Cheung Hing Construction Co., Ltd

Contract No. SSW 327

Reprovisioning of Cape Collinson Crematorium

Supplementary Contamination Assessment Plan for Additional Underground Oil Tank

(Version 3.0)

June 2014

Approved By	(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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1. INTRODUCTION

BACKGROUND

1.1 Cinotech Consultants Limited (Cinotech) was commissioned by the Cheung Hing Construction Co. Ltd (CH) (hereinafter the Contractor) to undertake the Environmental Team (ET) and prepare Supplementary Contamination Assessment Plan (SCAP) for the "Reprovisioning of Cape Collinson Crematorium" Project.

1.1 The general layout plan of the Project is shown in **Figure 1**.

1.2 According to the Environmental Impact Assessment Report (EIA Report) (Register No. AEIAR-137/2009) Section 5, Contamination Assessment Plan (CAP) and Contamination Assessment Report/Remediation Action Plan (CAR/RAP) for the Project were submitted to EPD, endorsed and approved on 2 and 23 April 2008, respectively.

1.3 According to Environmental Permit (EP-335/2009) and further EP (FEP – 01/335/2009) Clause 3.3 (a), to determine the extent and level of land contamination and formulate necessary remedial measures at the Cremator Rooms 1 and 2 and the trial pit location underneath the fuel pipeline, Supplementary Contamination Assessment Plan (SCAP) for the Project was submitted to EPD, endorsed and approved on 31 December 2012 and 16 January 2013, respectively.

1.4 According to Environmental Permit (EP-335/2009) and further EP (FEP – 01/335/2009) Clause 3.3 (b), Supplementary Contamination Assessment Report (SCAR) for the Project was submitted to EPD, endorsed and approved on 20 August 2013 and 6 September 2013, respectively. Remediation Report (RR) for the Project was submitted to EPD, endorsed and approved on 25 September 2013 and 16 October 2013, respectively. All contaminated soil failed to meet the RBRGs criteria had been treated and removed.

1.5 An Additional Underground Oil Tank (AUOT) was found during the excavation works being carried out in the proximity of Grid G/1 on 24th February 2014. The report on AUOT found from CH is shown in **Appendix C** and location of the AUOT is shown in **Figure 2**.

1.6 According to further EP (FEP – 01/335/2009) Clause 3.3 (a), The Permit Holder shall submit Supplementary Contamination Assessment Plan (SCAP) to the Director of EPD for approval. Site assessments would be required at the location of Additional Underground Oil Tank before commencement of the works.

1.7 Prior to the commencement of the site investigation work, a Supplementary Contamination Assessment Plan (SCAP) is required to be prepared, certified by the ET Leader and verified by the Independent Environmental Checker (IEC) then submitted to EPD for endorsement.

OBJECTIVES:

1.8 The objective of this SCAP is to:

i) Summarize the information of site appraisal and the information of AUOT obtained during the site inspection in March 2014;

ii) Identify potential contamination activity and contaminated area at the location of AUOT; and

iii) Propose sampling and design for the site investigation for the location of AUOT.

1.9 Based on the endorsed SCAP, a contamination site investigation would be conducted and a Supplementary Contamination Assessment Report (SCAR) will be complied to document the findings. If the findings confirm that the site is contaminated, a Supplementary Remediation Action Plan (SRAP) will be drawn up to recommend remedial actions.

1.10 This SCAP is prepared by Cinotech in accordance with the following guidance documents:-

i) EPD's *Guidance Note for Contaminated Land Assessment and Remediation*(GN);

ii) EPD's *Practice Guide for Investigation and Remediation of Contaminated Land;*(PG)

iii) EPD's *Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management'* (GM).

2. INFORMATION IN THE APPRVODED CONTAMINATION ASSESEMENT PLAN

2.1 According to the approved CAP in the EIA Report (Register No. AEIAR-137/2009) Appendix 5.1, site inspection was conducted at Cape Collinson Crematorium in year 2008 to inspect and identify any potential contamination, to form part of the EIA report. The detailed site appraisal information could be referred to the approved CAP, as shown in **Appendix A**, and the geology, hydrogeology information in the approved CAP were extracted and listed as below:

SITE GEOLOGY AND HYDROGEOLOGY

2.2 The study area is mainly underlain by Shing Mun Formation, which is the most complex and lithologically variable formation, both laterally and vertically; undivided sedimentary and volcanic rock consisting of tuffite of Upper Jurassic Period of Mesozoic Era.

2.3 As reported in Ground Investigation (GI) reports and EIA report Sections 5.12 to 5.15, '*the area close to Study Area is generally covered by a layer of fill materials/colluviums (~0.5m to 1.5m in thickness) composed of sandy SILT and clayey sandy SILT with occasional fine to medium gravel. It is then followed by a layer (~1.15 m to 10.1m in thickness) of saprolitic soil (in the majority of fine ash vitric TUFF and sandy SLIT) before reaching the lower variable decomposed rock (rock of grade IV with thickness of ~0.4m to 6m). In terms of the likelihood of migration of contaminants, fill materials (i.e. top soil layer) generally have higher permeability and therefore, ability if potential contaminant migration through this horizon is higher than downward migration.'*

HYDROGEOLOGY

2.4 '*According to the general topography of the Study Area and groundwater levels recorded in some of the reviewed GI reports, elevation of the groundwater level varies from +153mPD to +110mPD from hillside south to hillside north of the Existing Crematorium. The general groundwater pattern likely flows from south to north, i.e. from Tai Tam Road towards Fung Wah Estate.*'

3. SITE APPRAISAL

3.1 Site inspections were conducted on 7 March 2014 and 14 March 2014, to identify the area with potential soil and/or groundwater contamination due to AUOT.

3.2 Photographical records for AUOT were taken to depict the existing conditions of the site area. Photographic records are shown in the **Appendix B**.

3.3 The location plan of AUOT is shown in **Figure 2**.

Additional Underground Oil Tank (AUOT)

3.4 The estimated size of the AUOT is 4 m x 1.5 m x 1.5 m with volume capacity smaller than 10 tons and it is assumed an oil tank buried over 20 years. The oil tank is disused and fuel oil is observed inside. No written confirmation for the type of oil from relevant party and no information about AUOT in the structural plan for crematorium were found. The oil stored in the tank is most likely to be diesel due to following reasons:

- Laboratory testing of Total Petroleum Hydrocarbon (TPH) analysis and GC-MS scanning for the oil sample collected from AUOT was conducted. The hydrocarbon chain lengths of the oil sample distributed into range from C9 to C35, where the common range of diesel is about C10 to C28. The laboratory testing report is shown in **Appendix D**.
- Prior to agreement on re-activating waste account, Chemical Waste Treatment Centre (CWTC) noticed that the AUOT was discovered during construction activity. The crematorium was using the diesel for incineration and in-situ flame test of the liquid waste inside AUOT confirmed that it is flammable liquid. They advised no further sample test was required. Waste drums from CWTC were delivered to construction site for waste oil collection as diesel from AUOT in June 2014. The supporting documents including delivery notes, label and record photos are shown in **Appendix E**.

3.5 No fuel and oil leakage was observed at the AUOT.

3.6 Due to the discovered tank is located at the middle of the construction site without proper working space and no smooth pathway to access the fuel tank. Working platform is built for decontamination work.

3.7 **Table 3.1** provides a summary of observation during the site inspection in March 2014.

Table 3.1 Summary of Site Inspection

Location	Site Observation
AUOT	i) Fuel oil is observed inside. ii) The type of the oil stored inside the AUOT is most likely to be diesel. iii) No fuel and oil leakage was observed. iv) Working platform is built for decontamination work.

4. HEALTH AND SAFETY

4.1 The following measures should be implemented before contamination assessment to minimise risks to workers during remediation works such as excavation of soil. These measures will also mitigate against transferring contamination to groundwater, to surface water courses or to the air.

- Exposed Underground Oil Tank and contaminated solid should be covered with tarpaulin.
- Site workers should wear gloves, masks, and other protective clothing where exposure to vapours or contaminated soil may be encountered.
- Contaminated materials should be moved with bulk earthmovers to prevent human contact.
- Adequate washing facilities should be provided and smoking/eating should be prohibited in the area.
- Leakage of pollutants or leaching from excavated soil should be prevented by storing on an impermeable surface.

5. SAMPLING STRATEGY

5.1 Potential land contamination of soil and/or groundwater would be contributed to oil spillage/ leakage from the oil tank in the proximity of Grid G/1.

Additional Underground Oil Tank (AUOT)

5.2 According to Section 5.50 of approved EIA report,'*During removal of the underground storage tank, appropriate precautions should be taken to avoid contamination. All fuel tank and associated pipelines should be emptied prior to any demolition work being undertaken. Any remaining sludge or sediment in the tanks or pipelines should be removed and disposed of as chemical waste in accordance with the appropriate regulation for disposal of such material. After removal of the underground storage tank, confirmatory soil sample(s) underneath the tank should be collected and tested for TPH, VOCs and Pb using the same approach as mentioned in Sections 5.43 and 5.44 above to ensure that no contamination due to fuel leakage.'*

5.3 Photographic records of the site investigation, soil/groundwater samples will be taken for the preparation of SCAR and SRAP.

5.4 The proposed sampling and testing plan is shown in **Table 5.1**.

Table 5.1 Sampling and Testing Plan

Sampling Location	Sampling Method	S / GW	Depth	Proposed Testing Parameters		
				Heavy Metals	VOCs	TPH
AUOT	Soil sampling to 3m below the underground storage tank by Borehole	S	Immediately below tank	Lead	Y	Y
		S	Every 1m below tank, to 3m	Lead	Y	Y
		S	Additional sampling if contamination is found	Lead	Y	Y
		GW	If present	-	Y	Y

Remarks:
a) S – Soil, GW – Groundwater
b) Details of the testing parameters are shown in Table 6.1.
c) The detailed location plan of soil sampling for UOT is shown in **Figure 3**.

SAMPLING METHODS

5.5 Underground utilities should be surveyed prior to the proposed borehole locations. The actual locations of Site Investigation should be finely adjust and agreed by the Architect and the Environmental Team member with experience in contaminated land assessment.

Borehole Sampling:

5.6 Dry rotary drilling method will be employed for soil boring and sampling, in which no flushing medium will be used. Inspection pit will be excavated to 1m below tank to inspection underground utilities. The disturbed soil at 1m below tank will be collected

as samples for laboratory analysis. Drilling rigs will be used for sampling at depth below 1m to 3m below tank. Soil samples will be collected every 1m below tank.

5.7 The excavated soil will be refilled or treated base on the contaminants found, if any, in the laboratory test.

5.8 Excavated soil should be immediately collected once exposed by hand sampling.

5.9 All equipment in contact with the ground shall be thoroughly decontaminated prior to use at each borehole by scrubbing with a lab-grade detergent.

5.10 Strata Log will be recorded for boreholes. It records the stratigraphic structure, soil sampling depths, the thickness of each band of materials and the depth at which groundwater sampling encountered. Grain size, odour, presence of rock and other materials will be recorded. Photographic record will be taken during the site investigation and sampling process.

GROUNDWATER SAMPLES

5.11 Groundwater sample will be collected and tested in laboratory where groundwater is encountered. Groundwater monitoring wells should be developed after completion of installation to remove debris from the water. The wells should be purged with at least three times the well volume or until dry prior to each sampling event. Groundwater samples should be taken within 24 hours of the wells being purged. Prior to purging and sampling, groundwater levels should be measured and recorded. Presence of non-aqueous phase liquid (NAPL) should also be recorded. The design of groundwater sampling well to be installed at borehole is shown in **Figure 4**.

5.12 For boreholes sampling locations, groundwater sampling well will be installed to the boreholes in advance of conducting the sampling.

5.13 All samples shall be uniquely labeled. Between samples, all equipment used for sample handling and storage shall be thoroughly decontaminated with laboratory-grade detergent. Samples shall be stored in appropriate pre-washed containers (provided by laboratory) and put in an insulated box below ice immediately. It must be ensured that the sample containers and the box are tightly closed and that sufficient ice is provided to maintain refrigerated at 4^0C.

SAMPLE SIZE AND HANDLING PROCEDURES

5.14 1 groundwater and 4 soil samples at AUOT will be taken.

TRANSPORTATION OF SAMPLES

5.15 All the samples must be uniquely labelled and described on-site prior to sending to a HOKLAS accredited laboratory for analysis. Description shall include, but not be restricted to:

i) test site where sample collected;
ii) sample identification number;
iii) soil sampling depth (with respect to lowest level of concrete slab);
iv) estimated physical characteristics (clay, silt, sand, gravel, stone, cobble, colour, odour, moisture);

v) colour photograph; and
vi) any other relevant information.

