

## ***Appendix 5.1b***

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### ***Approved Contamination Assessment Plan (CAP) for ex-GFS Building***



土木工程拓展署

Civil Engineering and Development Department  
Kowloon Development Office

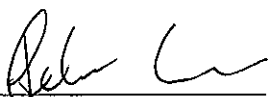
Agreement No. CE 35/2006 (CE)

## **Kai Tak Development Engineering Study cum Design and Construction of Advance Works – Investigation, Design and Construction**

Revised Contamination Assessment Plan (CAP)  
For Ex-Government Flying Services Building (Rev.3)

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**MAUNSELL CONSULTANTS ASIA LTD**

**Agreement No. CE 35/2006(CE)  
Kai Tak Development Engineering Study  
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– Investigation, Design and Construction**

**REVISED CONTAMINATION ASSESSMENT PLAN  
FOR EX-GOVERNMENT FLYING SERVICES BUILDING (REV. 3)**

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## 1 INTRODUCTION

### 1.1 Background

- 1.1.1 The former Kai Tak airport started its operation since 1920s and was replaced by the new airport at Chek Lap Kok in 1998. The airport is located at south east Kowloon and comprised of the north and south aprons and the runway areas extending into the Kowloon Bay. This former airport covered a total land area of about 260 hectares, of which the land area other than the north apron is about 96 hectares.
- 1.1.2 The North Apron area of Kai Tak Airport had been assessed for land contamination under the Agreement No. CE 86/97 (South East Kowloon Development at Kai Tak Airport – Design and Construction for Decontamination and Site Preparation) and were cleaned up from 1998 to 2002, except the area affected by the then occupied ex-Passenger Terminal Building and Multi-Storey Carpark Building, which is being cleaned up at present.
- 1.1.3 Recently, the sources of potential land contamination within the South Apron area has been identified and assessed under the *Agreement KDO 02/05 Assessment of Possible Land Contamination Associated with Decommissioned Fuel Pipeline and Hydrant System at South Apron of Former Kai Tak Airport*. Potential contaminated hotspots associated with fuel pipeline and hydrant system at the South Apron were identified and assessed under this Agreement.
- 1.1.4 Following the *EIA Study Brief for Kai Tak Development (ESB-152/2006)*, the present investigation is to assess the extent of residual land contamination associated with the historical operation of the former Kai Tak Airport. Radar Station and ex-Government Flying Services (ex-GFS) building were found to be within the planning boundary of the Kai Tak development and required investigation in details. This Contamination Assessment Plan (CAP) is specifically prepared to cover only the ex-GFS building as shown in **Drawing 1.1**.

### 1.2 Objectives

- 1.2.1 The objectives of this CAP are to (1) present the findings of the desk study and site appraisal to review past and present land use activities that may lead to land contamination, (2) identify potential hotspots of land contamination for intrusive site investigation, and (3) propose a sampling and testing strategy for the site investigation. In addition, in accordance with *Section 3.4.10.4 of the EIA Study Brief for Kai Tak Development (ESB-152/2006)*, this CAP is submitted to seek endorsement from the EPD.
- 1.2.2 On endorsement of this CAP, a contaminated land investigation and assessment will be undertaken accordingly and a Contamination Assessment Report (CAR) will be prepared based on the site investigation results. Should significant contamination is identified within the study area, a Remediation Action Plan (RAP) will be prepared as required in *3.4.10.5 of the EIA Study Brief for Kai Tak Development (ESB-152/2006)*, for formulation of necessary remedial measures.



## **2 ENVIRONMENTAL STANDARDS AND NON-STATUTORY GUIDELINES**

- 2.1.1 Assessment of land contamination sources and the potential impacts to particular development projects should be in accordance with *Professional Persons Environmental Consultative Committees Practice Note 3/94 – Contaminated Land Assessment and Remediation (ProPECC PN 3/94)* and *Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair /Dismantling Workshop (Guidance Notes)* issued by Environmental Protection Department (EPD). In Hong Kong, the “Dutch List” is generally referenced as the criteria for assessing soil and groundwater contamination under the ProPECC PN3/94.



### 3 LAND CONTAMINATION SITE APPRAISAL

#### 3.1 General Site Context

- 3.1.1 The study area covered by this CAP is approximately 17,000m<sup>2</sup> and it is located next to the Radar Station of the former Kai Tak Airport. Surrounding environment of the study area is mainly industrial and commercial landuses as shown in **Drawing 3.1**. In general, the study area consists of (a) ex-GFS hangar, (b) an underground fuel storage tank, (c) a dangerous goods store, (d) a playground (previously used as an car parking area), and (d) a grassland (previously used as a tennis court), as depicted in **Drawing 3.2**.

#### 3.2 Geology and Hydrogeology

##### ***Site Geology and Superficial Geological Deposits***

- 3.2.1 The subsurface geology is important as contaminants, especially those associated with petroleum hydrocarbon products such as gasoline, fuels and oils, may enter the soil and groundwater through spills or leaks and migrate through the underground medium for some distances. 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 Site, the superficial geology of the Site is FILL and SANITARY FILL which are mainly composed of natural earth and waste. Fill materials generally have higher permeability and the ability of potential contaminant migration through this horizon is relatively high.

##### ***Review of Previous Ground Investigation Reports***

- 3.2.2 A review of reports from previous ground investigation (GI) undertaken at or in the vicinity of the Study Area (kept in the CEDD Geotechnical Information Library) was conducted to obtain available information about the geological and hydrogeological conditions of the study area. The GI reports reviewed are as follows:
- *Ground Investigation: Item 63AA, RHKAAF Relocation Site Investigation Report by Bachy Soletanche Group Hong Kong (1990) (CEDD's Geotechnical Information Unit Report No.13488).*
  - *Airfield Surface Detection Radar at Kowloon Bay Final Report of Site Investigation by Enpack (H.K.) Ltd (1983) (CEDD's Geotechnical Information Unit Report No.3650).*
  - *New Central Materials Test Laboratory Site Investigation Report by Bachy Soletanche Group Hong Kong (1983) (CEDD's Geotechnical Information Unit Report No. 4784).*
  - *Site Investigation: 3030 GG In Category AB of Public Works Programme Vehicle examination centre, Kowloon Bay by Bachy Soletanche Group Hong Kong (1983) (CEDD's Geotechnical Information Unit Report No. 10923).*
  - *Site Investigation:New Tilt Test Platform Vehicle Inspection Centre, Kowloon Bay by Bachy Soletanche Group Hong Kong (1983) (CEDD's Geotechnical Information Unit Report No. 7756).*
  - *Assessment of Possible Land Contamination Associated with Decommissioned Fuel Pipeline and Hydrant System at South Apron of Former Kai Tak Airport, Kowloon Final Factual Fieldwork Report by Fugro Geotechnical Services Ltd (2006). (CEDD's Geotechnical Information Unit Report No.43073).*
- 3.2.3 With reference to the GI reports, the general geological sequence around the Study Area was concrete, fill, marine deposit or alluvium, highly or completely decomposed granites. The layer of concrete encountered at each drillhole location was determined to be around 0.3m to 0.7m.

- 3.2.4 According to the groundwater levels recorded in some of the reviewed GI reports, the groundwater level varied from +1.7mPD near the ex-GFS building to +1.3mPD near the Central Materials Test Laboratory. The general groundwater pattern is thus likely flows from northwest to southeast. It was anticipated that the groundwater level was around 2m to 5m below ground at the Study Area.

### 3.3 Review of Historical Aerial Photographs

- 3.3.1 A review of historical aerial photographs (**Table 3.1**) covering the Study Area has been undertaken. The aim of this review is to evaluate any land use changes associated with potential contamination implication within the Study Area.

**Table 3.1 Reviewed Historical Aerial Photographs**

Year	Photograph References	Height (ft)
1959	0289	40000
1967	5571	6250
1983	49904	4000
1991	A27411	4000
1992	A30387	4000
1993	CN3182	4000
1998	CN21315	4000
2000	CN27476	4000
2004	CW55568	4000
2006	CW72470	4000

*Source of historical aerial photographs: Survey and Mapping Office, Lands Department.*

- 3.3.2 The findings of the review of historical aerial photographs are summarized as follows:

#### **Year 1959**

- The earliest aerial photograph that is relevant to the Study Area was taken in 1959. As shown from the aerial photograph, the Study Area was sea in 1959.

#### **Year 1967**

- The area where the ex-GFS building situated was found to be reclaimed in 1967.

#### **Year 1983**

- Some building blocks had been constructed at the site of ex-GFS building in 1983. According to the relevant land survey map reviewed in the Mapping Office, those building blocks were Kai Fook Temporary Housing Area.

#### **Year 1991**

- Kai Fook Temporary Housing Area was decommissioned in 1991.

#### **Year 1992**

- The ex-GFS building was constructed in 1992.

#### **Year 1993**

- Small planes and helicopter were found outside the ex-GFS building in 1993.

#### **Year 1998**

- No helicopter or small planes was found around the Study Area in 1998. The layout of the Study Area was apparently the same as in 1993.

#### **Year 2000-2006**

- No apparent change of the layout of the Study Area was observed.

- 3.3.3 As concluded from the review of aerial photographs, the ex-GFS building had been constructed for more than 10 years. No significant changes of site layout were observed

since 1992.

### **3.4 Acquisition of Relevant Information from Government Departments**

#### ***Environmental Protection Department (EPD)***

- 3.4.1 Inquiry letter has been sent to EPD to acquire information about the registered Chemical Waste Producer(s) and records of accidents of spill/leakage of chemical within the Study Area.
- 3.4.2 According to the information provided by EPD, there have been 3 registered chemical waste producers within the ex-GFS building. The major chemical waste concerned were spent lubricating oil, diesel oil, contaminated fuel oil, non-halogenated solvents and activated carbons used for filtering diesel fuel. No spillage or leakage of chemicals has been reported in the Study Area. A copy of EPD's letter is provided in **Appendix A**. As revealed from the Government Flying Services (GFS) representative during site inspection, all the chemical wastes were stored in the D.G. store behind the ex-GFS building.

