1993	<ul style="list-style-type: none"> Several container storage areas adjacent to the utilities works area was observed. No significant changes for the historical land use of other features were observed as compared with Year 1983.
2000	<ul style="list-style-type: none"> No significant changes for the historical land use were observed as compared with Year 1993 Man Kam To Road.
2005	<ul style="list-style-type: none"> The Police Dog Unit and Force Search Training School had been constructed. No significant changes in historical land use of other features were observed as compared with Year 2000 Man Kam To Road.
2010	<ul style="list-style-type: none"> No significant changes for the historical land use were observed as compared with Year 2005 along Man Kam To Road.

2.3 Site Geology

- 2.3.1.1** The geological strata likely to be encountered within the Area at Sandy Ridge are mainly metasandstone, metaconglomerate and phyllite of the Tai Shek Mo Member, which belonged to the Lok Ma Chau Formation of the Carboniferous age. The site is overlain by debris flow deposit (colluvium) and alluvium, with estuarine deposits deposited near the Shenzhen River to the north of the Area.
- 2.3.1.2** For Choi Yuen Road, there is a Tai Mo Shan Formation as the bedrock type within the site area. The quartz veins also present in the vicinity. The site is overlain by terraced alluvium and alluvium. In view of the developed nature of the site at Choi Yuen Estate, a layer of construction fill is also expected.
- 2.3.1.3** For Lin Ma Hang Road, there is the Tai Shek Mo Member of the Lok Ma Chau Formation as the bedrock type within the study area, comprising of metamorphosed siltstone, metamorphosed sandstone, some conglomerate horizons and phyllite. It is anticipated that the Tai Shek Mo member found near the former Sam Wo Public School as the bedrock type comprises of metamorphosed siltstones and sandstones. The study area is overlain by the Pleistocene terraced alluvium at the western side of Lin Ma Hang Road and debris flow deposits at the middle portion of Lin Ma Hang Road. Fill is expected to be found along Lin Ma Hang Road with a thickness ranging from 0.1-1m. A northwest-southeast trending photolineament is noted in the southwestern side of Lin Ma Hang Road. Two northeast-southwest trending photolineaments are in close proximity to the road. A syncline plunging towards the north is also noted across the middle of the road.
- 2.3.1.4** For Man Kam To Road, there is the Mai Po Member of the Lok Ma Chau Formation as the bedrock type comprises of metamorphosed siltstones, sandstones with thin conglomeratic beds and graphite schist within the study area. The study area is mainly overlain by debris flow deposits with locally alluvium identified near the Police Post and terraced alluvium near the junction with Sha Ling Road. Fill is expected to be found along the Man Kam To Road. Where encountered, the thickness ranges from 1.2-3.5m. A northwest-southeast and northeast-southwest trending photolineament are noted along the road.

2.4 Site Survey

- 2.4.1.1** Site surveys were conducted in September 2013, May 2014 and June 2014 to ground truth the findings of desktop study and to identify any other landuses within the EIA Study Brief Boundaries at Sandy Ridge, Choi Yuen Road, Lin Ma Hang Road and along Man Kam To Road which may have potential for causing soil contamination. Possible

contaminants were identified in accordance with EPD's *Practice Guide for Investigation and Remediation of Contaminated Land*.

- 2.4.1.2** Photo records of the site survey at Sandy Ridge are given in **Figure 2.1** and **Figures 2.1a** to **2.1e** and the findings of the surveys are summarized as follows:

2.4.2 Western Access Road to MTR Lo Wu Station and Lo Wu Village

- 2.4.2.1** As shown in **Figures 2.1a** to **2.1c**, village houses (photo nos. 6263 and 6280), cemeteries (photo nos. 6261, 6274, 6281, 6286 and 6320), school (photo no. 6255) and roads (photo nos. 6268 and 6271) were identified along the EIA Study Brief Boundary in this area. They are not identified as potentially contaminated sites. Since there are no project works within the area of MTR Lo Wu Station (photo no. 6264), the contamination potential, if any, within this area is considered not the concern for this project.