5.16 The samples must be put in an insulated box below ice immediately after being placed in an appropriate pre-washed container (provided by the laboratory) without being agitated. Headspace should also be minimised. It must be ensured that samples containers and the box are tightly closed and that sufficient ice packs are provided to maintain refrigerated conditions at about 4°C.

5.17 Samples will be delivered to laboratory within 24 hours after collected and analysed within 7 days upon delivery.

DECONTAMINATION

5.18 All equipment used for sample handling and storage must be decontaminated before and after collection of each sample. The following is the standard procedure for cleaning drilling equipment and sampling equipment on site:

i) Clean with tap water and lab-grade detergent (using brush if necessary) to remove particulate matter and surface films.

ii) Rinse thoroughly with tap water (for drilling equipment) or distilled water (for sampling equipment).

iii) After field cleaning, the equipment shall be handled by personnel wearing clean gloves to avoid re-contamination. If the equipment is not to be used immediately it should be covered with clean plastic sheeting or wrapped in aluminium foil to avoid re-contamination.

iv) The drilling equipment and sampling equipment shall be cleaned according to the above procedures between sampling holes.

5.19 The samples should be scooped directly from the sampling tool into the sample containers. The scoop should be stainless steel. If a gloved hand comes into contact with the sample, then new gloves should be used for each sample.

QA/QC PROCEDURES

5.20 A chain of custody system shall be operated as part of the QA/QC procedure. QA/QC samples shall be collected in the following frequency:

i) 1 equipment blank per 20 samples for full suite analysis,
ii) 1 field blank per 20 samples for full suite analysis,
iii) 1 trip blank per 20 samples for full suite of analysis,
iv) 1 duplicate sample per 20 samples for full suite of analysis.

From the proposed sampling plan, there should be at least 1 sets of equipment blank, field blank, trip blank and duplicate sample for soil and 1 set of the mentioned QA/QC samples for groundwater to be collected and tested under this Study.

6. LABORATORY ANALYSIS

6.1 With reference to the EPD's GN and PG, potential contamination is from fuel oil leakage, and the potential contaminants associated are list as follows:-

Oil installations

- Total Petroleum Hydrocarbons (TPH).
- Simple Aromatics VOCs: Benzene, Toluene, Ethylbenzene, Xylenes (Total); and
- Heavy Metals (Lead);

6.2 The soil and groundwater samples shall be dispatched to the HOKLAS accredited laboratory for analysis. The schedule for laboratory analysis is listed in **Table 6.1.**

Table 6.1 Laboratory Analysis Schedule for Groundwater Samples

Parameter	Reference Method	Groundwater Reporting Limit (mg/L)
TPH		
C6-C8	In-house method SOP139 (Purge and Trap GC/MSD)	0.006
C9 – C16	In-house method SOP141 (GC/FID/MSD)	0.2
C17 – C35		0.475
VOCs		
Benzene	In-house method SOP116 (Purge and Trap GC/MSD)	0.0002
Toluene		0.0002
Ethyl Benzene		0.0002
Xylenes (total)		0.0006

TABLE 6.2 LABORATORY ANALYSIS SCHEDULE FOR SOIL SAMPLES

Parameter	Reference Method	Soil Reporting Limit (mg/kg) dry weight
TPH		
C6-C8	In-house method SOP140 (Purge and Trap GC/MSD)	1.2
C9 – C16	In-house method SOP142 (Purge and Trap GC/FID/MSD)	20
C17 – C35		47.5
VOCs		
Benzene	In-house method SOP121 (Purge and Trap GC/MSD)	0.04
Toluene		0.04
Ethyl Benzene		0.04
Xylenes (total)		0.12
Heavy Metals		
Lead	In-house method SOP053 (ICP-AES)	5

6.3 All soil and groundwater samples will be tested within the holding times of 7 days.

6.4 In according to Section 3.7 of the 'Practice Guide for Investigation and Remediation of Contaminated Land', "*all laboratory test methods must be accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS) or one of its Mutual Recognition Arrangement Partners.*"

6.5 The soil and groundwater samples shall be dispatched to the HOKLAS accredited laboratory for analysis of TPH, VOCs and Heavy Metals. The schedule for laboratory analysis, which are HOKLAS accredited Wellab Ltd., is listed in **Table 6.1** and **Table 6.2**.

7. INTERPRETATION OF RESULTS

7.1 As defined in the CAP in the EIA report, the future land use of Crematorium is regarded as Industrial; the results of the laboratory analyses shall be interpreted in accordance RBRGs Criteria for Industrial, with the guidance documents referred to "Guidance Note for Contaminated Land Assessment and Remediation".

7.2 The RBRGs Criteria for Industrial land use, Soil Saturation limits and Solubility limits, as extracted from GN-RBRGs, are in **Table 7.1**.

Table 7.1 RBRGs Criteria

Parameter	Soil samples		Groundwater samples	
	RBRGs of Soil of Industrial (mg/kg)	**Soil Saturation Limit (Csat)** (mg/kg)	**RBRGs of Groundwater of Industrial** (mg/L)	**Solubility Limit** (mg/L)
TPH				
C6-C8	10,000	1,000	1150	5.23
C9 – C16	10,000	3,000	9,980	2.80
C17 – C35	10,000	5,000	178	2.80
VOCs				
Benzene	9.21	336	54	1,750
Toluene	10,000	235	10,000	526
Ethyl Benzene	8,240	138	10,000	169
Xylenes (total)	1,230	150	1,570	175
Heavy Metals				
Lead	2,290	N/A	N/A	N/A

IN-SITU SAMPLING

7.3 If any exceedance of RBRGs levels for soil is found at the distance 3m below tank after laboratory testing, additional soil sampling is required to determine the extent of the contamination at sites where contaminants have been detected. Soil samples at 3m extended from the tested location at which RBRGs levels have been exceeded will be taken and tested. If RBRGs levels are still exceeded, soil sampling will be extended outwards in 3m and tested until levels below RBRGs standards are reached.

7.4 Soil samples will be tested for limited parameters depended on previous exceedances of RBRGs at the original location.

GROUNDWATER RESULT

7.5 The analytical results of groundwater samples will be interpreted with the RBRGs, as listed in **Table 7.1**, and which should be used as the clean-up target of the groundwater,

EXISTENCE OF NON-AQUEOUS PHASE LIQUID (NAPL)

7.6 Field assessment, which includes visual and odour observation during the sampling will be recorded. They include, but not limit to, the appearance of unnaturally colored; liquid layer; petroleum or solvent smell; oily residual in the soil or groundwater samples.

7.7 When the conditions listed in Section 7.6 to be observed, no matter the chemical concentrations in soil/groundwater samples exceed or that the RBRG, removal of NAPL and clear-up to lower of RBRG or C_{sat}/Solubility limit would be required.

7.8 If the chemical concentrations in soil/groundwater samples exceed that the RBRG but field assessment indicates no NAPL, the clean-up target of soil/groundwater would be RBRG.

7.9 No remediation would be required if the chemical concentrations in soil/groundwater samples lower than the RBRG and field assessment indicates no NAPL.

REPORTING OF RESULTS

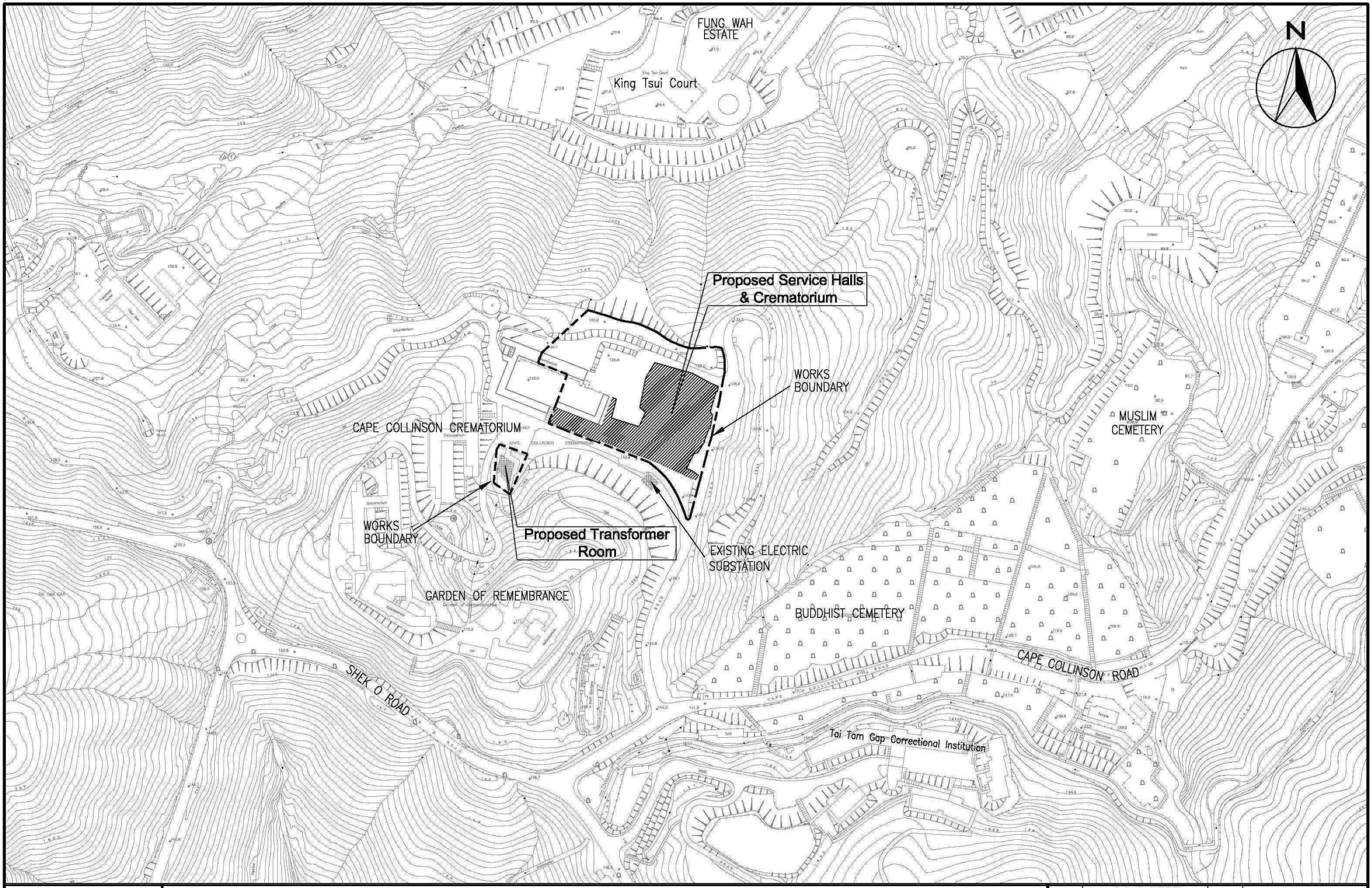
7.10 No later than one month after the completion of the land contamination investigation work, a Supplementary Contamination Assessment Report (SCAR) which certified by the ET Leader and verified by IEC should be submitted to EPD for approval. If the results of the site investigation reveal contamination at the subject site, a Supplementary Remediation Action Plan (SRAP) which certified by the ET Leader and verified by IEC, should be submitted to EPD for approval.

8. CONTAMINATED SOIL TREATMENT AND DISPOSAL ARRANGEMENT

8.1 A Supplementary Contamination Assessment Report (SCAR) and Supplementary Remediation Action Plan (SRAP) (if the tested parameters exceed relevant criteria) will be prepared. Detail of the treatment method will be given in the SCAR and SRAP.

8.2 Supplementary Remediation Report (SRR) should be prepared and submitted to EPD no later than two weeks before demolition of the existing crematorium. Before submission, the RR should be certified by the ET Leader and verified by IEC.