#### ***Fire Services Department (FSD)***

- 3.4.3 Inquiry letter has been sent to FSD to acquire information about (1) the current and past registration of dangerous goods (D.G.) stored within the Study Area and (2) records of accidents of spill/leakage of chemical within the Study Area.
- 3.4.4 According to the information provided by FSD, there has been one file record of dangerous goods storage registration within the ex-GFS site. The approval was granted to the former Royal Hong Kong Auxiliary Air Force which has been renamed as the Government Flying Services in 1993. An underground tank for storage of Category 5 dangerous goods (diesel) was identified with approved quantity of 18,000 litres registered with FSD since 1992. In addition, Category 2 items oxygen, nitrogen, feron 12, carbon dioxide and acetylene and Category 5 items paint and thinner stored in the D.G. store have also been registered with FSD since May 1993. No record of spillage / leakage has been reported in the Study Area within the last 3 years.

#### ***Architectural Services Department (ArchSD)***

- 3.4.5 Inquiry letter has been sent to ArchSD to acquire information about the layout of the Study Area. As-built drawings of the ex-GFS building have been received on 14 April 2007 from ArchSD and a copy of drawings has been attached in **Appendix B**.
- 3.4.6 According to the drawings provided by ArchSD, hangar, electrical workshop, instrument workshop, Ni-cad battery room, lead acid battery room, transformer room, generator room, metal / machine workshop, welding workshop, component overhaul workshop, engine / module workshop and ground equipment workshop/ ground equipment and tractor storage, which have potential land contamination concerns, was found inside the ex-GFS building.

### **3.5 Site Inspection and Interview**

- 3.5.1 According to the Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development Environmental Impact Assessment Report (EIAO Register No.: EIA-059/2001) (SEKD EIA), an additional investigation had been undertaken for the ex-GFS building as part of the EIA study.
- 3.5.2 Under the SEKD EIA study, a questionnaire had been sent to GFS to collect information on site uses, duration of the site operation and chemicals used and their disposal method. The questionnaire completed by GFS in December 2000 indicated that the ex-GFS hangar had been operated by GFS from 1993 to June 1998. As reported in the questionnaire, the ex-GFS building was used for helicopter and fixed wing aircraft operation and maintenance. During the operation, fuels, lubricating oils, hydraulic fluid, cleansing solvents, anticorrosive

paints and thinners has been used, stored or generated and would be collected by a chemical waste handling agency called Enviropace Co. for disposal. No regulatory violation / complaints on environmental performance and no spillage / leakage incidence were recorded during the length of operation.

- 3.5.3 Accordingly to the SEKD EIA report, the ex-GFS building had been returned to Government Property Agency (GPA) and half of the site had been leased to a private helicopter company and the other half was leased to Custom of Immigration Department after the closure of the former Kai Tak Airport. However, the length of occupancy for these parties is unknown.
- 3.5.4 A sample Contamination Assessment Plan (CAP) with proposals on sampling and analysis to determine the nature and extent of land contamination at the GFS hangar site was included the SEKD EIA report. The sample CAP proposed that 20 sampling locations (with 3 soil samples and 1 groundwater sample per each borehole) should be constructed on site by trial pit for the ex-GFS building. However, as mentioned in the SEKD EIA report, the proposals given in the sample CAP should be reviewed taking into account all past and current land uses and site activities prior to the development of the site.
- 3.5.5 Further to the information provided in the SEKD EIA report, several site inspections were carried out to identify any contamination hotspots within the Study Area. Site inspection in company with the ISS EastPoint Property Management Ltd representative (the management company hired by GPA to manage the former Kai Tak Airport site) was conducted on 23 March 2007. Since most of the rooms / workshops inside the ex-GFS buildings were not accessible during the first visit, 2 additional site inspections were undertaken. One was conducted in company with GFS representative on 12 April 2007 and the other was held in company with China Light and Power (CLP) representative on 16 April 2007.
- 3.5.6 During the site inspections, all accessible areas were inspected as far as practicable, and the representatives of the Study Area have been interviewed to collect information about the present or historical activities undertaken at the Study Area. Photo-documentation was also undertaken if possible and is provided in **Appendix C**. Findings of the site inspections are summarised as follows:

#### Ex-GFS Building

- 3.5.7 The ex-GFS building is located at the west of the Study Area. According to the information provided from ArchSD (**Appendix B**), the ground floor of the ex-GFS building consists of more than 40 rooms / workshops as shown in **Drawing 3.2**.
- 3.5.8 For the hangar inside the ex-GFS building, as reported from the GFS representative, 1/3 of the hangar is currently occupied by GFS while the remaining 2/3 area of the hangar has been leased to Customs and Excise Department (C&ED). The hangar area occupied by GFS was reported to be used for aircraft parking and maintenance. 3 fire points have been observed within the hangar. As stated by the GFS representative, no fuel or chemical wastes have been stored in this hangar area. All the chemical wastes generated from the hangar (due to aircraft maintenance activities) would be collected and transferred to the D.G. store and disposed of through a registered chemical waste disposal agent. The ground of this hangar area was tidy and no apparent signs of contamination were found during the site inspection.
- 3.5.9 For the remaining 2/3 area of the hangar used by C&ED, as reported by ISS EastPoint Property Management Ltd representative, it has been used to store confidential goods and no site access was allowed during the site inspections.
- 3.5.10 For the workshops and rooms inside the ex-GFS building, only the transformer room was available to inspect. During the site inspection with CLP's representative on 16 April 2007, high voltage equipment, two transformers and a power supply were observed within the transformer room. Interviews with the representative revealed that the transformer room has been operated for more than 10 years. According to the representative, insulating oil has



been used in the transformer and the quality of the oil would be checked annually on site. For the power supply, it was reported to be used for providing energy to the high voltage equipment. The power supply was found to be made up of battery cells and they were all stored in containment and the battery cells would be replaced by a new one when it was used up. The ground was found to be well paved with concrete and no apparent stains have been observed at the transformer room.

3.5.11 Apart from the hangar and transformer room, other rooms / workshops located inside the ex-GFS building which may have potential land contamination impacts are identified as follows:

- Electrical Workshop;
- Instrument Workshop;
- Ni-Cad Battery Room;
- Lead-acid Battery Room;
- Generator Room;
- Metal / Machine Workshop;
- Welding Workshop;
- Component Overhaul Workshop;
- Engine / Module Workshop;
- Ground Equipment Workshop.

3.5.12 Based on the information acquired from site inspections and desktop review, 22 locations with potential land contamination concern were identified inside the ex-GFS building, in which 6 hotspots were found in hangar area while 16 hotspots were identified within the rooms/workshops which were suspected to have potentially contaminative activities undertaken. Since it was impossible to conduct inspection on the above rooms / workshops and part of the hangar area during the site inspections, as a conservative approach, site investigation is proposed in the ex-GFS building.

3.5.13 In order to assess the actual site condition, a site appraisal has been conducted before the site investigation (SI). During the appraisal, unidentified underground chambers were found underneath the concrete floor of the battery rooms, electrical, instrument, metal / machine, welding, overhaul, engine/module and ground equipment workshops. Inquiry letters had been sent to Architectural Services Department (ArchSD) and the Government Property Agency (GPA) to acquire more information about the underground chambers and any other nearby underground facilities. However, no information on the chambers was available from GPA and from the drawings of ex-GFS building layout plans (Ref No. 85438, 85378, 85440, 85441, 85442, 85443 & 85450) provided by ArchSD on 19 November 2007.

3.5.14 Since these rooms were found on a concrete floor, a direct contact of potential contaminants with soil is therefore not expected. Hence, issue of land contamination in relation to site activities was therefore not identified. No sampling locations are proposed at the battery rooms, electrical, instrument, metal / machine, welding, overhaul, engine/module and ground equipment workshops inside the ex-GFS building.

3.5.15 For the China Light and Power's (CLP) transformer room and the generator room, the facilities inside were found to be in use during the appraisal, site possession was not possible at this stage. Any SI works in these rooms may affect the operation of the facilities and give rise to safety issues to the workers of the SI works. Therefore, SI at the transformer room and the generator room are not proposed at this stage. SI at these hotspots shall be carried out when all the facilities are decommissioned and before any re-development of the site.

3.5.16 In light of the above, only 6 boreholes within the ex-GFS building are proposed for this land contamination study.

Dangerous Goods Store (D.G. store)

- 3.5.17 The D.G. store was located behind the ex-GFS building and in between the playground and the grassland. According to the information provided by the FSD, the chemicals stored inside the D.G. store included oxygen, nitrogen, feron 12, carbon dioxide and acetylene and paint and thinner. However, as reported by the GPA and GFS respective, the D.G. store has been emptied except one of the rooms occupied by GFS and inspection was able to be conducted in this room only.
- 3.5.18 The room occupied by GFS was used for chemical waste storage and the chemical waste would be disposed of through a registered chemical waste disposal agent monthly. During the site inspection, waste oil has been stored in glass jars and oil drums and they were all lidded. The ground was well paved with concrete and no apparent stains have been found in the room.
- 3.5.19 The size of the D.G. store is about 300m<sup>2</sup>. In order to assess any potential land contamination induced from the mishandling of dangerous goods, a full-scale investigation is proposed and 4 trial pits should be constructed as depicted in **Drawing 3.3**.

#### Underground tank and Underground Pipelines

- 3.5.20 According to the drawings provided by ArchSD, there has been an underground fuel tank in between the D.G. store and the hanger. In addition, the dangerous goods information provided from FSD indicated that this underground tank was used for diesel fuel storage and the capacity was 18,000L. In order to assess any land contamination due to spillage or leakage of the underground tank, it is proposed that 2 boreholes should be drilled in the upstream and downstream of the underground tank as shown in **Drawing 3.3**.
- 3.5.21 In addition, as observed from the as-built drawings provided by ArchSD, pipe trench was found connecting the D.G. Store and the welding workshop (**Appendix B**). However, no further information was available for the pipe trench, such as details of pipes stored in the pipe trench. Therefore, as a conservative approach, 2 boreholes are proposed to be drilled along the pipe trench as shown in **Drawing 3.3**.