2.4.3 Access Road to Macintosh

- 2.4.3.1** As shown in **Figure 2.1c** and **Figure 2.1d**, the upper section of the access road to Macintosh comprised of watercourse (photo no. 6302), grasslands (photo nos. 6308 and 6313), fish ponds (photo no. 6373) and Nam Hang Police Post (photo no. 6291) which has replaced the Macintosh Fort. For the lower section, village houses (photo no. 6370) were observed. A site consisted of concrete factory (photo no. 6363), open storage area and warehouse (photo no. 6364) was also observed. As this area is a private land lot, given the issue on privacy and rights of the land ownership, site inspection and photographs could only been taken outside the boundary of the site. Although site access to this site was not allowed for site appraisal, it is considered as potentially contaminated in view of its long industrial landuse history (i.e. warehousing and open storage since early 90). The site walkover checklist of this potentially contaminated site is given in **Appendix E**.

2.4.4 Eastern Access Road to Sandy Ridge Cemetery

- 2.4.4.1** As shown in **Figure 2.1e**, roads (photo no. 6332), water pipes (photo no. 6328), cemetery (photo no. 6327) and fish pond (photo no. 6323) were identified along the EIA Study Brief Boundary in this area. No potentially contaminated sites were identified.

2.4.5 Choi Yuen Road

- 2.4.5.1** Photo records of the site survey at Choi Yuen Road are given in **Figure 2.2**. The site walkover checklist is given in **Appendix E**. The findings of the surveys are summarized as follows:

2.4.5.2 Road, car park, housing estate were identified along the EIA Study Brief Boundary at Choi Yuen Road. Since there are no project works within the area of MTR Sheung Shui Station and those urban areas have been disturbed throughout the urban development, the contamination potential, if any, within this area is considered not the concern for this project.

2.4.6 Lin Ma Hang Road

2.4.6.1 Photo records of the site survey at Lin Ma Hang Road are given in **Figure 2.3** and **Figures 2.3a to 2.3c**. The site walkover checklist is given in **Appendix E**.

2.4.6.2 Road (photo nos. P300, P396, P405 and 4620), open areas (photo nos. P323 and P343), grassland (photo no. P314), horticultural activities (photo nos. P405 and P385) and storage facilities (photo no. P408) were identified along the section of Lin Ma Hang Road that requires widening. No potentially contaminated sites were identified.

2.4.7 Man Kam To Road

2.4.7.1 Photo records of the site survey at Man Kam To Road are given in **Figure 2.4** and **Figures 2.4a to 2.4b**. The site walkover checklist is given in **Appendix E**.

2.4.7.2 Man Kam To Road (photo nos. 547, 550, 553, 558, 565, 572, 581, 587, 595 and 605) was the only landuse observed within the utilities construction area. No potentially contaminated sites were identified on Man Kam To Road.

2.4.7.3 Adjacent to the road, and outwith the utilities construction area, natural terrain, agricultural land and container storage areas were observed. However, since the utilities works will not encroach into these adjacent landuses, the contamination potential, if any, within these areas is not considered to be a concern for this project.

2.4.7.4 A portion of the utilities construction area lies outwith Man Kam To Road and overlaps with the site survey conducted at the access road to Macintosh where a potentially contaminated site was identified. The potentially contaminated site and its landuse are described in **Section 2.4.3**.

2.5 Other Relevant Information

2.5.1.1 Acquisition of other relevant information from Fire Services Department (FSD) and Environmental Protection Department (EPD) was summarized below.

2.5.2 Fire Services Department

2.5.2.1 The Fire Services Department (FSD) has been contacted in September 2013 and June 2014 for:

- The records of Dangerous Goods License(s), and
- The reported accidents of spillage/leakage within EIA Study Brief Boundaries at Sandy Ridge, Choi Yuen Road at Sheung Shui, Lin Ma Hang Road and along Man Kam To Road.

2.5.2.2 Based on the information provided by FSD in October 2013, there is a record of a 5,000L above-ground diesel storage tank within the EIA Study Brief Boundary. The record available shows no incidents in the past.