FIGURES



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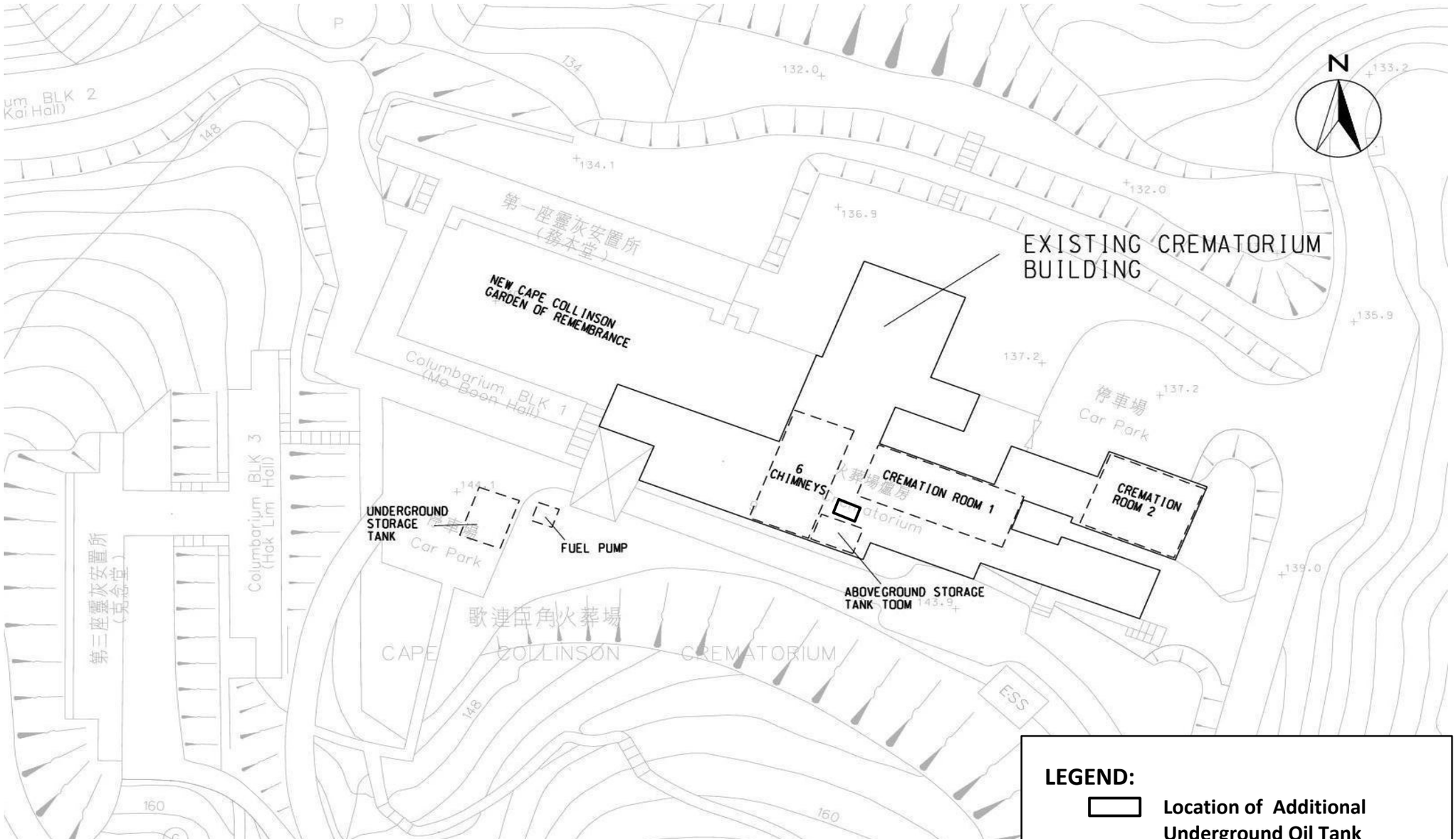
Contract No. SSW 327
Repeovisioning of Cape Collinson Crematorium
Layout Plan of the Project

Scale	A3 1: 2000	Date	June - 2010
Check	GL	Drawn	GL
Project No.	MA 0031	Figure No.	Figure 1
		REV	–



LEGEND:

Location of Additional Underground Oil Tank

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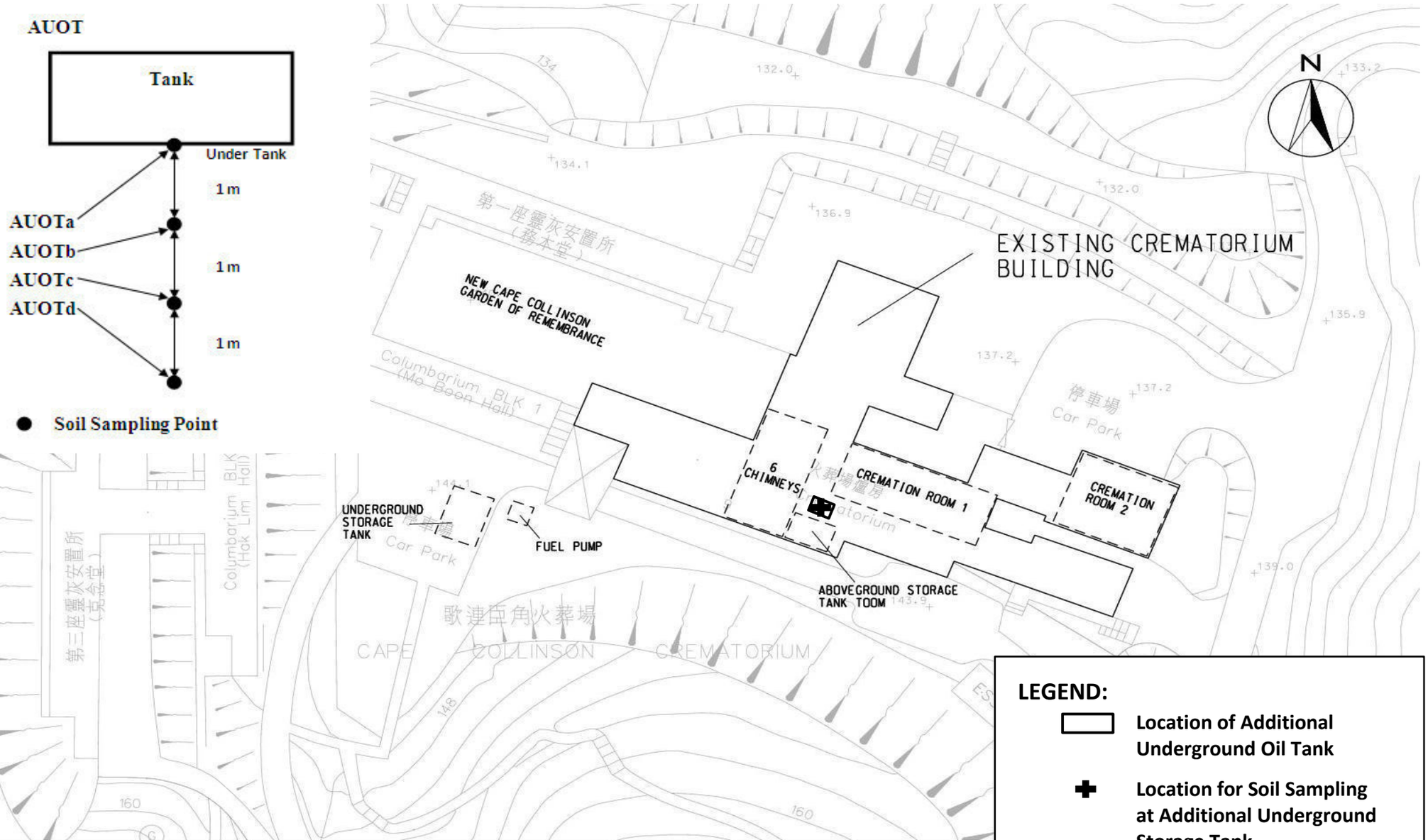
Reprovisioning of Cape Collinson Crematorium

Location of Additional Underground Oil Tank

SCALE	N.T.S.	DATE	Mar-14
CHECK	JL	DRAWN	N/A
JOB NO.	MA 0031	Figure No. 2	Rev 2



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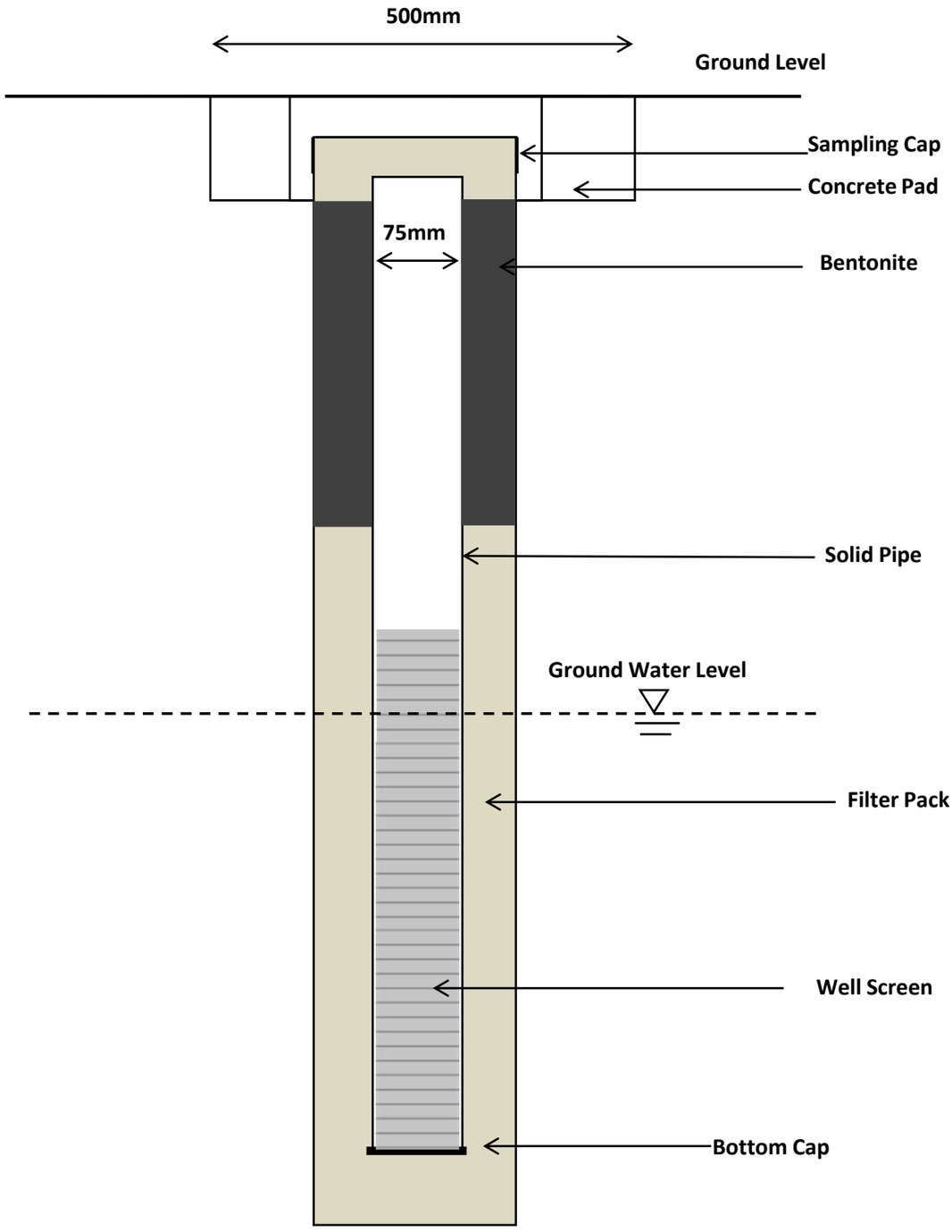
Contract No. SSW 327
Reprovisioning of Cape Collinson Crematorium

Location Plan for Soil Sampling at Additional Underground Storage Tank

SCALE	N.T.S.	DATE	Mar-14
CHECK	JL	DRAWN	N/A
JOB NO.	MA 0031	Figure No. 3	Rev 2



CINOTECH Cinotech Consultants Limited	Contract No. SSW 327 Reprovisioning of Cape Collinson Crematorium Design of Groundwater Sampling Well	SCALE	N.T.S.	DATE	Dec-12
		CHECK	HL	DRAWN	GL
		JOB NO.	MA0031	DRAWING No. 4	Rev 1

APPENDIX A

CAP IN APPROVED EIA REPORT

Architectural Services Department

PWP No. 016NB

Phased Reprovisioning of Cape Collinson Crematorium Environmental Impact Assessment Study

Contamination Assessment Plan

March 2008

	Name	Signature
Prepared & Checked:	Derek Lam	
Reviewed & Approved:	Freeman Cheung	

Version: 2	Date: 11 March 2008

The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and ENSR Asia (HK) Ltd. accepts no responsibility for its use by others.

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1 INTRODUCTION

Background

1.1 The existing Cape Collinson Crematorium (The Existing Crematorium) consists of four service halls with twelve cremators. The Existing Crematorium was first in use in 1962 and had several cremators upgraded in 1995 and 2001. To cope with the growing service demand while meeting the emission standards, the Food and Environmental Hygiene Department (FEHD) as the Project Proponent will replace all the existing cremators by new ones with higher capacity and more efficiency. The construction of the replacement crematorium was proposed in two phases. Phase 1 works involve the site formation work for the new crematorium, the construction of four new cremators and the provision of ancillary facilities. After commissioning of the four new cremators and their ancillary facilities, Phase 2 works will proceed to demolish the existing twelve cremators and construct six new cremators with ancillary facilities.