#### Grassland and Playground

- 3.5.22 There have been two vacant areas in the ex-GFS building site. One is the playground located adjacent to the Radar Station and the other is the grassland situated at the north western part of the hanger.
- 3.5.23 As reported from the site personnel, the playground area had been used for car parking and used as kennels for the Immigration Department Dog Team. The area is now vacant and no activities have been observed during the site inspections. As observed, the ground was generally well paved with concrete and no apparent stains were found during site inspection.
- 3.5.24 For the grassland, it was reported to be used for Immigration Department Dog Team training. During the site inspection, no activities were observed in this area.
- 3.5.25 It is proposed that 2 boreholes should be drilled in the grassland and the playground in order to check any potential land contamination in these two vacant areas. In addition, in order to assess any potential migration of contaminants from the ex-GFS building, 2 additional boreholes as depicted in **Drawing 3.3** are proposed next to the ex-GFS building. Besides, these four boreholes will also serve to provide information on general soil and groundwater conditions.

## 4 SAMPLING PLAN FOR SITE INVESTIGATION

### 4.1 Sampling Locations

- 4.1.1 Information obtained from the desktop studies, site inspections, interviews and site observations were used to determine site investigation (SI) sampling locations. The criteria for identification of contamination hotspots were based upon the review of the potential past activities, the site observation of stain or ground discoloration, past uses as machine or chemical storage locations or areas with potential contamination concerns.
- 4.1.2 In this land contamination study, a total of 34 contamination hotspots are identified. However, since the generator room and the transformer room will still be in operation at the time of the site investigation and due to the presence of unidentified underground chambers within the ex-GFS building, only 4 trial pits and 14 boreholes are proposed to be constructed for the purpose of initial screening of the identified hotspots. The indicative location plans of the proposed SI sampling locations are illustrated in **Drawing 3.3**.
- 4.1.3 Since the battery rooms, electrical, instrument, metal / machine, welding, overhaul, engine/module and ground equipment workshops were well paved with concrete and the presence of underground chamber has prevented a direct contact of potential contaminants with the soil underneath. No issue of land contamination in relation to the site activities is therefore expected.
- 4.1.4 For the 3 potential contamination hotspots identified inside the generator room and the transformer room, it is recommended that a land contamination investigation should be carried out upon the cessation of the operations and prior to the redevelopment. If land contamination is confirmed, proper remedial measures should be formulated and implemented prior to the redevelopment of the site.
- 4.1.5 It should be noted that 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 location should be agreed with both the Engineer and the land contamination specialist prior to drilling/excavation and sampling.
- 4.1.6 If serious contamination was revealed during the SI, more sampling locations or more number of samples at the specific borehole/trail pit would be recommended to determine the exact extent of contamination. For the proposed trial pits, a third soil sample would be collected if contamination is found at the sample collected at 1.5m.

**Table 4.1 Sampling and Testing Plan for the Study Area**  
(Concerned Site Area: ~17,000m<sup>2</sup>; Proposed 18 Sampling Locations)

Proposed Sampling Location	Sampling Method	Sample Matrix	Parameters to be Tested						Rationale of Sampling
			TPH	BTEX	PAHs	Phenols	Chlorinated Hydrocarbons	Heavy Metals	
GFSA-17 (Hangar)	Borehole down to 6m	Soil	X	X	X	X	X	X	2 boreholes are proposed to assess any potential land contamination within the ex-GFS hangar currently occupied by GFS.
		Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		GW	X	X	X	X	X	X	
GFSA-18 (Hangar)	Borehole down to 6m	Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		GW	X	X	X	X	X	X	
GFSA-19 (Hangar)	Borehole down to 6m	Soil	X	X	X	X	X	X	4 boreholes are proposed to assess any potential land contamination within the remaining ex-GFS hangar currently occupied by C&ED.
		Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		GW	X	X	X	X	X	X	
GFSA-20 (Hangar)	Borehole down to 6m	Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		Soil	X	X	X	X	X	X	
		GW	X	X	X	X	X	X	

Proposed Sampling Location	Sampling Method	Sample Matrix	Parameters to be Tested						Rationale of Sampling
			TPH	BTEX	PAHs	Phenols	Chlorinated Hydrocarbons	Heavy Metals	
GFSA-21 (Hangar)	Borehole down to 6m	Soil	1m BBC	X	X	X	X	X	
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSA-22 (Hangar)	Borehole down to 6m	Soil	1m BBC	X	X	X	X	X	
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSB-01 (D.G. Store)	Trial pit down to 1.5m^	Soil	0.5m BBC	X	X	X	X	X	4 trial pits are proposed to assess any potential land contamination induced from the mishandling of dangerous goods.
		Soil	1.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
		Soil	0.5mBBC	X	X	X	X	X	
GFSB-02 (D.G. Store)	Trial pit down to 1.5m^	Soil	1.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
		Soil	0.5mBBC	X	X	X	X	X	
		Soil	1.5m BBC	X	X	X	X	X	
GFSB-03 (D.G. Store)	Trial pit down to 1.5m^	GW	If present	X	X	X	X	X	
		Soil	0.5m BBC	X	X	X	X	X	
		Soil	1.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSB-04 (D.G. Store)	Trial pit down to 1.5m^	Soil	0.5m BBC	X	X	X	X	X	
		Soil	1.5m BBc	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
		Soil	1.5m BBC	X	X	X	X	X	

Proposed Sampling Location	Sampling Method	Sample Matrix	Parameters to be Tested						Rationale of Sampling
			TPH	BTEX	PAHs	Phenols	Chlorinated Hydrocarbons	Heavy Metals	
GFSC-01 (Underground Fuel Tank)	Borehole to 6m BBC	Soil	X	X	X				In order to assess potential land contamination impacts from any leakage/spillage of the underground diesel tank, 1 borehole is proposed to be located at the upstream of the tank area.
		Soil	X	X	X				
		Soil	X	X	X				
		Soil	X	X	X				
		Soil	X	X	X				
		G.W.	X	X	X				
GFSC-02 (Underground Fuel Tank)	Borehole to 6m BBC	Soil	X	X	X				In order to assess potential land contamination impacts from any leakage/spillage of the underground diesel tank, 1 borehole is proposed to be located at the downstream of the tank area.
		Soil	X	X	X				
		Soil	X	X	X				
		Soil	X	X	X				
		Soil	X	X	X				
		G.W.	X	X	X				
GFSC-03 (Underground Pipelines)	Borehole to 6m BBC	Soil	X	X	X				In order to assess any potential land contamination impacts from underground pipelines protected by the pipe trench, 2 boreholes are proposed to be drilled along the pipe trench.
		Soil	X	X	X				
		Soil	X	X	X				
		GW	X	X	X				
GFSC-04 (Underground Pipelines)	Borehole to 6m BBC	Soil	X	X	X				
		Soil	X	X	X				
		Soil	X	X	X				
		GW	X	X	X				

Proposed Sampling Location	Sampling Method	Sample Matrix	Parameters to be Tested						Rationale of Sampling
			TPH	BTEX	PAHs	Phenols	Chlorinated Hydrocarbons	Heavy Metals	
GFSD-01	Borehole to 6m BBC	Soil	1m BBC	X	X	X	X	X	2 boreholes are proposed to assess any potential land contamination within the grassland and the playground.
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSD-02	Borehole to 6m BBC	Soil	1m BBC	X	X	X	X	X	
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSD-03	Borehole to 6m BBC	Soil	1m BBC	X	X	X	X	X	2 boreholes are proposed to assess any potential migration of contaminants from the activities undertaken in the ex-GFS building area.
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	
GFSD-04	Borehole to 6m BBC	Soil	1m BBC	X	X	X	X	X	
		Soil	2.5m BBC	X	X	X	X	X	
		Soil	3.5m BBC	X	X	X	X	X	
		GW	If present	X	X	X	X	X	

Remarks:

BBC = Below Base of Existing Concrete Pavement; GW=groundwater; X = testing proposed  
 ^ For proposed trial pits, a third soil sample may be necessary if contamination is found at the sample collected at 1.5m.  
 Details of the chemical parameters shall be referred to **Table 4.2** below.  
 This table shall be read in conjunction with **Drawing 3.3**.

## **4.2 Soil Sampling Method and Depth of Sampling**

- 4.2.1 Soil samples shall be taken using either boreholes or trial pits with consideration the headroom constraint and safety. All soil boring / excavation and sampling should be supervised by a qualified land contamination specialist.
- 4.2.2 Trial pit should be excavated by means of hand tools. Two disturbed soil samples (at 0.5m and 1.5m below base of existing concrete pavement) should be collected from each trial pit by hand sampling. A third soil sample would be collected if contamination is found at the sample collected at 1.5m.
- 4.2.3 Borehole 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 1m BBC. 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 2.5m and 3.5m and/or 5m and 6m BBC.
- 4.2.4 At each sampling location/depth, sufficient quantity of soil sample (as specified by the laboratory) should be taken. All soil samples should be uniquely labeled. Backup samples should be retained and stored at 0 - 4 °C in laboratory.

## **4.3 Strata Logging**

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

## **4.4 Free Product and Groundwater Level Measurement**

- 4.4.1 The thickness of any free product and ground water 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.

## **4.5 Groundwater Sampling**

- 4.5.1 It is proposed to collect groundwater samples if groundwater is encountered at the sampling locations.
- 4.5.2 For each proposed borehole sampling location, a groundwater sampling well shall be installed into the boreholes if groundwater is encountered or agreed by the land contamination specialist. A typical design of the groundwater sampling well as shown in **Drawing 4.1** should be submitted by the land contamination specialist for the Engineer's approval prior to the commencement of sampling. After installation of the monitoring wells, the depth to water table at all monitoring wells should be measured at the same time with an interface probe in order to delineate the water table contours at the subject site. Well developments (approximately five well volumes) should be carried out to remove slit 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.
- 4.5.3 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.