2.5.2.3 As informed by FSD, the ownership of the identified storage tank is classified and hence cannot be released. Therefore, the area within EIA Study Brief Boundary at Sandy Ridge is further subdivided into 4 sub-areas (i.e. Area 1, 2, 3 and 4) for identification of the location of the DGs. Based on the information provided by FSD in November 2013, the DGs is identified within Area 3. Copy of FSD's correspondence is provided in **Appendix F**.

2.5.2.4 In view of the current landuse in Area 3, only one industrial site is identified which consisted of concrete factory, open storage area and warehouse as mentioned in **Section 2.4.3.1**. It is reasonably believed that the 5,000L above-ground diesel storage tank is located within this industrial site in view of its relatively large site area (i.e. approx. 8,340m²) and industrial activities.

2.5.3 Environmental Protection Department

2.5.3.1 The Environmental Protection Department (EPD) has been contacted in September 2013 and June 2014 for

- The records of Chemical Waste Producers Registration, and
- The reported accidents of spillage/leakage within EIA Study Brief Boundaries at Sandy Ridge, Choi Yuen Road at Sheng Shui, Lin Ma Hang Road and along Man Kam To Road.

2.5.3.2 The Chemical Waste Producers Registration records in EPD office have been reviewed. A list of Chemical Waste Producers registration is provided in **Table 2.5**. The review findings revealed that there were 10 Chemical Waste Producers Registration within EIA Study Brief Boundary at Sandy Ridge and there was no record within EIA Study Brief Boundary at Choi Yuen Road in Sheung Shui.

2.5.3.3 China Concrete Company Limited (Chemical Waste Producer 1(CWP1)) has already been identified as a potentially contaminated site (i.e. refer to **Section 2.4.3.1** for details).

- 2.5.3.4** CWP2 to CWP9 refer to various government departments, train facilities and contractors at the MTR Lo Wu Station. Since there are no project works within the area of MTR Lo Wu Station, the contamination potential, if any, within this area is considered not the concern for this project.
- 2.5.3.5** Shanghai Urban Construction (Group) Corporation (CWP 10) with registration address at Sandy Ridge Cemetery has de-registered. The previous construction works were supposed to be carried out within the area of the existing facilities of Sandy Ridge Cemetery. Since there are no project works within the area of the existing facilities of Sandy Ridge Cemetery, the contamination potential, if any, within this area is considered not the concern for this project.
- 2.5.3.6** Based on the information provided by EPD on 23 September 2013 and 2 July 2014 there was no reported accident of spillage/leakage within EIA Study Brief Boundaries at Sandy Ridge, Choi Yuen Road, Lin Ma Hang Road and Man Kam To Road. Copy of correspondence with EPD is provided in **Appendix G**.

Table 2.5 List of Chemical Waste Producers registration

Chemical Waste Producer (CWP)	Organization	Business Type	Address	Validity
CWP 1	China Concrete Company Limited	Ready Mixed Concrete Supply	Lot No. 551 Sb. R.P. In D.D. 89, Man Kam To Road, Sha Ling, NT	Yes
CWP 2	Customs & Excise Department	Government Dept/ Civil Services	2/F, Lo Wu KCRC Terminal Building, NT	Yes
CWP 3	Department of Health	Public Health and Emergency	DD89, Floor 1, Lo Wu Station, North District, NT	Yes
CWP 4	Henryvicy Construction Co., Ltd	Construction Works	Lo Wu Station, Lo Wu Station Road, Lo Wu, NT	Yes
CWP 5	ISS Servisystem (HK) Ltd.	Environmental Service and Cleaning	Lo Wu KCRC Station and Staff Quarters, NT	No
CWP 6	Kier-Leader Joint Venture	Construction	Lo Wu Station, Lo Wu Station Road, Lo Wu, NT	No
CWP 7	Kowloon Control Railway Corporation	Transportation	Lo Wu Terminal Building, Phase III, Lo Wu	No
CWP 8	MTR Corporation Limited	Railway Services and Maintenance	Lo Wu Station, North District, NT	Yes
CWP 9	Pollard Construction Co. Ltd.	Construction	Construction Site at Platform 2&3, 1/F & Arrival, Concourse at Lo Wu Station, NT	No
CWP 10	Shanghai Urban Construction (Group) Corporation	Civil Construction	Sandy Ridge Cemetery, North District, NT	No