1.2 This "*Phased Reprovisioning of Cape Collinson Crematorium*" (The Project) is a designated project under Part I, Schedule 2, Item N4 of the *Environmental Impact Assessment Ordinance* (EIAO). In October 2007, Architectural Services Department (ArchSD), being the works agent commissioned ENSR Asia (HK) Limited (ENSR) to conduct Environmental Impact Assessment for the Project of which the area (Project Area) is shown in **Drawing No. 1.**

1.3 Potential land contamination resulting from the operation of the Existing Crematorium has been identified in the Project Profile (No. PP 338/2007). The Environmental Protection Department (EPD) issued the EIA Study Brief (No. ESB-177/2008) in January 2008 which demands a detailed assessment of land contamination impacts for the Project Area. This Contamination Assessment Plan (CAP) is to formulate the necessary investigation to address the potential land contamination concern associated with historic/current land uses in the Project Area. This CAP and the subsequent Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) (if required) will form part of the EIA Study and be included in the EIA Report.

Objectives

1.4 The objectives of this CAP are to:

(i) present the findings of the desktop study and site appraisals;
(ii) identify potential hotspots of land contamination for intrusive site investigation; and
(iii) propose a sampling and testing strategy for the site investigation.

2 ENVIRONMENTAL LEGISLATION, POLICIES, PLANS, STANDARDS AND CRITERIA

2.1 Three publications issued by EPD, "*Guidance Note for Contaminated Land Assessment and Remediation*" (referred to as Guidance Note 1), "*Guidance Notes for Investigation and Remediation of Contaminated Sites of: Petrol Filling Stations, Boatyards, and Car Repair /Dismantling Workshops*" (referred to as Guidance Note 2) and *Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management*" (referred to as Guidance Manual) provide guidance on land contamination assessment.

2.2 According to Guidance Note 2, Risk-based Remediation Goal (RBRG) shall be used as the criteria for assessing land contamination and as the remediation goals if remediation is required.

3 LAND CONTAMINATION SITE APPRAISAL

General Site Context

3.1 The Project Area is located at Cape Collinson Road, Eastern District near Buddhist Cemetery, with site area of about 2000m^2. The Existing Crematorium consists of four service halls for carrying out ceremonies, two cremation rooms consisting of twelve cremators and several offices.

3.2 The Existing Crematorium is bounded to west and south by six columbarium blocks and Hong Kong Electric substation. Cemeteries and Fung Wah Estate are at the west and north of the Existing Crematorium respectively.

Geology and Hydrogeology

3.3 According to the Hong Kong Geological Survey Map (Series: HGM20) – Sheet No. 11 (1:20,000 scale) on the solid and superficial geology of the Project Area, the Project Area is mainly underlain by Shing Mun Formation, undivided sedimentary and volcanic rock consisting of tuffite of Upper Jurassic Period of Mesozoic Era.

3.4 A review of previous ground investigation (GI) reports undertaken at or in vicinity of the Project Area was conducted at the Civil Engineering and Development Department's (CEDD) Geotechnical Information Library to obtain information about the geological and hydrogeological conditions of the Project Area. Details of the reviewed GI reports are listed below:

- *Agreement No. CE 9/95 Feature No. 11SE-D/F19 Chai Wan Ground Investigation Factual Fieldwork Report* by Bachy Soletanche Group in 1995. (CEDD's Geotechnical Information Unit Report No. 21583)
- *Slope No. 11SE-D/R2 Regional Council Crematorium, Tai Tam Road, H.K. Ground Investigation Factual Fieldwork Report* by Bachy Soletanche Group in 1999. (CEDD's Geotechnical Information Unit Report No. 30513)
- *Agreement No. CE 10/2004 (GE) 10-Year Extended LPM Project, Phase 5, Package D – Hong Kong Island Landslip Preventive Works on Government Slopes and Related Studies – Investigation, Design and Construction Feature No. 11SE-D/C71 Location: Cape Collinson Crematorium Final Factual Fieldwork Report* by Fugro Geotechnical Services Ltd. in 2006. (CEDD's Geotechnical Information Unit Report No. 42859)

3.5 With reference to the above GI reports, the area close to the Project Area is generally covered by a layer of fill materials/colluvium (~0.5m to 1.5m in thickness) composed of sandy SILT and clayey sandy SILT with occasional fine to medium gravel. It is then followed by a layer (~1.15m to 10.1m in thickness) of saprolitic soil (in the majority of fine ash vitric TUFF and sandy SILT) before reaching the lower variable decomposed rock (rock of grade IV with thickness of ~0.4m to 6m). In terms of the likelihood of migration of contaminants, fill materials (i.e. top soil layer) generally have higher permeability and therefore, ability of potential contaminant migration through this horizon is higher than downward migration.

3.6 According to the general topography of the Project Area and groundwater levels recorded in some of the reviewed GI reports, elevation of the groundwater level varies from +153mPD to +110mPD from hillside south to hillside north of the Existing Crematorium. The general groundwater pattern likely flows from south to north, i.e. from Tai Tam Road towards Fung Wah Estate.

Review of Historical Aerial Photographs

3.7 A review of historical aerial photographs (as shown in **Table 3.1**) available in the Survey and Mapping Office of Lands Department was undertaken. The aim of this review is to identify the landuses associated with potential contamination implication within or near the Project Area.

Table 3.1 Reviewed Historical Aerial Photographs

Year	Height (Ft.)	Photograph Reference No.
1945	20000	4062
1949	8600	6063
1961	30000	120
1963	2700	6979
1967	6250	5631
1972	13000	2289
1974	12500	9697
1976	4000	12673
1978	4000	23782
1980	4000	29864
1982	4000	40872
1984	4000	53720
1986	4000	A06043
1987	4000	A10339
1989	4000	A17812
1992	4000	A32626
1994	4000	CN6926
1996	4000	CN14150
1998	4000	CN21101
2000	4000	CN28278
2002	3500	CW39611
2004	4000	CW55553
2006	4000	CW72455
2007	3000	CW77143

3.8 As concluded from the review of aerial photographs, the location of the Existing Crematorium was open area until 1962 and residential houses were found in the location of current Fung Wah Estate. Six columbarium blocks were built successively from 1970s to 1990s. Tai Tam Gap Correctional Institution at the southeast of the Existing Crematorium was also built in 1972. Residential houses were demolished and Fung Wah Estate was built in 1980s. No major land uses changes of the Project Area were observed since then.

4 SITE INSPECTION AND OBSERVATIONS

4.1 A site visit to Cape Collinson Crematorium was conducted on 1 February 2008 to inspect and identify any potential contamination hotspots within the Project Area. There were four service halls for carrying out ceremonies, two cremation rooms with twelve cremators and a number of smaller structures such as offices. New Cape Collinson Garden of Remembrance, which was open in December 2007, was situated at the west of the Existing Crematorium.

4.2 A capacity of 15,000L underground storage tank (UST), located at the south of the Existing Crematorium, has been used for diesel storage. The diesel fuel stored in the UST was pumped via the underground pipeline to the aboveground storage tank (AST) which situated at ground floor of the Existing Crematorium serving the cremators thereby by gravity. The exact alignment of the underground pipeline was concealed and could not be identified visually or from the available as-built plans. As a follow-up, an enquiry on the alignment was made to ArchSD. During a site interview with the site person in charge (PIC) from Electrical and Mechanical Services Department (EMSD), there noted no reportable events of leakage concerning the fuel tanks and pipeline.

4.3 Twelve cremators were located in two cremation rooms at the ground floor of the Existing Crematorium. Floors of both cremation rooms were covered by intact ceramic tiles while the cremators were set up on concrete foundation. Diesel fuel was fed to the cremators from the AST via vertical pipelines that ran outside along the wall. The oil pipes ended behind the cremators where their connections were clad in metal plates. Given the limited space and burn hazard from the operating cremator for close inspection, it was not able to access to the pipe joint or coupling where their conditions or any signs of leakage were uncertain. The site PIC from EMSD expressed that small-scale leakage of fuel from the pipes happened occasionally inside the cremation room. There was no storage of chemicals or dangerous goods as told by the manager of the Crematorium and observation during site visit.

4.4 Six chimneys connected to the twelve cremators were located at the top roof of the Existing Crematorium. Some areas around the Existing Crematorium were landscaped with trees and shrubs while other areas were paved with intact concrete. No stain or odour was observed during site inspection.

4.5 **Table 4.1** summarizes the findings of site inspection and photographs taken during site inspection were shown in **Appendix A. Drawing No. 2** illustrates the layout of the Existing Crematorium.

Table 4.1 Findings of Site Inspection

Location	Site Observation	SI Proposed?
Underground Storage Tank	• Located at the south of Existing Crematorium with capacity of ~15,000L for fuel storage; • No leakage incident happened as told by site PIC from EMSD; • Fuel is pumped from the underground fuel tank to the aboveground storage tank via underground pipeline. Exact location of the pipeline was not clear. • As the UST has been used for more than 40 years, there was potential leakage from the tank via cracks to the ground, further site investigation is required.	Yes

Location	Site Observation	SI Proposed?
Aboveground Storage Tank	• Located inside the tank room at the ground floor of Existing Crematorium for fuel storage ; • Tank room covered by intact concrete floor with no stain observed during site visit; • Fuel was pumped from the underground tank via underground pipeline; • As the underground pipe had been used for more than 40 years, there was potential leakage of fuel from the pipe via cracks to the ground, further site investigation is required.	Yes
Cremation Room 1	• Located at the ground floor of Existing Crematorium ; • The floors were well covered by intact tiles with no stain observed; • The oil pipes ended behind the cremators where their connections were clad in metal plates. Given the limited space and burn hazard from the operating cremator for close inspection,. Therefore, any signs of leakage were uncertain. • It was told by PIC from EMSD that occasional leakage of fuel was suspected. Further site investigation is required.	Yes
Cremation Room 2	• Located at the ground floor of Existing Crematorium with one cremator; • The floors were covered by intact tiles with no stain observed; • It was told by PIC from EMSD that occasional leakage of fuel was suspected. Further site investigation is required.	Yes
East of Chimneys	• Some part of the ground was covered by intact concrete while some part of the area was landscaped with trees and shrubs; • Construction works may be conducted within these areas. As contaminants of stack emissions might deposit on the soil where the ground was unpaved, further site investigation is required.	Yes
South of Chimneys	• As no works would be carried out at the south of Existing Crematorium, disturbance of soil is not anticipated, site investigation is not proposed for area at the south of chimneys.	No
West of Chimneys	• Construction works may be conducted within these areas. As contaminants of stack emissions might deposit on the soil where the ground was unpaved, further site investigation is required.	Yes
North of Chimneys	• Some part of the ground was covered by intact concrete while some part of the area was landscaped with trees and shrubs; • As contaminants of stack emissions might deposit on the soil where the ground was unpaved, further site investigation is required	Yes

4.6 Other areas inside the Existing Crematorium, which were covered by intact tiles, were used as service halls and offices. Chemicals were seldom used inside these areas and thus potential land contamination is not likely. Site investigation is not recommended for these areas.

4.7 An interview with the manager of the Crematorium has conducted. A summary of past, current and anticipated future land uses for the Project Area is presented in **Table 4.2** below.

Table 4.2 Summary of On-site Land Use

Current Use

Study Area	Type of facility/ business	On-site property land use	Date began	Description of business process/ primary products	Owner or Occupier	Approximate size of on-site property (m^2)	Off-site property affected?
Existing Crematorium Building	Crematorium	Crematorium	1962	To cremate the remains	Food and Environmental Hygiene Department (FEHD)	~1500	Yes
Car Park	Car Park	Car Park		Vehicles parked on site		~400	No

Past Use

Are past uses different from current uses? √ Yes ____ No

Study Area	Type of facility/ business	On-site property land use	Date began	Date ended	Description of business process/ primary products	Owner or Occupier	Approximate size of on-site property (if different from current size) (m^2)	Off-site property affected?
Existing Crematorium Building	Open Area	Vacant	Unknown	1962	Vacant	Unknown	~1500	No
Car Park							~400	

Future Use

Are future uses different from current uses? √ Yes ____ No

Study Area	Type of facility/ business	On-site property land use	Description of business process/ primary products	Owner or Occupier	Approximate size of on-site property (m^2)
Existing Crematorium Building	New Crematorium Building	Crematorium	To cremate the remains	FEHD	~2200
Car Park					

5 SAMPLING PLAN FOR SITE INVESTIGATION

Sampling Locations

5.1 Ten sampling locations are proposed for the potential contamination hotspots mentioned in **Table 4.1,** except for the cremation rooms 1 and 2. . Locations of proposed sampling points are illustrated in **Drawing No. 3**. The strategy of selection of sampling locations are based on the site observation of stain/floor discolourisation, machine/chemical storage locations, areas with contaminative activities undertaken or information provided by site personnel during the interviews.