- 4.5.4 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 minimizes agitation and volatilization of VOCs from the samples. All samples should be uniquely labelled.
- 4.5.5 Apart from boreholes, groundwater sample should also be collected at all trial pits if groundwater was encountered during excavation. The trial pits should be pumped to near dry and allowed to stand for 24 hours. Groundwater samples should be collected using decontaminated bucket.
- 4.5.6 Immediately after collection, groundwater samples should be transferred to new, clean, laboratory-supplied glass jars for sample storage/transport. The sampling glass jars should be of “darken” type. Groundwater samples should be placed in the glass jars with zero headspace and promptly sealed with a septum-lined cap. Immediately following collection, samples should be placed in ice chests, cooled and maintained at a temperature of about 4°C until delivered to the analytical laboratory.

#### **4.6 Sample Size and Decontamination Procedures**

- 4.6.1 All equipment in contact with the ground should be thoroughly decontaminated between each excavation, drilling and sampling event to minimise the potential for cross contamination. The equipment (including drilling pit, digging tools and soil/groundwater samplers) should be decontaminated by steam cleaning or high-pressure hot water jet, then washed by phosphate-free detergent and finally rinsed by distilled / deionised water
- 4.6.2 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.
- 4.6.3 The sample containers should be laboratory cleaned, sealable, water-tight, made of glass or other suitable materials with aluminum 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.
- 4.6.4 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 the respective retention period but should not more than 10 days.

#### **4.7 QA/QC Procedures**

- 4.7.1 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

#### **4.8 Health and Safety**

- 4.8.1 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.
- 4.8.2 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.

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

- a. Instruction of works on work procedures, safe practices, emergency duties, and applicable regulations;
- b. 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;
- c. Good housekeeping practices; and
- d. Availability of and instruction in the location, use and maintenance of personal protective equipment.

4.8.4 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:

- a. Maintain proper safety devices, barriers to minimize hazards during performance of the work;
- b. Prohibit smoking and open flames and the carrying of matches and lighters;
- c. Develop and maintain a written emergency plan applicable to the Work and Site;
- d. Maintain equipment in good operating condition and have emergency and first aid equipment ready for immediate use, where applicable;
- e. 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;
- f. 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
- g. The personnel are required to wear respirator and gloves for vapour exposure protection, if necessary. Safety helmet and protective boots should be worn.

## 4.9 Laboratory Analysis

4.9.1 Laboratory analysis is proposed in order to screen the presence of potential contaminants that are of concern at the Study Area. **Table 4.2** summarizes the parameters, detection limits and reference methods for the laboratory analyses of soil and groundwater samples for this Study.

**Table 4.2 Parameters, Detection Limits and Reference Methods for Laboratory Analyses**

Item	Parameter	Soil		Groundwater	
		Detection Limit (mg/kg) or otherwise stated	Reference Method	Detection Limit (µg/L) or otherwise stated	Reference Method
1	Total Petroleum Hydrocarbons (TPH)	C6-C9: 2 C10-C14: 50 C15-C28: 100 C29-C36: 100	USEPA 8260 USEPA 8015	C6-C9: 20 C10-C14: 25 C15-C28: 25 C29-C36: 25	USEPA 8260 USEPA 8015
2	Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	0.4 for meta- & para-Xylenes; 0.2 for others	USEPA 8260	1 for benzene 15 for others	USEPA 8260
3	Polyaromatic Hydrocarbons (PAHs) <sup>a</sup>	0.05 for individuals	USEPA 8270	0.1 for individuals	USEPA 8270

Item	Parameter	Soil		Groundwater	
		Detection Limit (mg/kg) or otherwise stated	Reference Method	Detection Limit (µg/L) or otherwise stated	Reference Method
4	Phenols <sup>b</sup>	0.2 for individuals	USEPA 8270	0.5 for individuals	USEPA 8270
5	Chlorinated Hydrocarbons - Aliphatics <sup>c</sup>	0.5 for individuals	USEPA 8260	2 for individuals	USEPA 8260
6	Total Polychlorinated Biphenyls (Total PCBs)	0.1	USEPA 8070	0.2	USEPA 8070
7	Heavy Metals				
	Cadmium (Cd)	0.2	USEPA 6020	1	USEPA 6020
	Lead (Pb)	1	USEPA 6020	1	USEPA 6020
	Copper (Cu)	1	USEPA 6020	1	USEPA 6020
	Tin (Sn)	0.5	USEPA 6020	1	USEPA 6020
	Chromium (Cr)	1	USEPA 6020	1	USEPA 6020
	Nickel (Ni)	1	USEPA 6020	1	USEPA 6020
	Zinc (Zn)	20	USEPA 6020	50	USEPA 6020
	Cobalt (Co)	0.5	USEPA 6020	1	USEPA 6020
	Arsenic (As)	1	USEPA 6020	10	USEPA 6020
	Molybdenum	1	USEPA 6020	1	USEPA 6020
	Barium (Ba)	0.5	USEPA 6020	1	USEPA 6020
	Mercury (Hg)	0.05	USEPA 6020	0.5	USEPA 6020

Remarks:

(a) The full list of 6 Polycyclic Aromatic Hydrocarbons (PAHs) is tabulated below:

1) Naphthalene	2) Phenanthrene	3) Anthracene
4) Fluoranthene	5) Benzo(a)pyrene	6) Pyrene

(b) The full list of 3 phenols is tabulated below:

1) Phenol	2) 2-methylphenol	3) 3/4-methylphenol
-----------	-------------------	---------------------

(c) The full list of 18 chlorinated hydrocarbons (of halogenated aliphatics) is tabulated below:

1) 1,1-Dichloroethene	2) trans-1,2-Dichloroethene	3) 1,1-Dichloroethane
4) cis-1,2-Dichloroethene	5) 1,1,1-Trichloroethane	6) 1,1-Dichloropropylene
7) Carbon tetrachloride	8) 1,2-Dichloroethane	9) Trichloroethene
10) Dibromomethane	11) 1,1,2-Trichloroethane	12) 1,3-Dichloropropane
13) Tetrachloroethene	14) 1,1,1,2-Tetrachloroethane	15) 1,1,2,2-Tetrachloroethane
16) 1,2,3-Trichloropropane	17) 1,2-Dibromo-3-chloropropane	18) Hexachlorobutadiene

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

4.9.3 All laboratory analyses for soil and groundwater samples will be conducted by a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory. It should be noted that

alternative methods or similar detection limits may be used subject to the laboratory availability and capability. The relevant supporting document of the laboratory to be employed for this Study should be given in the future CAR or CAR/RAP.

- 4.9.4 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.
- 4.9.5 If contamination is found and landfill disposal is identified as the last resort to remediate the contaminated soil, three impacted soil samples shall be conducted for TCLP test to determine whether they comply with the criteria for landfill disposal in accordance with the *Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/Dismantling Workshops* published by the EPD.
- 4.9.6 The criteria are set primarily in terms of Toxicity Characteristic Leaching Procedure (TCLP) limits shown in **Table 4.3**.

**Table 4.3 Laboratory Testing Requirements for TCLP Analysis**

Parameter	Test Methods*	Detection limit (mg/L)
TCLP Leachate Preparation allowed by analysis for:		
Antimony (Sb)	USEPA 1311 and 6020A	2
Arsenic (As)		2
Barium (Ba)		2
Beryllium (Be)		1
Cadmium (Cd)		1
Chromium (Cr)		1
Copper (Cu)		2
Lead (Pb)		3
Nickel (Ni)		1.5
Selenium (Se)		0.1
Silver (Ag)		2
Thallium (Ti)		0.08
Tin (Sn)		2.5
Vanadium (V)		4
Zinc (Zn)		10
Mercury (Hg)		0.02

\* Equivalent internationally recognized standard methods could also be used.

## 5 INTERPRETATION OF RESULTS

- 5.1.1 The results of the laboratory analyses shall be interpreted in accordance with the guidance documents referred in EPD's Practice Note ProPECC PN3/94 *Contaminated Land Assessment and Remediation and Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repairing/Dismantling Workshops*.
- 5.1.2 The ProPECC PN3/94 was used in setting the soil contamination criteria. The Practice Note makes reference to criteria developed in the Netherlands (Dutch 'ABC' Levels), which are most comprehensive and widely used for contaminated site assessment. The preliminary screening approach adopted in land contamination study was based on the Dutch Criteria which consists of 3 levels of guidelines, namely A, B, and C. The simplified explanation of the ABC levels is as follows:
- 'A' level implies unpolluted;
  - 'B' level implies potential pollution present that requires further investigation or remediation; and
  - 'C' level implies pollution which requires remediation.
- 5.1.3 The Dutch criteria are very stringent as they are developed based on a 'good for all uses' philosophy. The EPD generally requires remediation for soil contamination above the Dutch B level. In other words, the Dutch B level is the cleanup target for remediation of soil. Relevant soil and groundwater Dutch 'ABC' levels for this land contamination study are presented in **Table 5.1**.