2.6 Future Landuses

- 2.6.1.1** The RBRGs have developed four different post-restoration landuses, 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 post-restoration landuses are given in EPD's *Guidance Note for Contaminated Land Assessment and Remediation and Guidance Manual for RBRGs*.
- 2.6.1.2** This project mainly comprises the development of columbarium, crematorium and related facilities at Sandy Ridge cemetery and the drop-off road section(s). As defined in RBRGs, the corresponding RBRGs landuse for this project is "Industrial".

3 Potentially Contaminated Site

3.1 Identification of Potentially Contaminated Site

3.1.1.1 Based on the desktop review findings of selected aerial photos, the information collected during site surveys and the information collected from EPD and FSD, there is only one site identified to be potentially contaminated located to the south-eastern corner of the Area at Sandy Ridge in accordance with the criteria in EPD's *Practice Guide for Investigation and Remediation of Contaminated Land* for land use type of concrete and asphalt production and open storage area. Though access to site was constrained as the site is currently under operation, peripheral inspection was carried out instead and a paved open storage area, warehouses as well as a concrete factory were observed (see **Figure 2.1c** for details). The location of the potentially contaminated site SRC-1 is given in **Figure 3.1**.

3.2 Proposed Site Investigation for Potentially Contaminated Site

3.2.1.1 Though SRC-1 has been identified as potentially contaminated site, however, approximate 92 % of the site (~7,700m²) is located within a private land lot and it is currently under operation (see **Figure 3.1**). In addition, according to the latest land resumption programme as advised by Engineer, only the western portion of SRC-1 with an area of approximate 1,120m² inside private lot would require land resumption for the road widening work at Sha Ling Road and utilities construction works nearby. As such, the necessity of Site Investigation (SI) should focus on this area once the land is resumed and free for access.

3.2.1.2 For the remaining 8 % of the site (~620m²) which falls within government lot (to the southeast of SRC-1), only paved ground was observed and neither concrete & asphalt production nor open storage activities were observed during the site survey. In addition, review of historical aerial photos (since Year 1973) also revealed no sign of land contamination. As such, SI is considered not required for this strip of land.

3.3 Re-appraisal of the Potentially Contaminated Site

3.3.1.1 In view of the above implication, it is recommended that further site visit will be carried out by the PP once the works area for the Project is confirmed and site access is available (e.g. after land resumption), in order to identify any hot spots for SI within the southeast and western portions of SRC-1 .

3.4 Re-appraisal of the Area

- 3.4.1.1** The construction of columbarium, crematorium and related facilities at Sandy Ridge cemetery and the drop-off road section(s) would only commence few years later. There may be changes in land usage within the Area. Therefore, re-appraisal would also be required to assess the latest site situation at that time after land resumption. The objective of re-appraisal is to ensure any new changes in landuse that involve potentially contaminating activities after the approval of this Report but before commencement of the construction could be addressed.

3.5 Submission Requirements of CAP, CAR, RAP and RR

- 3.5.1.1** The PP would prepare a Contamination Assessment Plan (CAP) presenting the findings of the re-appraisal and strategy of the recommended Site Investigation (SI), if required, and submit to EPD for review and approval.
- 3.5.1.2** After approval of the CAP and upon completion of the SI works, if any, the PP would prepare a Contamination Assessment Report (CAR), to present findings of the SI works. If contamination has been identified, a Remediation Action Plan (RAP) would be prepared to formulate appropriate remedial measures to deal with the contamination identified. Following completion of any necessary remediation works, a Remediation Report (RR) would be prepared to demonstrate adequate clean-up and submit to EPD for approval prior to the commencement of any construction or development works at the contaminated sites identified.