5.2 Four boreholes and one trial pit along the fuel tank system are proposed to investigate whether there is contamination around the fuel tank system due to seepage or leakage. Five sampling locations are proposed for surface soil sampling to investigate whether there is surface soil contamination associated with aerial depositions from stack emissions.

5.3 As the cremators are still in operation, it is not possible to carry out site investigation behind the cremators at this stage. To maintain uninterrupted cremation services, further site investigation in cremation rooms is proposed at the later stage in Phase 2 during/ after the demolition of the Existing Crematorium. A supplementary CAP, which details further site investigation and testing plan for the cremation rooms, shall be prepared for EPD endorsement. Findings of supplementary site investigation and appropriate remediation methods (if contamination found) shall be presented in the supplementary CAR/RAP for EPD approval before the commencement of any earthworks.

Requirements of Site Investigation

5.4 Underground utilities survey shall be conducted to locate/ identify any underground utilities at/ in vicinity of the proposed borehole locations prior to commencement of drilling works. The exact sampling locations of the SI shall be determined on site and subject to fine adjustment due to site specific conditions (e.g. locations, presence of foundations, underground utilities, delivery pipes and services). The locations shall be agreed with both the premise owner, the Architect and the land contamination specialist prior to drilling and sampling.

5.5 It should be noted that if serious contamination is revealed during SI, more sampling locations or more number of samples at the specific sampling points would be recommended to determine the exact extent of contamination. For the proposed trial pit, additional soil sample would be collected if contamination is found at the sample collected at 3m.

5.6 The selection of potential contaminants recommended for laboratory analysis at each proposed SI location is referenced to the EPD's "*Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/Dismantling Workshops*" and "*Guidance Note for Contaminated Land Assessment and Remediation*". **Table 5.1** presents the sampling and testing plan for the 10 locations proposed for SI at the Project Area.

Table 5.1 Sampling and Testing Plan

Locations	Proposed Sampling ID	Sampling Method	Sample Matrix		Testing Parameters				When to conduct?
					TPH	VOCs	Heavy Metals	Dioxins	
Fuel Tank System	BH1 – BH 4	Borehole to 2m below GW level or 6m bcl if no GW is encountered	Soil	0.5m bcl	Y	Y	Lead	-	In this Study
			Soil	1.5m bcl	Y	Y	Lead	-	
			Soil	At GW level or at 6m bcl	Y	Y	Lead	-	
			GW	If present	Y	Y	Lead	-	
	TP1	Trial pit to 3m bcl	Soil	Immediately below pipeline	Y	Y	Lead	-	In this Study
			Soil	Every 1m below pipeline	Y	Y	Lead	-	
			GW	If present	Y	Y	Lead	-	
West of Chimneys	S1	Surface soil sample to 0.5m of exposed areas	Soil	0.1m			Y	Y	In this Study
			Soil	0.5m (Subject to the test results of 0.1m sample)	-	-	Y	Y	
North of Chimneys	S2 – S3	Surface soil sample to 0.5m of exposed areas	Soil	0.1m	-	-	Y	Y	In this Study
			Soil	0.5m (Subject to the test results of 0.1m sample)	-	-	Y	Y	
East of Chimneys	S4 – S5	Surface soil sample to 0.5m of exposed areas	Soil	0.1m	-	-	Y	Y	In this Study
			Soil	0.5m (Subject to the test results of 0.1m sample)	-	-	Y	Y	

Notes:
bcl = below concrete layer; GW = groundwater; BH = borehole; TP=trial pit; S=surface sample; Y = testing proposed; TPH=Total Petroleum Hydrocarbons; VOCs=Volatile Organic Chemicals; SVOCs=Semi-volatile Organic Chemicals.
Details of the chemical parameters should be referred to Table 6.1.
This table should be read in conjunction with Drawing No. 3.

Sampling Method and Depth of Sampling

5.7 All soil boring and sampling should be supervised by a qualified land contamination specialist. Boreholes should be undertaken by means of dry rotary drilling method i.e. without the use of flushing medium. For safety reasons, an inspection pit should be excavated down to 1.5m below ground to inspect for underground utilities at the proposed borehole location. Disturbed soil samples should be collected at the depth of 0.5m and 1.5m below concrete slab. Soil boring using drill rigs should then be performed for depth from 1.5m to the maximum boring depth. Undisturbed U100/U76 (stainless steel) soil samples should be collected at the groundwater level, or 6m below concrete layer if no groundwater is encountered.

5.8 Trial pit should be excavated by means of hand tools to expose the soil under the fuel pipeline for sampling. Disturbed soil samples should be collected immediately below the pipeline and every 1m below the pipeline from trial pit by hand sampling.

5.9 Surface soil samples should be taken at 0.1m and 0.5m by hand tools. The second soil sample at 0.5m shall be analyzed if contamination is found at the 0.1m sample.

Strata Logging

5.10 Strata logging for boreholes or trial pit should be undertaken during the course of drilling/digging and sampling by a qualified geologist. The logs should include the general stratigraphic descriptions, depth of soil sampling, sample notation and level of groundwater (if encountered). The presence of rocks/boulders/cobbles discoloration, odour and foreign materials such as metals, wood and plastics should also be recorded. If trial pit is used, photographic records should be taken.

Free Product and Groundwater Level Measurement

5.11 The thickness of any free product and groundwater level if present at sampling locations should be measured with an interface probe. The free product if encountered in sufficient amount should be collected for laboratory analysis to determine the composition.

Groundwater Sampling

5.12 Groundwater samples shall be collected if groundwater is encountered at the sampling locations.

5.13 For each proposed borehole location, a groundwater sampling well should be installed into the boreholes prior to ground the commencement of sampling if groundwater is encountered or agreed by the land contamination specialist. After installation of the monitoring wells, the depth to water table and the thickness of free product (if exists) at all monitoring wells should be measured using an interface probe. Well developments (approximately five well volumes) should be carried out to remove silt and drilling fluid residue from the wells. The wells should then be allowed to stand for a day to permit groundwater conditions to equilibrate. Groundwater level and thickness of free product layer, if present, should be measured at each well before groundwater samples are taken.

5.14 Prior to groundwater sampling, the monitoring wells should be purged (at least three well volumes) to remove fine-grained materials and to collect freshly refilled representative groundwater samples. Time for each groundwater purging/recharge should be recorded as well as the estimated groundwater flow.

5.15 After purging, one groundwater sample should then be collected at each well using Teflon bailer and decanted into appropriate sample vials or bottles in a manner that minimises agitation and volatilisation of VOCs from the samples. All samples should be uniquely labeled.

5.16 Apart from boreholes, groundwater sample should be also collected at the trial pit if encountering groundwater during excavation. The trial pit should be pumped to near dry and

allowed to stand for 24 hours. Groundwater sample should be collected using decontaminated bucket.

5.17 Immediately after collection, groundwater samples should be transferred to new, clean, laboratory-supplied glass jars for sample storage/transport. The sampling jars should be of opaque type that minimizes any sunlight effect on the sample. Groundwater samples should be placed in the glass jars with zero headspace and promptly sealed with a septum-lined cap. All sample jars should be transported in ice chests where they are cooled and maintained at a temperature of around 0-4°C until delivered to the analytical laboratory.

Sampling Size and Decontamination Procedures

5.18 All equipment in contact with the ground should be thoroughly decontaminated between each excavation, drilling and sampling event to minimise the potential cross contamination. The equipment (including drilling pit, digging tools and soil/groundwater samplers) should be decontaminated by steam cleaning/ high-pressure hot water jet, and then washed by phosphate-free detergent and finally rinsed by distilled/deionized water.

5.19 Prior to sampling, the laboratory responsible for analysis should be consulted on the particular sample size and preservation procedures that are necessary for each chemical analysis. Extra soil samples shall be reserved for Toxicity Characteristics Leaching Procedure (TCLP) analysis, if it is required.

5.20 The sample containers should be laboratory cleaned, sealable, water-tight, made of glass or other suitable materials with aluminium or Teflon-lined lids, so that the container surface will not react with the sample or adsorb contaminants. No headspace should be allowed in the containers which contain samples to be analysed for VOCs, TPH or other volatile chemicals.

5.21 The containers should be marked with the sampling location codes and the depths at which the samples were taken. If the contents are hazardous, this should be clearly marked on the container and precautions taken during transport. Samples should be stored at between 0-4°C but never frozen. Samples should be delivered to laboratory within 24 hours of the samples being collected and analysed within 7 days upon delivery.

QA/QC Procedures

5.22 QA/QC samples shall be collected in the following frequency during the SI. Chain of Custody protocol shall be adopted.

- 1 equipment blank per 20 samples for full suite analysis.
- 1 field blank per 20 samples for full suite analysis.
- 1 trip blank per 20 samples for full suite of analysis.

5.23 From the proposed sampling plan, there should be at least 2 equipment blanks, 2 field blanks and 2 trip blanks to be collected under this Study.

Health and Safety Measures

5.24 The specific safety measures to be taken depend on the nature and content of contamination, the site conditions and the regulations related to site safety requirements. Workmen Compensation Insurance and third party insurance must be provided for the SI.

5.25 Extreme care should be exercised when toxic gases or other hazardous materials are encountered. Any abnormal conditions found shall be reported immediately to the safety officer and the land contamination specialist.

5.26 The SI contractor shall establish and maintain a Health and Safety Plan, before commencement of the SI, that will include the following:

(i) Instruction of works on work procedures, safe practices, emergency duties, and applicable regulations;

(ii) Regularly scheduled and impromptu meetings of the workers in which the possible hazards, problems of the job, and related safe practices are emphasized and discussed;
(iii) Good housekeeping practices; and
(iv) Availability of and instruction in the location, use and maintenance of personal protective equipment.

5.27 The SI Contractor shall maintain equipment and supplies reasonably required in an emergency, including lifesaving, evacuation, rescue and medical equipment in good working order and condition at all times. The SI Contractor shall use all reasonable means to control and prevent fires and explosions, injury to personnel and damage to equipment of property. Without limiting the foregoing, the SI Contractor shall:
(i) Maintain proper safety devices, barriers to minimise hazards during performance of the work;
(ii) Prohibit smoking and open flames and the carrying of matches and lighters;
(iii) Develop and maintain a written emergency plan applicable to the Work and Site;
(iv) Maintain equipment in good operating condition and have emergency and first aid equipment ready for immediate use, where applicable;
(v) Conduct equipment tests to ensure that equipment is properly placed and in good operating condition, and that workers are able to respond to emergency situations;
(vi) Require all workers employed or retained by the Contractor, or a subcontractor, to at all time wear clothing suitable for existing work, weather and environmental conditions; and
(vii) The personnel are required to wear respirator and gloves for vapour exposure protection, if necessary. Safety helmet and protective boots should be worn.

6 LABORATORY ANALYSIS

6.1 Laboratory analysis is proposed in order to assess the presence of potential contaminants that are of concern at the Site. **Table 6.1** summarises the parameters, detection limits and reference methods for the laboratory analyses of soil and groundwater samples for this Study.

Table 6.1 Preliminary Testing Parameters Proposed for Laboratory Analysis

Item	Parameter	Soil		Groundwater	
		Detection Limit (mg/kg) or otherwise stated	Reference Method	Detection Limit (mg/L) or otherwise stated	Reference Method
1	**Total Petroleum Hydrocarbons (TPH)**	C6 – C8: 5 C9 – C16: 200 C17 – C35: 500	USEPA 8015	C6 – C8: 0.02 C9 – C16: 0.5 C17 – C35: 0.5	USEPA 8015
2	**VOCs**				
	Benzene	0.2	USEPA 8260	0.001	USEPA 8260
	Toluene	0.2	USEPA 8260	0.002	USEPA 8260
	Ethylbenzene	0.2	USEPA 8260	0.002	USEPA 8260
	Meta & para Xylene	0.4	USEPA 8260	0.004	USEPA 8260
	Ortho xylene	0.2	USEPA 8260	0.002	USEPA 8260
3	**Heavy Metals**				
	Antimony	1	USEPA 6020	NA	NA
	Arsenic	1	USEPA 6020	NA	NA
	Barium	0.5	USEPA 6020	NA	NA
	Cadmium	0.2	USEPA 6020	NA	NA
	Chromium III	1	USEPA 6020	NA	NA
	Chromium VI	1	USEPA 6020	NA	NA
	Cobalt	0.5	USEPA 6020	NA	NA
	Copper	1	USEPA 6020	NA	NA
	Lead	1	USEPA 6020	NA	NA
	Manganese	1	USEPA 6020	NA	NA
	Mercury	0.05	USEPA 6020	0.05	USEPA 6020
	Molybdenum	1	USEPA 6020	NA	NA
	Nickel	1	USEPA 6020	NA	NA
	Tin	0.5	USEPA 6020	NA	NA
	Zinc	1	USEPA 6020	NA	NA
4	**Dioxins (I-TEQ)**	0.5 ug/kg	USEPA 8280A	NA	NA

Note:
NA: No test is required.