**Table 5.1 Dutch ABC Values for Soil and Groundwater Contamination**

Parameter	Soil (mg/kg)			Groundwater(µg/L)		
	Dutch A	Dutch B	Dutch C	Dutch A	Dutch B	Dutch C
<b>Total Petroleum Hydrocarbons (TPH) (as mineral oil)</b>	100	1000	5000	20	200	600
<b>BTEX</b>						
Benzene	0.01	0.5	5	0.2	1	5
Toluene	0.05	3	30	0.5	15	50
Ethylbenzene	0.05	5	50	0.5	20	60
Xylenes	0.05	5	50	0.5	20	60
<b>Polyaromatic Hydrocarbons (PAHs)</b>						
Naphthalene	0.1	5	50	0.2	7	30
Phenanthrene	0.1	10	100	0.1	2	10
Anthracene	0.1	10	100	0.1	2	10
Fluoranthene	0.1	10	100	0.02	1	5
Benzo(a)pyrene	0.05	1	10	0.01	0.2	1
Pyrene	0.1	10	100	0.02	1	5
<b>Phenols</b>	0.02	1	10	0.5	15	50
<b>Chlorinated Hydrocarbons-Aliphatics (for individual)</b>	0.1	5	50	1	10	50
<b>Total Polychlorinated Biphenyls (Total PCBs)</b>	0.05	1	10	0.01	0.2	1

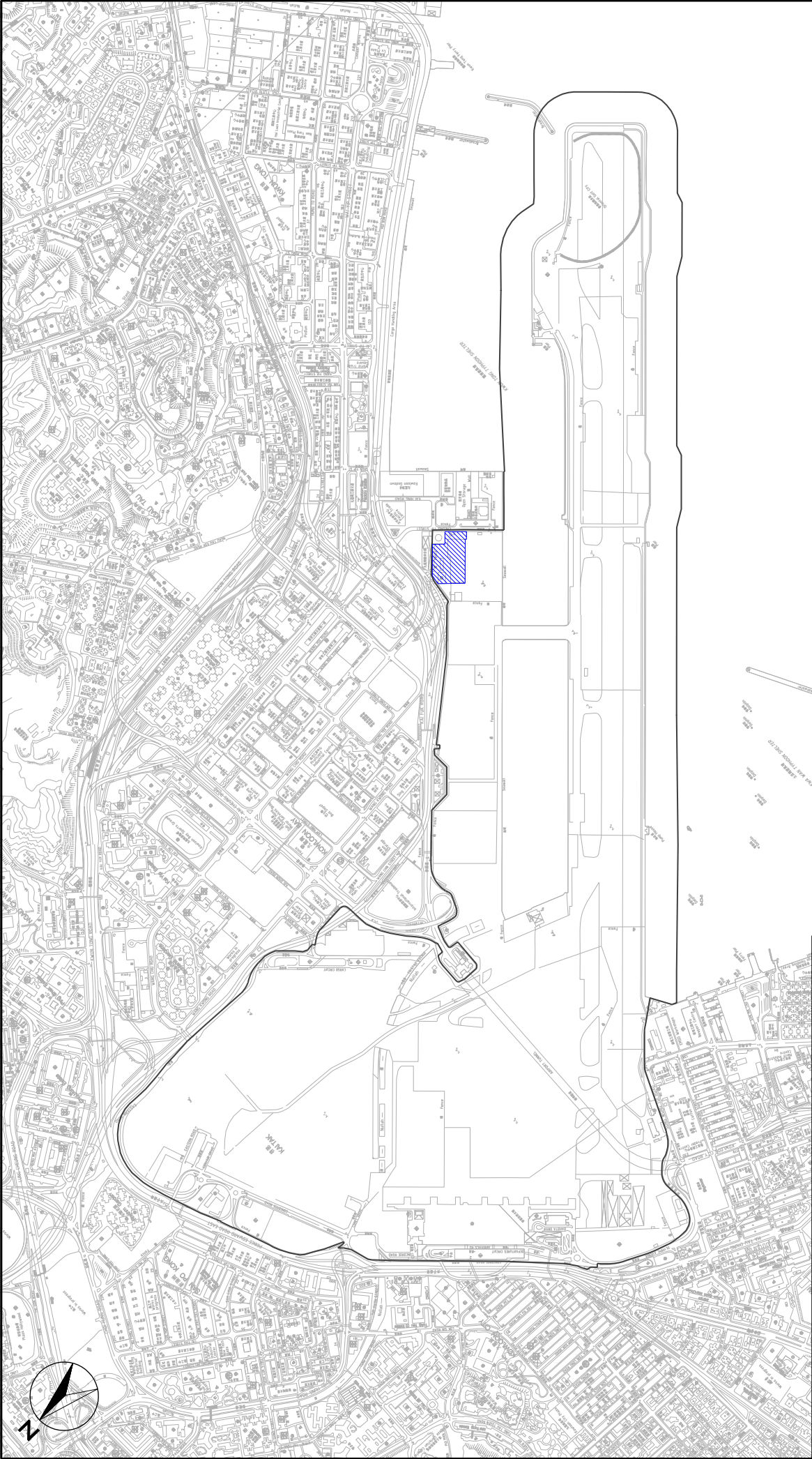
Parameter	Soil (mg/kg)			Groundwater(µg/L)		
	Dutch A	Dutch B	Dutch C	Dutch A	Dutch B	Dutch C
<b>Heavy Metals</b>						
Cadmium (Cd)	1	5	20	1	2.5	10
Lead (Pb)	50	150	600	20	50	200
Copper (Cu)	50	100	500	20	50	200
Tin (Sn)	20	50	300	10	30	150
Chromium (Cr)	100	250	800	20	50	200
Nickel (Ni)	50	100	500	20	50	200
Zinc (Zn)	200	500	3000	50	200	800
Cobalt (Co)	20	50	300	20	50	200
Arsenic (As)	20	30	50	10	30	100
Molybdenum (Mo)	10	40	200	5	20	100
Barium (Ba)	200	400	2000	50	100	500
Mercury (Hg)	0.5	2	10	0.2	0.5	2

- 5.1.4 The Dutch 'ABC' criteria were established based on the assumption that groundwater is used as potable water. However, it is not so appropriate to be applied directly in Hong Kong where groundwater is not generally for potable use. Hence, the Dutch B levels would be only for screening out the chemicals-of-concern (COCs) for risk assessment and are not for assessing groundwater contamination in Hong Kong. A risk-based assessment would be carried out for contaminants with the concentration exceeding the Dutch B level to evaluate the risks posed to the sensitive receptors.
- 5.1.5 The risk-based assessment that has been adopted in USEPA takes into account concentrations of individual contaminants in groundwater, the anticipated most sensitive human receptor and the potential exposure pathways. For a worst-case scenario, the largest contaminant concentrations in the groundwater samples would be taken as the source concentration for the risk calculation.
- 5.1.6 Exceedance of the risk-based criteria would be qualified in two tiers. Firstly, the Total Pathway Hazard Index that is the sum of contaminant hazard quotients exceeds one (i.e. USEPA recommended hazard index). Secondly the largest contaminant concentration exceeds the corresponding Risk Based Screening Level (RBSL) that is derived from the recognized oral reference dose. For carcinogens, the first is the Total Carcinogenic Risk that is the sum of contaminant carcinogenic risk exceeds  $1 \times 10^{-6}$  (i.e. USEPA lifetime cancer risk level). The second is the largest carcinogenic contaminant concentration exceeds the corresponding RBSL that is derived from the recognized carcinogenic oral slope factor. It should be noted that risk assessment could only be undertaken for those chemicals that have a recognized oral slope factor or oral reference dose.


***Drawings***

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LEGEND

 STUDY AREA OF THIS CAP

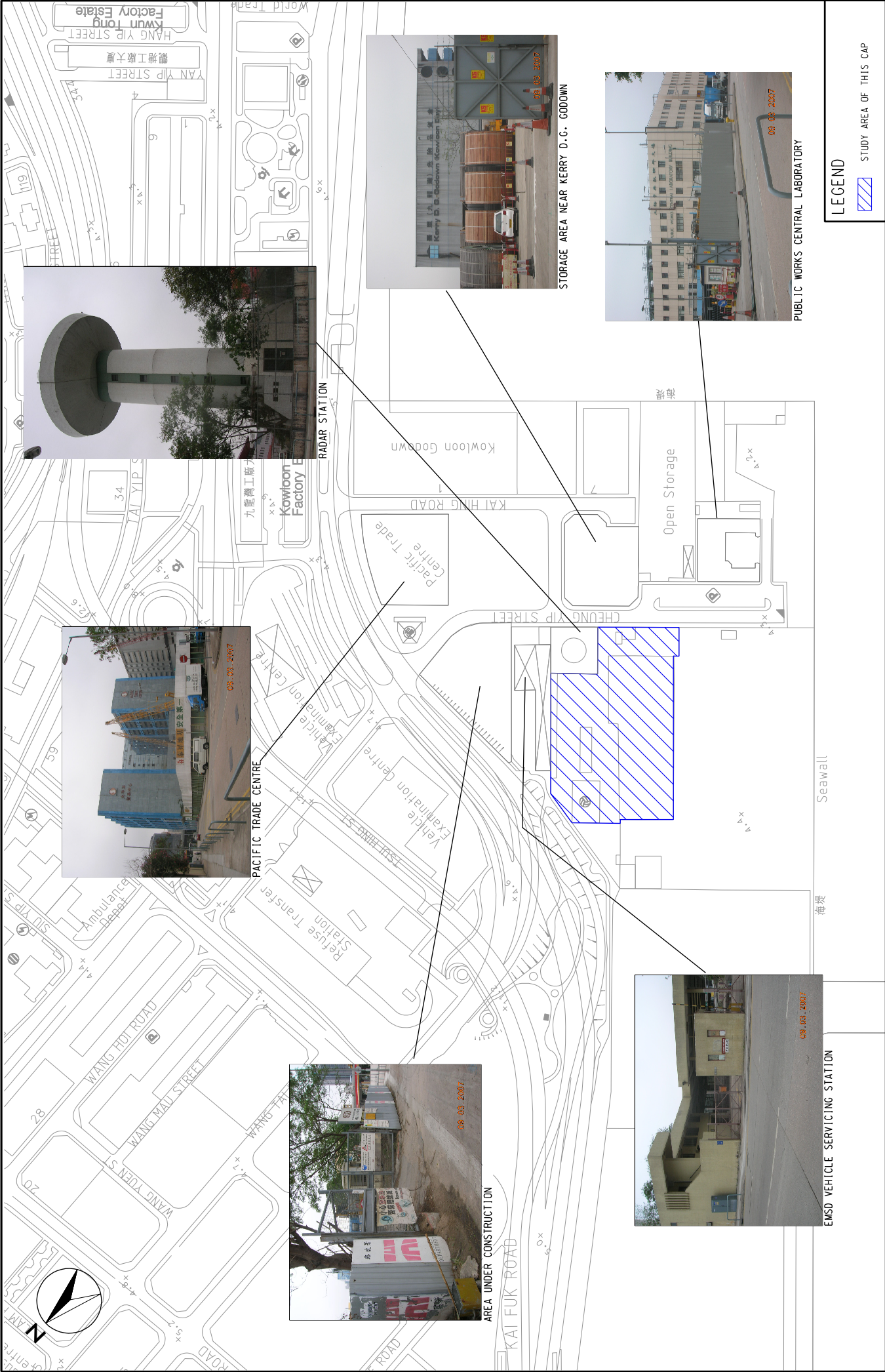
PLAN OF HONG KONG INTERNATIONAL AIRPORT  
(PLAN NO. KM 19659 DATED 1.11.1994)  
(LANDS DEPT. LETTER REF: (20) IN LND KEPD/103/13(11))