6.2 For sampling and laboratory analyses, chain of custody procedure shall be included as QC/QA procedure.

6.3 All laboratory analyses for soil and groundwater samples shall be conducted by laboratory accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS).

6.4 Extra soil samples shall be stored at 0-4°C and tested for Toxicity Characteristics Leaching Procedure (TCLP) before submission of Remediation Action Plan (RAP) if excavation and landfill disposal is identified as the last resort.

7 INTERPRETATION OF RESULTS FOR SITE INVESTIGATION

7.1 The results of the laboratory analyses shall be interpreted in accordance with and *Guidance Note for Contaminated Land Assessment and Remediation* (Guidance Note 1) and *Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repairing/Dismantling Workshops* (Guidance Note 2), published by EPD.

7.2 Risk-Based Remediation Goals (RBRGs) would be used as criteria for the soil and groundwater contamination assessment. The Guidance Manual launched by EPD on 15 August 2007 provides RBRGs for 4 types of land-uses including Urban Residential, Rural Residential, Industrial and Public Park. For each type of land-uses, a list of limits is provided for assessing land contamination purposes.

7.3 According to the Guidance Manual, land contamination data should be compared with the relevant RBRGs in accordance with the future land-use of the site. It is understood that the future site development will be crematorium. As workers are likely the group exposed to potential contaminated soil during excavation stage and maintenance works, RBRGs for Industrial is proposed to adopt as the land contamination assessment criteria. Relevant soil and groundwater Industrial RBRGs levels for this Study are presented in **Table 7.1**.

Table 7.1 RBRGs (Industrial) Values for Soil and Groundwater

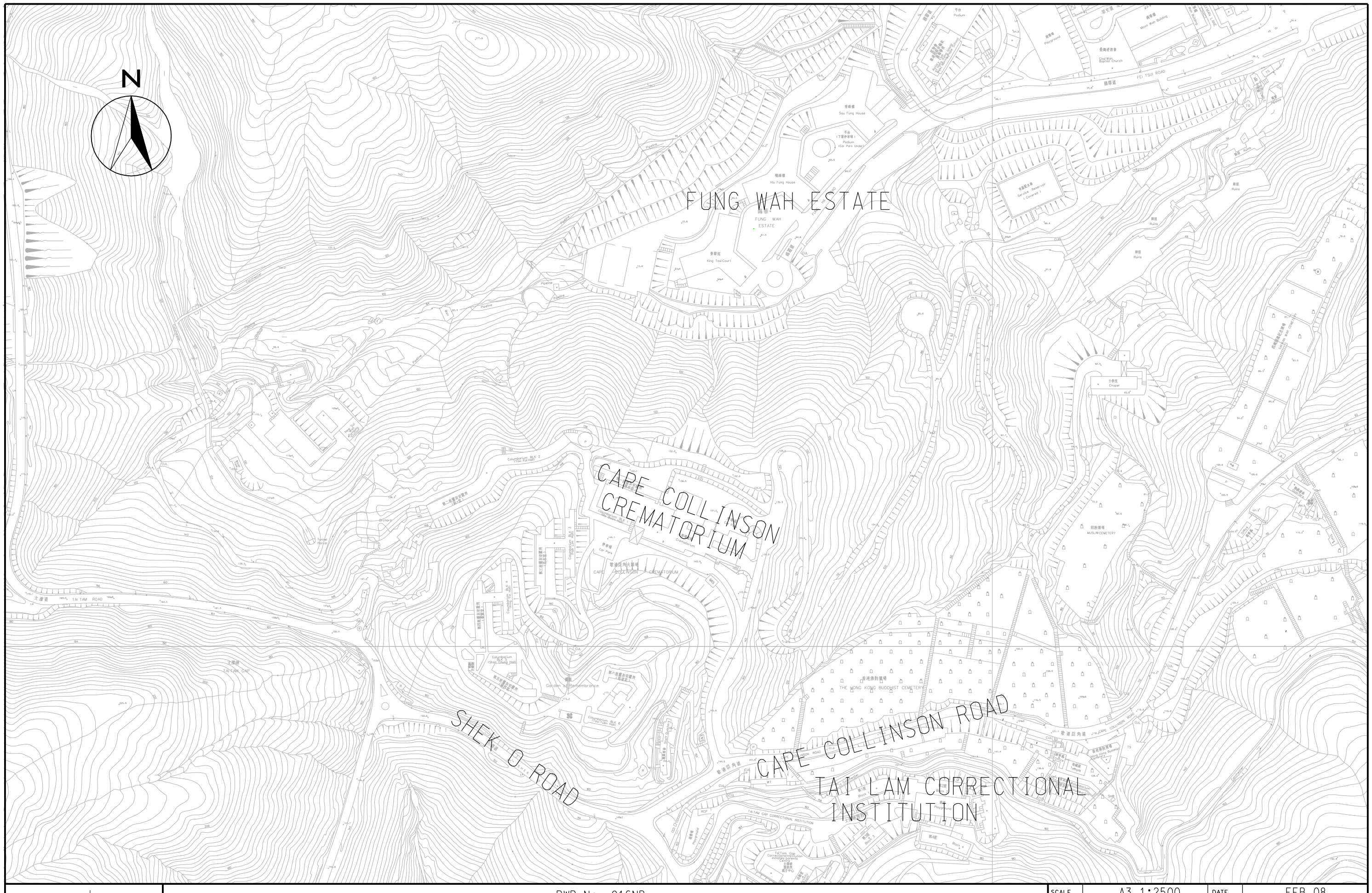
Parameter	Soil (mg/kg)		Groundwater(mg/L)	
	Industrial	Soil Saturation Limit	Industrial	Solubility Limit
VOCs				
Benzene	9.21	336	54	1,750
Toluene	10,000	235	10,000	526
Ethylbenzene	8,240	138	10,000	169
Xylenes (total)	1,230	150	1,570	175
Total Petroleum Hydrocarbons (TPH)				
C6-C8	10,000	1,000	1,150	5.23
C9-C16	10,000	3,000	9,980	2.8
C17-C35	10,000	5,000	178	2.8
Heavy Metals				
Antimony	261	NA	NA	NA
Arsenic	196	NA	NA	NA
Barium	10,000	NA	NA	NA
Cadmium	653	NA	NA	NA
Chromium III	10,000	NA	NA	NA
Chromium VI	1,960	NA	NA	NA
Cobalt	10,000	NA	NA	NA
Copper	10,000	NA	NA	NA
Lead	2,290	NA	NA	NA
Manganese	10,000	NA	NA	NA
Mercury	38.4	NA	6.79	NA
Molybdenum	3,260	NA	NA	NA
Nickel	10,000	NA	NA	NA
Tin	10,000	NA	NA	NA
Zinc	10,000	NA	NA	NA
Dioxins				
Dioxins (I-TEQ)	0.005	NA	NA	NA

7.4 A Contamination Assessment Report (CAR) shall be compiled following the SI. The CAR shall present the methodology used during the soil boring and sampling work, details of field observations, and interpretation of laboratory testing results for soil and groundwater contamination.

7.5 If land contamination is confirmed, a Remediation Action Plan (RAP) shall be drawn up to formulate necessary remedial measures. The subsequent CAR and RAP, as part of the EIA Study, shall be endorsed by EPD before implementation of any remediation work.

7.6 Since the cremators are still in operation, it is not possible to carry out site investigation inside the cremation rooms at this stage. Referring to Section 4.5, potential land contamination at cremation rooms would mainly due to fuel spillage and leakage from the cremators. Since there is no record of large scale spillage, only small scale spillage or leakage from the cremator are anticipated. Further site inspection is recommended during Phase 2 works of demolishing the existing cremators. Further the site inspection, a supplementary CAP shall be prepared for EPD endorsement to present detailed sampling and testing plan. Findings of site investigation and appropriate remediation methods shall be presented in supplementary CAR/ RAP for EPD endorsement prior to the commencement of any earthworks.