**MAUNSELL** AECOM  
Mausnell Consultants Asia Ltd

AGREEMENT NO. CE 35/2006 (CE)  
KAI TAK DEVELOPMENT ENGINEERING STUDY CUM DESIGN AND  
CONSTRUCTION OF ADVANCE WORKS-INVESTIGATION, DESIGN AND CONSTRUCTION  
SITE LOCATION PLAN

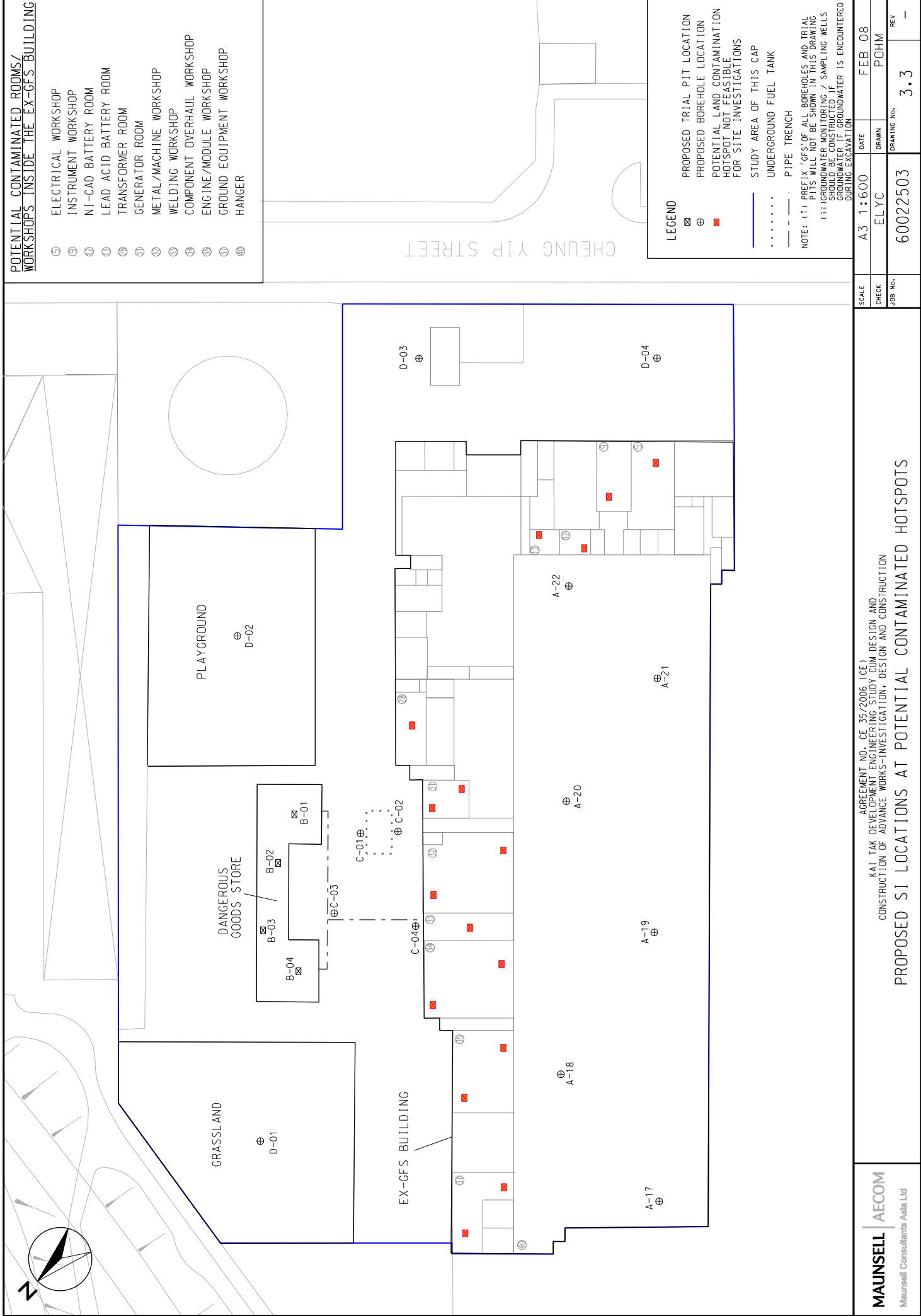
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JOB No.	60022503	DRAWING No.	1.1
REV			—





<b>MAUNSELL   AECOM</b> Maunsell Consultants Asia Ltd	AGREEMENT NO. CE 35/2006 (CE) KAI TAK DEVELOPMENT ENGINEERING STUDY CUM DESIGN AND CONSTRUCTION OF ADVANCE WORKS-INVESTIGATION, DESIGN AND CONSTRUCTION <b>SURROUNDING ENVIRONMENT OF EX-GFS BUILDING</b>			
	SCALE CHECK JOB No.	A3 1:3000 ELYC 60022503	DATE DRAWN DRAWING No.	FEB 08 POHM 3.1
	REV —			





- ⑤ ELECTRICAL WORKSHOP
- ⑥ INSTRUMENT WORKSHOP
- ⑦ NI-CAD BATTERY ROOM
- ⑧ LEAD ACID BATTERY ROOM
- ⑨ TRANSFORMER ROOM
- ⑩ GENERATOR ROOM
- ⑪ METAL/MACHINE WORKSHOP
- ⑫ WELDING WORKSHOP
- ⑬ COMPONENT OVERHAUL WORKSHOP
- ⑭ ENGINE/MODULE WORKSHOP
- ⑮ GROUND EQUIPMENT WORKSHOP
- ⑯ HANGER

CHEUNG YIP STREET

## LEGEND

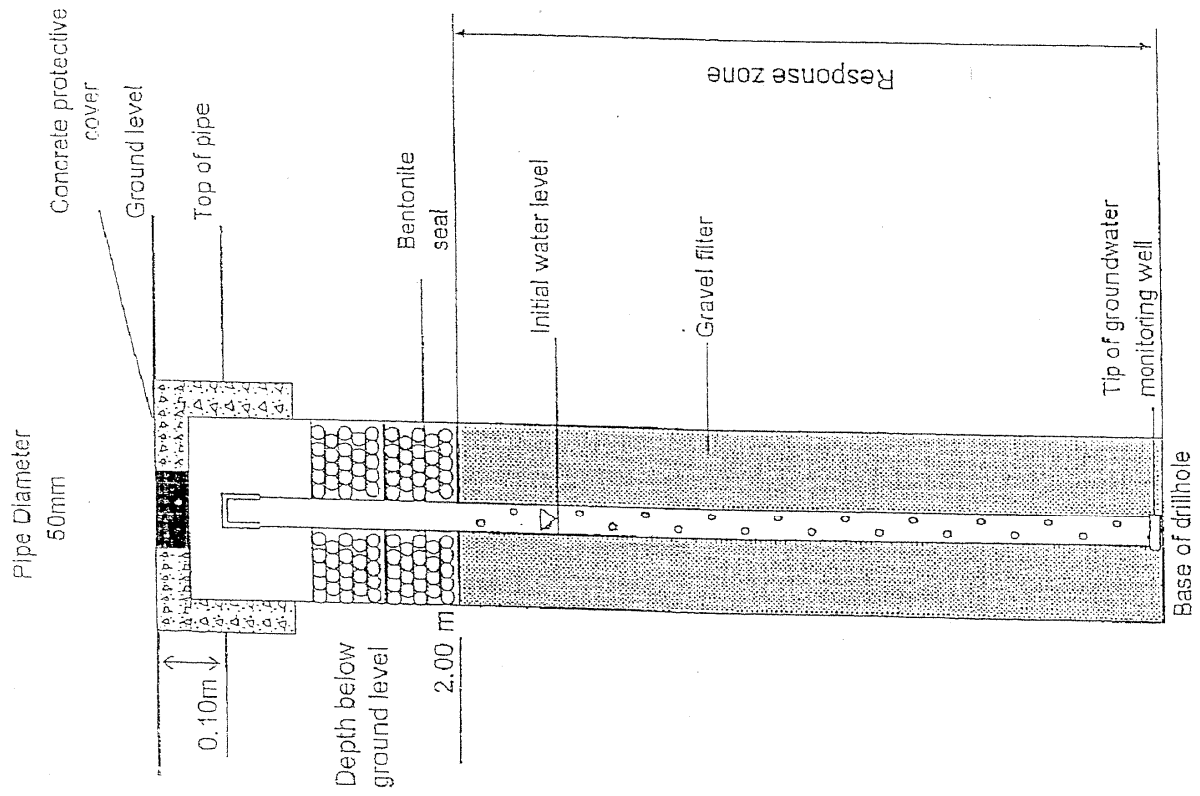
- ☒ PROPOSED TRIAL PIT LOCATION  
 ⊕ PROPOSED BOREHOLE LOCATION  
 ■ POTENTIAL LAND CONTAMINATION  
 ■ HOTSPOT NOT FEASIBLE FOR SITE INVESTIGATIONS  
 — STUDY AREA OF THIS CAP  
 ..... UNDERGROUND FUEL TANK  
 --- PIPE TRENCH

NOTE: (i) PREFIX 'GFS' OF ALL BOREHOLES AND TRIAL PITS WILL NOT BE SHOWN IN THIS DRAWING  
(ii) GROUNDWATER MONITORING / SAMPLING WELLS SHOULD BE CONSTRUCTED IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION

SCALE	A3 1:600	DATE	FEB 08
CHECK	ELYC	DRAWN	POHM
JOB No.	60022503	DRAWING No.	3.3
			REV -

AGREEMENT NO. CE 35/2006 (CE)  
KAI TAK DEVELOPMENT ENGINEERING STUDY CUM DESIGN AND  
CONSTRUCTION OF ADVANCE WORKS—INVESTIGATION, DESIGN AND CONSTRUCTION  
PROPOSED SI LOCATIONS AT POTENTIAL CONTAMINATED HOTSPOTS

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Maunsell Consultants Asia Ltd



AGREEMENT NO. CE 35/2006 (CE)  
KAI TAK DEVELOPMENT ENGINEERING STUDY CUM DESIGN AND  
CONSTRUCTION OF ADVANCE WORKS-INVESTIGATION, DESIGN AND CONSTRUCTION  
TYPICAL GROUNDWATER SAMPLING WELL DESIGN

MAUNSELL AECOM  
AECOM Consultants Asia Ltd

SCALE	N.T.S	DATE	FEB 08
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JOB No.	60022503	DRAWING No.	4.1
		REV	-

## ***Appendices***

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***Appendix A***  
***(Letter from Environmental Protection Department)***

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本署備案  
 OUR REF: (48) in EP 650/P7/1 II  
 來函備案  
 YOUR REF: PMC/NWHF:chy:60022408/08.2-0088  
 電話  
 TEL NO: 2150 8016  
 圖文傳真  
 FAX NO: 2402 8275  
 網址  
 HOMEPAGE: <http://www.epd.gov.hk/>

+ 852 2402 8275  
 Environmental Protection Department  
 Environmental Compliance Division  
 Regional Office (East)  
 8/F, Cheung Sha Wan Government Offices  
 303 Cheung Sha Wan Road  
 Kowloon



環境保護署  
 環保法規管理科  
 區域辦事處(東)  
 九龍長沙灣道303號  
 長沙灣政府合署8樓

郵遞及傳真至 2691 2649

19 March 2007

Maunsell Consultants Asia Limited  
 8/F Grand Central Plaza, Tower 2,  
 138 Shatin Rural Committee Road,  
 Sha Tin,  
 New Territories.  
 (Attention: Mr Peter CHEEK)

Dear Sir,

Agreement No. CE 35/2006(CE)  
 Kai Tak Development Engineering Study  
 cum Design and Construction of Advance Works-  
 Investigation, Design and Construction

Request for Information about Chemical Waste Producer  
and Chemical Spillage Accident

Maunsell Consultants Asia Ltd.	
19 MAR 2007	
254	
60022408/	
ML	Sign
HYN	Off
FSKY	
ATK	
TKST / NWHF	
JWLH / PMC	
MEMU - Peter Lee	

I refer to your letter dated 7 March 2007 regarding the captioned.

As requested, I provide the following information abstracted from our records:-

(i) registered chemical waste producers within the study area:

Date Registered	Name of Registered Chemical Waste Producers	Major Chemical Waste Types	Location where Waste is Produced
18 March 1993	Electrical and Mechanical Services Department, Kowloon Bay Vehicle Servicing Station	Mineral oil, flammable liquid, solvent, paint, oily sludge, acidic electrolyte and heavy metal compound	3 Cheung Yip Street, Kowloon Bay
2 November 1999	Helicopters Hong Kong Ltd	Spent lubricating oil and contaminated fuel oil	1 Cheung Yip Street, Kowloon Bay
11 June 2003	Customs & Excise Department	Spent lubricating oil, diesel oil and non-halogenated solvent	1 Cheung Yip Street, Kowloon Bay
23 January 2006	Strong Base Environmental Services and Engineering Co. Ltd.	活性炭(曾過濾柴油)	1 Cheung Yip Street, Kowloon Bay

(ii) reported accidents of spillage/leakage of chemicals within the study area: Nil.

Maunsell Environmental Management Consultants Ltd.	
Received 21 MAR 2007	
File No. IC/FIC	
TS MKO	AYK JLAM
TJC TYUT	
Env. Consultant	
Others	
Copied To	

Yours faithfully,

(C.P. Wai)

Environmental Protection Officer  
 Regional Office (East)  
 for Director of Environmental Protection

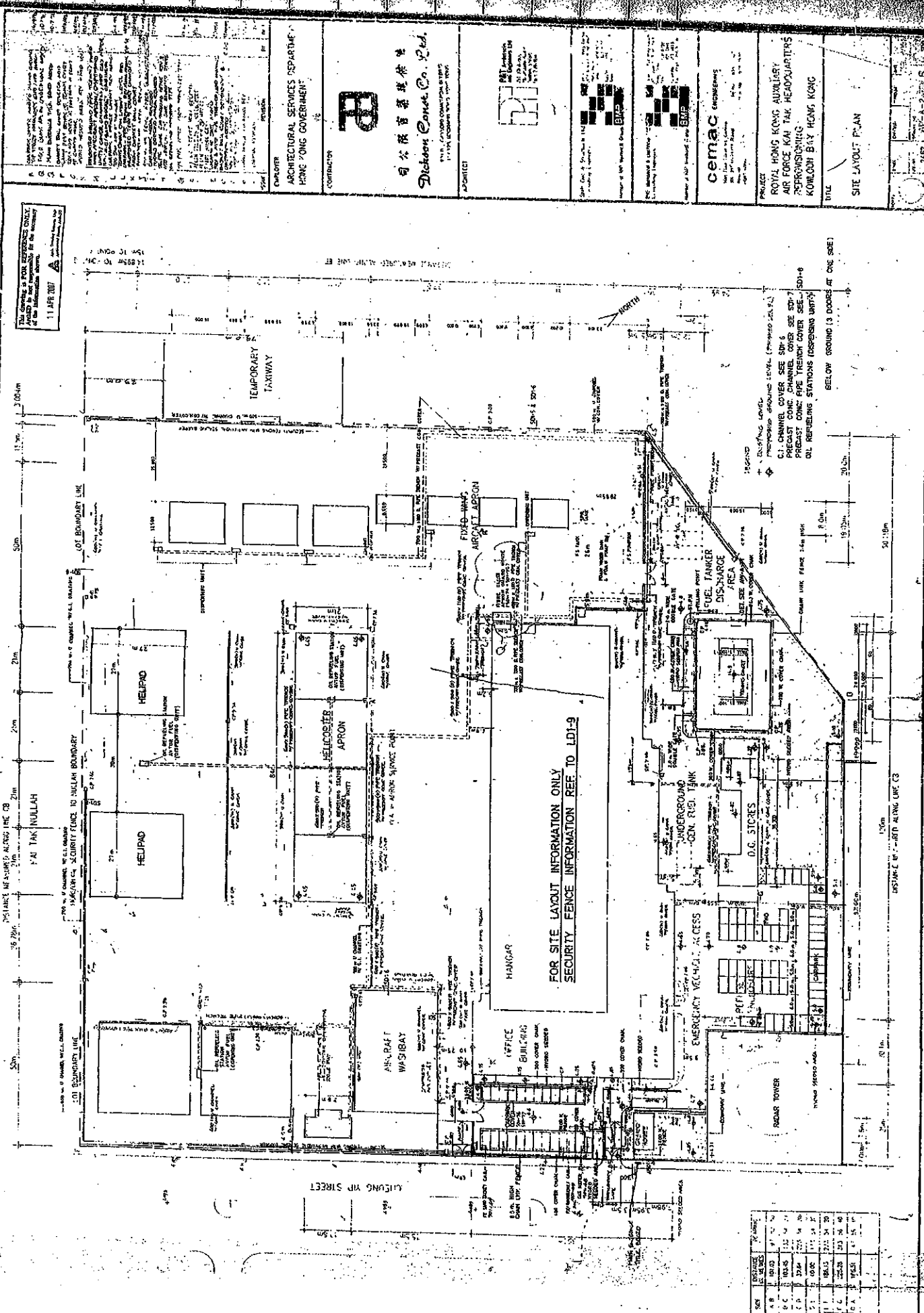


再生紙  
 RECYCLED PAPER

***Appendix B***  
***(As-built Drawings of Ex-GFS Building)***

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THIS DRAWING IS FOR INFORMATION ONLY  
AND IS NOT TO BE USED FOR CONSTRUCTION  
OF THE INSTALLATION.

11 APR 2007

FOR SITE LAYOUT INFORMATION ONLY  
SECURITY FENCE INFORMATION REF TO LD1-9

NO.	DESCRIPTION	AREA	VOLUME
1	HELIPAD	1,200	1,200
2	HELICOPTER APRON	1,200	1,200
3	HANGAR	1,200	1,200
4	AIRCRAFT WAREHOUSE	1,200	1,200
5	OFFICE BUILDING	1,200	1,200
6	RADAR TOWER	1,200	1,200
7	OIL TANK	1,200	1,200
8	UNDERGROUND CON. RES. TANK	1,200	1,200
9	DISCHARGE AREA	1,200	1,200
10	FUEL TANKER	1,200	1,200
11	STORAGE	1,200	1,200
12	UTILITY	1,200	1,200
13	ROAD	1,200	1,200
14	PERIMETER FENCE	1,200	1,200
15	LANDSCAPING	1,200	1,200
16	WATER SUPPLY	1,200	1,200
17	SEWERAGE	1,200	1,200
18	ELECTRICITY	1,200	1,200
19	TELECOMMUNICATIONS	1,200	1,200
20	OTHER	1,200	1,200
TOTAL		1,200	1,200

BELOW GROUND (3 DOORS AT ONE SIDE)

DISTANCE 10' - 10' ALONG LINE C3

SITE LAYOUT PLAN

PRINCE  
ROYAL HONG KONG AUXILIARY  
AIR FORCE KAI TAK HEADQUARTERS  
PERFORMING  
KOWLOON BAY HONG KONG

cemac  
ENGINEERING  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

司公限有建地生  
Dickson Const. Co. Ltd.



CLIENT  
ARCHITECTURAL SERVICES DEPARTMENT  
HONG KONG GOVERNMENT

CONTRACTOR  
Dickson Const. Co. Ltd.

ARCHITECT  
cernac ENGINEERING

ENGINEER  
B.M.P.