Drawings



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MAUNSELL
ENSR Asia (HK) Ltd

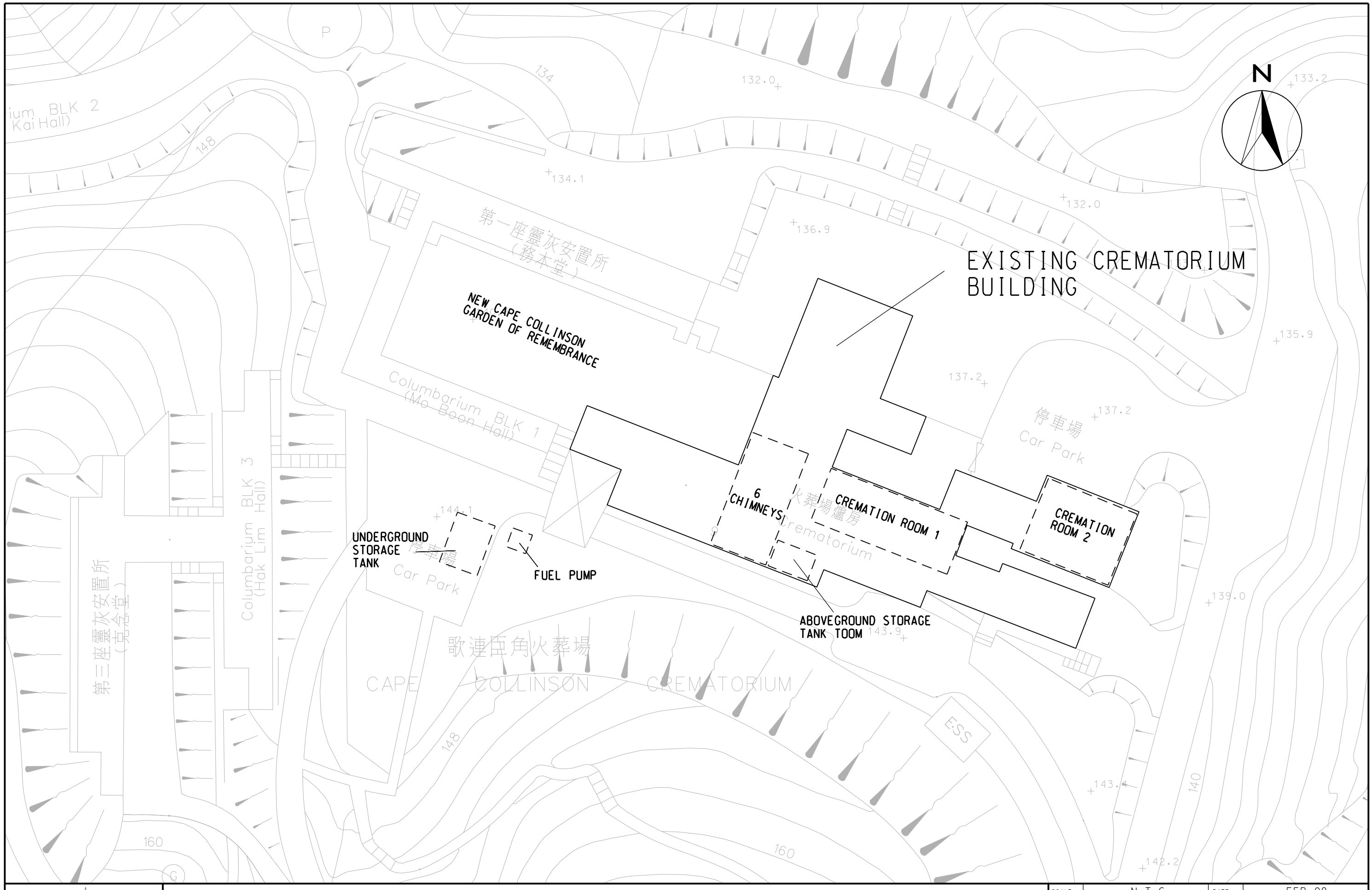
PWP No. 016NB

PHASED REPROVISIONING OF CAPE COLLINSON CREMATORIUM ENVIRONMETNAL IMPACT ASSESSEMENT STUDY

LOCATION PLAN

SCALE	A3 1:2500	DATE	FEB 08
CHECK	IWSL	DRAWN	CHKM
JOB No.	60028568	DRAWING No. 1	REV –

P:/60028568/1.01/CAD/Drawing/Report/CAP/DRAWING NO. 1.DGN



AECOM
ENSR
MAUNSELL
ENSR Asia (HK) Ltd

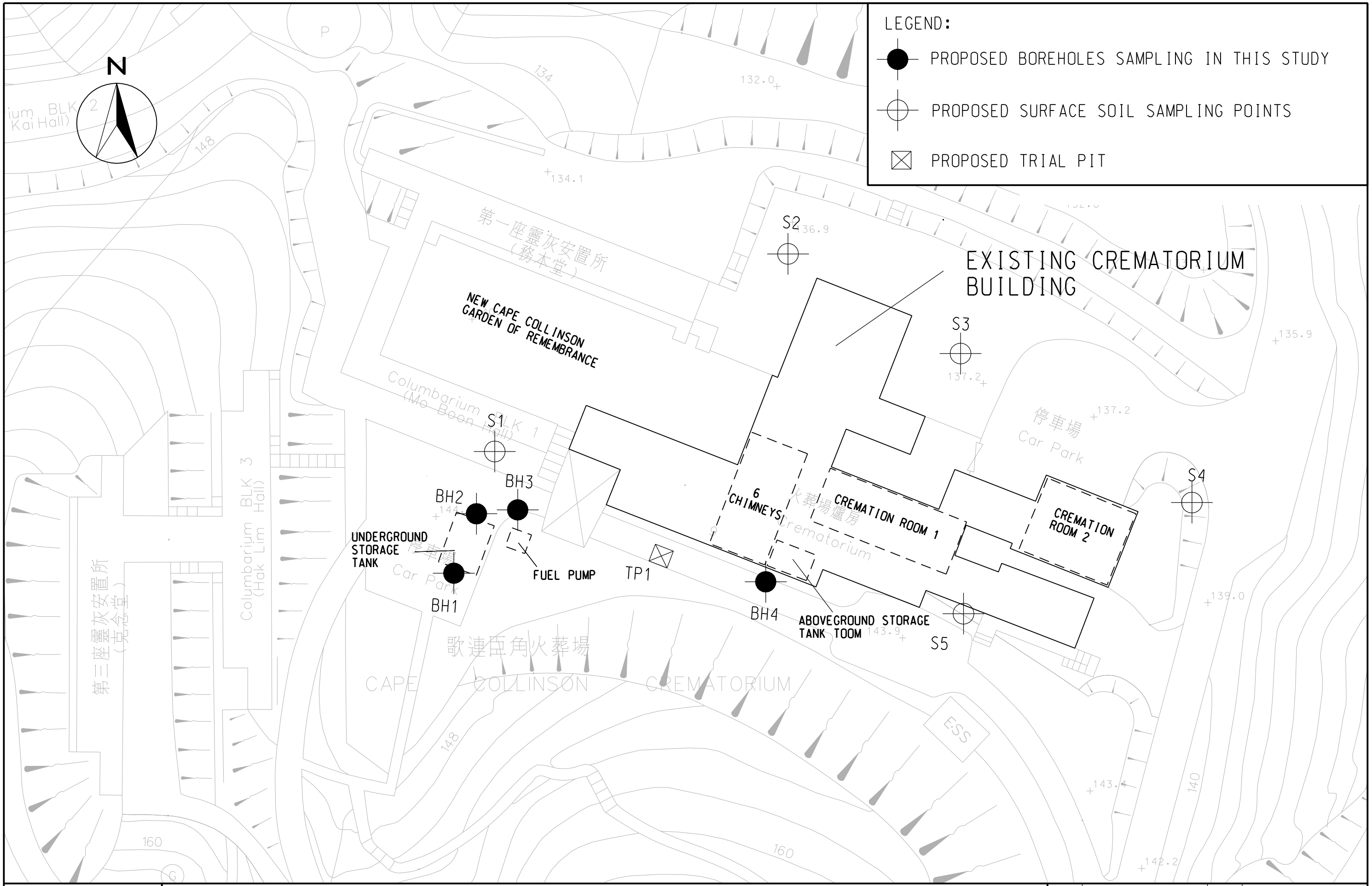
PWP No. 016NB

PHASED REPROVISIONING OF CAPE CLLINSON CREMATORIUM ENVIRONMENTAL IMPACT ASSESSMENT STUDY

STRUCTURAL LAYOUT OF THE EXISTING CREMATORIUM

SCALE	N.T.S.	DATE	FEB 08
CHECK	IWSL	DRAWN	CHKM
JOB No.	60028568	DRAWING No.	2
		REV	–

P:/60028568/1.01/CAD/Drawing/Report/CAP/DRAWING NO 2.DGN



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MAUNSELL
ENSR Asia (HK) Ltd

PWP No. 016NB
PHASED REPROVISIONING OF CAPE CLLINSON CREMATORIUM ENVIRONMENTAL IMPACT ASSESSMENT STUDY

PROPOSED SAMPLING LOCATIONS

SCALE	N.T.S.	DATE	FEB 08
CHECK	IWSL	DRAWN	CHKM
JOB No.	60028568	DRAWING No. 3	REV –

P:/60028568/1.01/CAD/Drawing/Report/CAP/DRAWING NO 3.DGN

Appendix A

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	Date:
1	Feb. 08

Direction Photo Taken:

South of Existing Crematorium

Description:

Underground Storage Tank System

With capacity of ~15,000L. It is used for diesel fuel storage. Stain was observed on intact concrete paved ground.

Photo No.	Date:
2	Feb. 08

Direction Photo Taken:

South Portion of Existing Crematorium

Description:

Aboveground Storage Tank

Located at the ground floor of Crematorium. For diesel fuel storage. No stain was observed on intact concrete paved ground.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	Date:
3	Feb. 2008

Direction Photo Taken:

West of Chimneys

Description:

A total of 6 chimneys connected to 12 cremators were located at the roof of existing crematorium.

Photo No.	Date:
4	Feb. 2008

Direction Photo Taken:

East of Chimneys

Description:

Some area was landscaped with shrubs and trees. Stack emissions may deposit on exposed soil.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
5	Feb. 2008

Direction Photo Taken:

North of Chimneys

Description:

Some area was landscaped with shrubs and trees. Stack emissions may deposit on exposed soil.

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AERIAL PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
A	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. 6063 dated 1949)

Crematorium has not yet been built. The area was left open.

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AERIAL PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
B	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. 6979 dated 1963)

Crematorium has been built.

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AERIAL PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
C	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. 9697 dated 1974)

Columbarium Blocks 1 and 2 have been built.

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ENSR Asia (HK) Ltd

AERIAL PHOTOGRAPHIC LOG

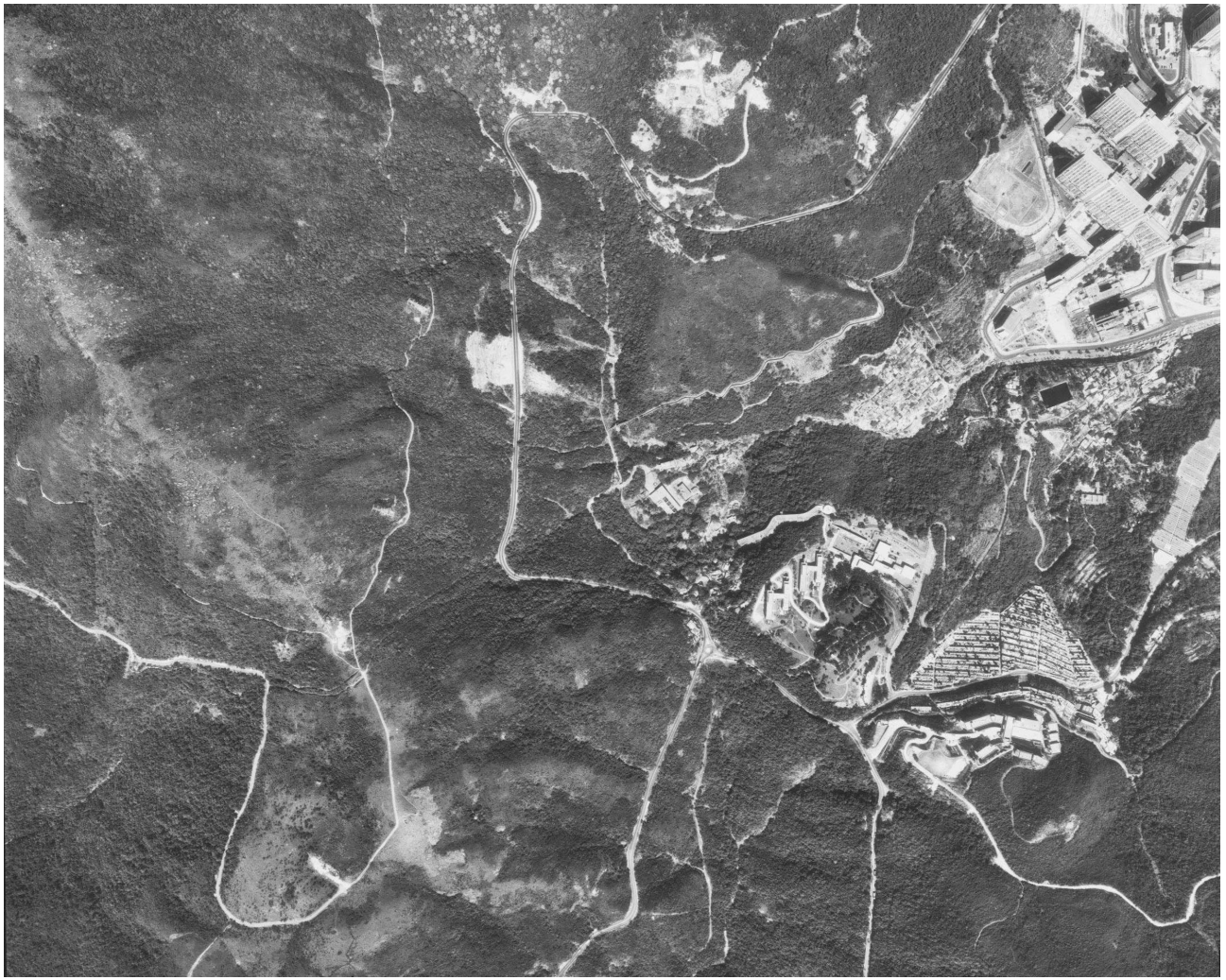
Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
D	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. 53720 dated 1984)

Columbarium Blocks 3 and 4 have been built.



AECOM
ENSR
MAUNSELL
ENSR Asia (HK) Ltd

AERIAL PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
E	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. CN14150 dated 1996)

Residential houses in the north of crematorium were demolished and Fung Wah Estate has been built on it. Columbarium Block 5 and 6 have also been built.

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AERIAL PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Architectural Services Department	Cape Collinson Crematorium	60028568

Photo No.	**Date:**
F	Feb. 2008

Description:

(Extracted from aerial photo Ref. No. CW77143 dated 2007)

No major land use changes were observed.

APPENDIX B

PHOTOPGRAPHIC RECORD OF SITE INSPECTION ON 7 MARCH 2014 AND 14 MARCH 2014

Appendix B – Photographic record of Site inspection on 7 March 2014 and 14 March 2014

Description: Location of Additional Underground Oil Tank (AUOT) (Taken on 7 March 2014)	**Description: Location of Additional Underground Oil Tank (AUOT) (Taken on 14 March 2014)**

APPENDIX C

REPORT ON UNKNOWN UNDERGROUND OIL TANK FOUND ON SITE ON 24 FEBRUARY 2014

Unknown U/G Oil Tank Found on Site on 24th February 2014

APPENDIX D

LABORATORY TESTING REPORT FOR THE OIL SAMPLE COLLECTED FROM AUOT

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

ATTN: **Ms. Ivy Tam**

Laboratory No.:	20444
Date of Issue:	2014-06-12
Date Received:	2014-05-09
Date Tested:	2014-06-09
Date Completed:	2014-06-12
Page:	1 of 1

Sample Description : 1 sample as received by customer said to be oil
Project No : LC14018
Project Name : Land Contamination Assessment for Underground Oil Tank at Cape Collinson Crematorium
Custody No. : LC14018/20140509
Sampling Date : 2014-05-09

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	Total Petroleum Hydrocarbons (C6-C8)	In-house method SOP139 (Purge and trap GC/MSD)	0.006 mg/L
2	Total Petroleum Hydrocarbons (C9-C16)	In-house method SOP141 (GC/FID/MSD)	0.2 mg/L
3	Total Petroleum Hydrocarbons (C17-C35)		0.475 mg/L

Results:

Sample ID	Oil
Sample Number	20444-1
Total Petroleum Hydrocarbons (C6-C8), mg/L	<0.006
Total Petroleum Hydrocarbons (C9-C16), mg/L	180,000
Total Petroleum Hydrocarbons (C17-C35), mg/L	840,000

Remark: 1) < = less than
**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

ATTN: **Ms. Ivy Tam**

Laboratory No.:	20444A
Date of Issue:	2014-06-12
Date Received:	2014-05-09
Date Tested:	2014-06-09
Date Completed:	2014-06-12
Page:	1 of 4

Sample Description : 1 sample as received by customer said to be oil
Project No : LC14018
Project Name : Land Contamination Assessment for Underground Oil Tank at Cape Collinson Crematorium
Custody No. : LC14018/20140509
Sampling Date : 2014-05-09

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
1	1,1-dichloroethene	In-house method SOP 116 (Purge and Trap GC/MSD)	0.2 µg/L
2	Acetone		100 µg/L
3	Dichloromethane		0.2 µg/L
4	Methyl Tert-Butyl Ether		5 µg/L
5	trans-1,2-dichloroethene		0.2 µg/L
6	1,1-dichloroethane		0.2 µg/L
7	2-butanone		5 µg/L
8	2,2-dichloropropane		0.2 µg/L
9	cis-1,2-dichloroethene		0.2 µg/L
10	Chloroform		0.1 µg/L
11	1,1,1-trichloroethane		0.2 µg/L
12	1,1-dichloropropene		0.2 µg/L
13	Carbon Tetrachloride		0.2 µg/L
14	Benzene		0.2 µg/L
15	1,2-dichloroethane		0.2 µg/L
16	Trichloroethylene		0.2 µg/L
17	1,2-dichloropropane		0.2 µg/L
18	Dibromomethane		0.2 µg/L
19	Bromodichloromethane		0.1 µg/L
20	cis-1,3-dichloropropylene		0.2 µg/L

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

Laboratory No.:	20444A
Date of Issue:	2014-06-12
Date Received:	2014-05-09
Date Tested:	2014-06-09
Date Completed:	2014-06-12

Test Requested & Methodology:

Item	Parameters	Ref. Method	Limit of Reporting
21	Toluene	In-house method SOP 116 (Purge and Trap GC/MSD)	0.2 µg/L
22	trans-1,3-dichloropropylene		0.2 µg/L
23	1,1,2-trichloroethane		0.2 µg/L
24	Tetrachloroethene		0.2 µg/L
25	1,3-dichloropropane		0.2 µg/L
26	Dibromochloromethane		0.2 µg/L
27	1,2-dibromoethane		0.2 µg/L
28	Chlorobenzene		0.2 µg/L
29	Ethylbenzene		0.2 µg/L
30	1,1,1,2-tetrachloroethane		0.2 µg/L
31	m-xylene and o-xylene		0.4 µg/L
32	p-xylene		0.2 µg/L
33	Styrene		0.2 µg/L
34	Bromoform		0.1 µg/L
35	Isopropylbenzene		0.2 µg/L
36	1,1,2,2-tetrachloroethane		0.2 µg/L
37	Bromobenzene		0.2 µg/L
38	1,2,3-trichloropropane		0.2 µg/L
39	n-propylbenzene		0.2 µg/L
40	2-chlorotoluene		0.2 µg/L
41	1,3,5-trimethylbenzene		0.2 µg/L
42	4-chlorotoluene		0.2 µg/L
43	tert-butylbenzene		0.2 µg/L
44	1,2,4-trimethylbenzene		0.2 µg/L
45	sec-butylbenzene		0.2 µg/L
46	p-isopropyltoluene		0.2 µg/L
47	1,3-dichlorobenzene		0.2 µg/L
48	1,4-dichlorobenzene		0.2 µg/L
49	n-butylbenzene		0.2 µg/L
50	1,2-dichlorobenzene		0.2 µg/L
51	1,2-dibromo-3-chloropropane		0.2 µg/L
52	1,2,4-trichlorobenzene		0.2 µg/L
53	Hexachlorobutadiene		0.2 µg/L
54	Naphthalene		0.2 µg/L
55	1,2,3-trichlorobenzene		0.2 µg/L

****

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Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Laboratory No.:	20444A
Date of Issue:	2014-06-12
Date Received:	2014-05-09
Date Tested:	2014-06-09
Date Completed:	2014-06-12

Results:

Sample ID	Oil
Sample Number	20444-1
1,1-dichloroethene, µg/L	<0.2
Acetone, µg/L	<100
Dichloromethane, µg/L	<0.2
Methyl Tert-Butyl Ether, µg/L	<5
trans-1,2-dichloroethene, µg/L	<0.2
1,1-dichloroethane, µg/L	<0.2
2-butanone, µg/L	<5
2,2-dichloropropane, µg/L	<0.2
cis-1,2-dichloroethene, µg/L	<0.2
Chloroform, µg/L	<0.1
1,1,1-trichloroethane, µg/L	<0.2
1,1-dichloropropene, µg/L	<0.2
Carbon Tetrachloride, µg/L	<0.2
Benzene, µg/L	<0.2
1,2-dichloroethane, µg/L	<0.2
Trichloroethylene, µg/L	<0.2
1,2-dichloropropane, µg/L	<0.2
Dibromomethane, µg/L	<0.2
Bromodichloromethane, µg/L	<0.1
cis-1,3-dichloropropylene, µg/L	<0.2
Toluene, µg/L	<0.2
trans-1,3-dichloropropylene, µg/L	<0.2
1,1,2-trichloroethane, µg/L	<0.2
Tetrachloroethene, µg/L	<0.2
1,3-dichloropropane, µg/L	<0.2
Dibromochloromethane, µg/L	<0.2
1,2-dibromoethane, µg/L	<0.2
Chlorobenzene, µg/L	<0.2
Ethylbenzene, µg/L	<0.2
1,1,1,2-tetrachloroethane, µg/L	<0.2

Remark: 1) < = less than

****

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Website: www.wellab.com.hk

TEST REPORT

Laboratory No.:	20444A
Date of Issue:	2014-06-12
Date Received:	2014-05-09
Date Tested:	2014-06-09
Date Completed:	2014-06-12
Page:	4 of 4

Results:

Sample ID	Oil
Sample Number	20444-1
m-xylene and o-xylene, µg/L	<0.4
p-xylene, µg/L	<0.2
Styrene, µg/L	<0.2
Bromoform, µg/L	<0.1
Isopropylbenzene, µg/L	<0.2
1,1,2,2-tetrachloroethane, µg/L	<0.2
Bromobenzene, µg/L	<0.2
1,2,3-trichloropropane, µg/L	<0.2
n-propylbenzene, µg/L	<0.2
2-chlorotoluene, µg/L	<0.2
1,3,5-trimethylbenzene, µg/L	<0.2
4-chlorotoluene, µg/L	<0.2
tert-butylbenzene, µg/L	<0.2
1,2,4-trimethylbenzene, µg/L	<0.2
sec-butylbenzene, µg/L	<0.2
p-isopropyltoluene, µg/L	<0.2
1,3-dichlorobenzene, µg/L	<0.2
1,4-dichlorobenzene, µg/L	<0.2
n-butylbenzene, µg/L	<0.2
1,2-dichlorobenzene, µg/L	<0.2
1,2-dibromo-3-chloropropane, µg/L	<0.2
1,2,4-trichlorobenzene, µg/L	<0.2
Hexachlorobutadiene, µg/L	<0.2
Naphthalene, µg/L	<0.2
1,2,3-trichlorobenzene, µg/L	<0.2

Remark: 1) < = less than

**********END OF REPORT**********

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APPENDIX E

SUPPORTING DOCUMENT FOR REACTIVATING WASTE ACCOUNT IN YEAR 2010

PRODUCER COPY)

ORDER # : 1406190038

ECOSPACE LIMITED DELIVE

CHEMICAL WASTE CONTAINER RECEIPT

HIS IS TO ACKNOWLEDGE RECEIPT FROM ECOSPACE LIMITED:

CWTFID	DESCRIPTION		QTY
L0436641	200 LITRE CARBON STEEL	X	30

COMPANY NAME :
CHEUNG HING CONSTRUCTION CO LTD

ACCOUNT NO. : C3110-19

ADDRESS :
CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN. HK

CONTACT NAME : MR HO LONG

TELEPHONE NO : 25722384

DATE : 19-JUN-2014

ECOSPACE STAFF INITIAL :

CHEUNG HING CONSTRUCTION CO. LTD. Contract No. SSW127

PRINTED ON : 18-JUN-2014

PRODUCER COPY)

ORDER # : 1406200016

ECOSPACE LIMITED DELIVE

CHEMICAL WASTE CONTAINER RECEIPT

THIS IS TO ACKNOWLEDGE RECEIPT FROM ECOSPACE LIMITED:

CWTFID	DESCRIPTION		QTY
10436642	200 LITRE CARBON STEEL	X	15

COMPANY NAME :
CHEUNG HING CONSTRUCTION CO LTD

ACCOUNT NO. : C3110-19

ADDRESS :
CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN. HK

CONTACT NAME : MR HO LONG

TELEPHONE NO : 25722384

DATE : 20-JUN-2014

ECOSPACE STAFF INITIAL :

T. S. Cotton

PRINTED ON : 19-JUN-2014

PRODUCER COPY)

ORDER # : 1406200015

ECOSPACE LIMITED DELIVE

CHEMICAL WASTE CONTAINER RECEIPT

THIS IS TO ACKNOWLEDGE RECEIPT FROM ECOSPACE LIMITED:

CWTFID	DESCRIPTION		QTY
10436641	200 LITRE CARBON STEEL	X	20

COMPANY NAME :
CHEUNG HING CONSTRUCTION CO LTD

ACCOUNT NO. : C3110-19

ADDRESS :
CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN. HK

CONTACT NAME : MR HO LONG

TELEPHONE NO : 25722384

DATE : 20-JUN-2014

ECOSPACE STAFF INITIAL :

T. S. Cotton

PRINTED ON : 19-JUN-2014

CHEMICAL WASTE 化學廢物 NO.: 10436641

Chemical name, Common name 化學名稱或普通名稱

SPENT DIESEL
廢油渣

Waste type and Code 廢物種類及代號

HARMFUL C06 L43
有害

Particular Risks 危險情況

* HARMFUL BY INHALATION AND IF SWALLOWED

* 吸入或吞食後都對人體有害。

Name, Address and Telephone No of Waste producer
廢物產生者姓名地址及電話

CHEUNG HING CONSTRUCTION CO LTD
(---)

CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN HK

;

Contact: MR HO LONG (---)
Tel.No.: 96723470

Safety Precautions 安全措施

* AVOID CONTACT WITH SKIN AND EYES

* 避免沾及皮膚和眼睛。

CHEMICAL WASTE 化學廢物 NO.: 10436641

Chemical name, Common name 化學名稱或普通名稱

SPENT DIESEL
廢油渣

Waste type and Code 廢物種類及代號

HARMFUL C06 L43
有害

Particular Risks 危險情況

* HARMFUL BY INHALATION AND IF SWALLOWED

* 吸入或吞食後都對人體有害。

Name, Address and Telephone No of Waste producer
廢物產生者姓名地址及電話

CHEUNG HING CONSTRUCTION CO LTD
(---)

CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN HK

;

Contact: MR HO LONG (---)
Tel.No.: 96723470

Safety Precautions 安全措施

* AVOID CONTACT WITH SKIN AND EYES

* 避免沾及皮膚和眼睛。

CHEMICAL WASTE 化學廢物 NO.: 10436642

Chemical name, Common name 化學名稱或普通名稱

SPENT DIESEL W/ DETERGENT
廢柴油含清潔劑

Waste type and Code 廢物種類及代號

HARMFUL C06 L43
有害

Particular Risks 危險情況

* HARMFUL BY INHALATION AND IF SWALLOWED

* 吸入或吞食後都對人體有害。

Name, Address and Telephone No of Waste producer
廢物產生者姓名地址及電話

CHEUNG HING CONSTRUCTION CO LTD
(---)

CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN HK

;

Contact: MR HO LONG (---)
Tel.No.: 96723470

Satety Precautions 安全措施

* AVOID CONTACT WITH SKIN AND EYES

* 避免沾及皮膚和眼睛。

CHEMICAL WASTE 化學廢物 NO.: 10436642

HARMFUL
有害

Chemical name, Common name 化學名稱或普通名稱

SPENT DIESEL W/ DETERGENT
廢柴油含清潔劑

Waste type and Code 廢物種類及代號

HARMFUL C06 L43
有害

Particular Risks 危險情況

* HARMFUL BY INHALATION AND IF SWALLOWED

* 吸入或吞食後都對人體有害。

Name, Address and Telephone No of Waste producer
廢物產生者姓名地址及電話

CHEUNG HING CONSTRUCTION CO LTD
(---)

CAPE COLLINSON CREMATORIUM
9 CAPE COLLINSON RD
CHAI WAN HK

;

Contact: MR HO LONG (---)
Tel.No.: 96723470

Satety Precautions 安全措施

* AVOID CONTACT WITH SKIN AND EYES

* 避免沾及皮膚和眼睛。

19.06.2014

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DANGER : CHEMICAL WASTE
危險勿近 : 化學廢物
20.06.2014