STRUCTURAL ENGINEER  
B.M.P.

MECHANICAL ENGINEER  
B.M.P.

ELECTRICAL ENGINEER  
B.M.P.

PLUMBING ENGINEER  
B.M.P.

PAINTING ENGINEER  
B.M.P.

LANDSCAPING ENGINEER  
B.M.P.

WATER SUPPLY ENGINEER  
B.M.P.

SEWERAGE ENGINEER  
B.M.P.

ELECTRICITY ENGINEER  
B.M.P.

TELECOMMUNICATIONS ENGINEER  
B.M.P.

OTHER ENGINEER  
B.M.P.

NOT TO BE USED FOR CONSTRUCTION OF  
 ANY BUILDING OR STRUCTURE WITHOUT  
 THE APPROVAL OF THE ARCHITECT  
 11 APR 2007

MATCH LINE

HANGAR

THIS ROOM DESIGN TO BE PROVIDED TO LIVED DOWN 12  
 TO BE PROVIDED AT 50:1 RATIO FOR 100% RATIO

MATCH LINE

SECTION LINE

8255555555

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THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF ANY BUILDING OR STRUCTURE WITHOUT THE APPROVAL OF THE ARCHITECT

Casey, J. A. 1998. *Journal of the American Veterinary Medical Association* 264: 1039-1040.

## ***Appendix C***

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***(Photo-documentation of Site Inspection)***



Photo 1: Ex-GFS Building

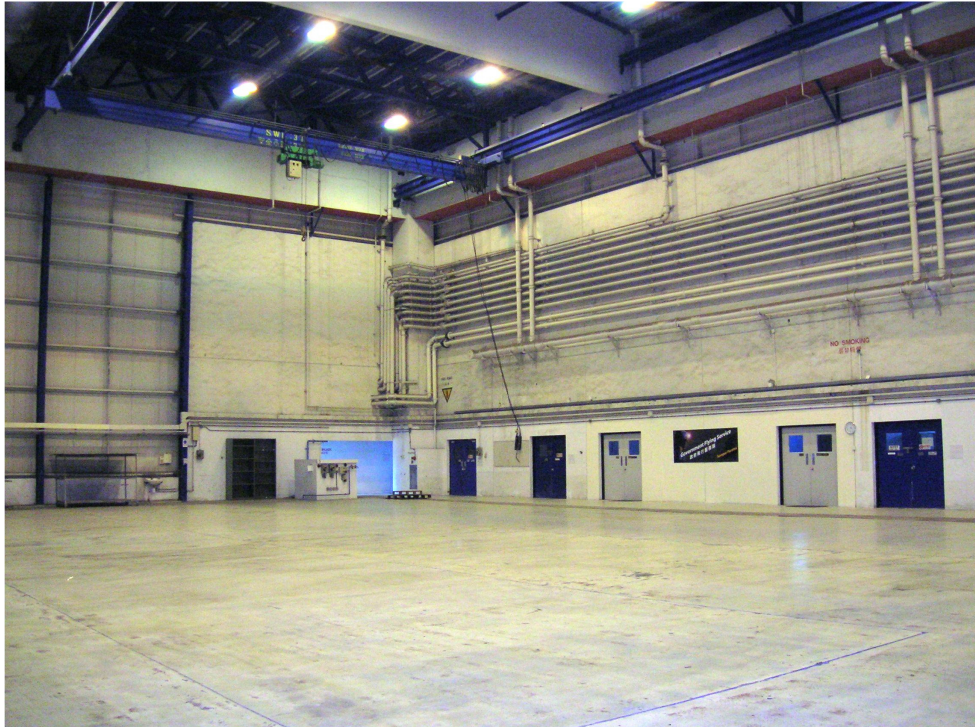


Photo 2: Hanger Area of the Ex-GFS Building Being Occupied by Government Flying Service (GFS)





Photo 3: Fire Point Located at the Hanger Area of the Ex-GFS Building



Photo 4: Lead Acid Battery Room Inside Ex-GFS Building





Photo 5: Inaccessible Area of the Ex-GFS Building Occupied by Customs and Excise Department (C&ED)



Photo 6: Dangerous Goods Store (D.G. Store)



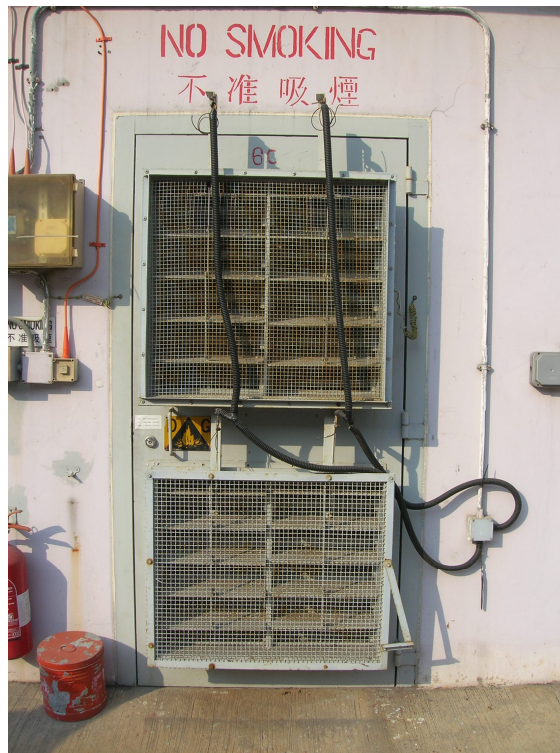


Photo 7: D.G. Store Room Occupied by GFS for Chemical Waste Storage



Photo 8: Chemical Waste Stored in D.G. Store Room Occupied by GFS





Photo 9: Grassland Located next to D.G. Store



Photo 10: Playground Located in between D.G. Store and Radar Station

***Appendix D***  
***(Responses to Comments)***

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**Agreement No. CE 35/2006(CE)  
Kai Tak Development Engineering Study  
cum Design and Construction of Advance Works  
– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study  
(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4  
Revised Contamination Assessment Plan (CAP)  
and Contamination Assessment Report/ Remediation Action Plan (CAR/RAP) for  
Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

**Comments Received**

**Date Received**

1. Environmental Protection Department

21 May 2008

**Agreement No. CE 35/2006(CE)**  
**Kai Tak Development Engineering Study**  
**cum Design and Construction of Advance Works**  
**– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study**  
**(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4**  
**Revised Contamination Assessment Plan (CAP)**  
**and Contamination Assessment Report/ Remediation Action Plan (CAR/RAP) for**  
**Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

<b><u>No.</u></b>	<b><u>Comments</u></b>	<b><u>Responses</u></b>
1.	<p><b>Environmental Protection Department, memo ref. (2) in Ax(13) to EP2/K19/S3/10 Pt. 8 dated 20 March 2008</b></p> <p>I refer to your MUR confirming that you have instructed MCAL to prepare and submit, on behalf of CEDD, assessment methodologies and key assessment assumptions, etc, as required in the EIA study briefs for the captioned study for our agreement.</p> <p>2. In this connection, we have received MCAL's letter ref: PMC:IWLH:ALSC:qc:60022408/08.2-1478 dated 30.4.2008 seeking our agreement to the revised CAP (Rev.2) and CAR/RAP (Rev.1) for the captioned under Section 3.4.10.4 and 3.4.10.5 of the EIA Study Brief No. ESB-152/2006.</p> <p>3. For avoidance of doubt, I have extracted the relevant requirements of the concerned EIA study brief clause as follows:</p> <p><u>EIA Study Brief No. ESB-152/2006</u></p> <p><i>S.3.4.10.4 – "During the course of the EIA study, the Applicant shall submit a contamination assessment plan (CAP) to the Director for agreement prior to conducting the contamination impact assessment of the relevant land or site(s) suspected to contain land contaminant(s) that shall require remediation. The CAP shall include proposals with details on representative sampling and analysis required to determine the nature and the extent of the contamination of the relevant land or site(s)."</i></p> <p><i>S.3.4.10.5 – "Based on the CAP agreed with the Director, the Applicant shall conduct a land contamination impact assessment. If land contamination is confirmed, a remedial action plan (RAP) shall be prepared to</i></p>	

No.	Comments	Responses
	<p><i>formulate necessary remedial measures."</i></p> <p>4. As we have already pointed out previously S3.4.10.5 does not require any submission of the CAR/RAP for our agreement. The CAR/RAP should form part of the EIA Report for approval submission under the EIAO. It is not legitimate for us to provide any form of partial agreement(s) of CAR/RAP in advance of the EIA Report approval.</p> <p>5. Please note that our comments below on the revised CAP are only provided for the partial fulfilment of the specific requirements for agreement stipulated in the above-mentioned EIA study brief S.3.4.10.4 and for the Ex-GFS Building area only and shall not pre-empt our future decisions to the EIA report approval process for the Kai Tak Development EIA and any future related EIA studies within Kai Tak Development EIA study area under the EIA Ordinance. Moreover, our views below shall not absolve your responsibility to fulfil requirements in other statutory legislation,</p> <p>6. Subject to the above caveats, we have the following comments, provided on an advisory basis, on your Consultant's submission:</p> <p>(a) Section 3.5.14 as per our previous comments, you are required to evaluate and confirm whether the potential contamination problem at all the remaining areas would be surmountable or not. If yes, please state your justifications in the CAP. If it is still uncertain at this stage, please also clearly state the uncertainty and the proposed way forward in the CAP</p> <p>(b) Section 4.1.2&amp;4.1.3, supplementary sampling plan and tentative programme for all those remaining areas with potential land contamination impacts as identified in Sections 3.5.11&amp; 3.5.12 should be provided</p> <p>7. In views of the comments in para. 6 above, the CAP is yet to be further revised and resubmitted for our agreement.</p>	<p>Please note that due to the presence of the underground chamber underneath the rooms inside ex-GFS building, direct contact of soil with the potential contaminants is not expected. Therefore, no issue of land contamination was identified in relation to the site activities in these rooms and no sampling locations were therefore proposed at these remaining areas.</p> <p>As discussed above, since no issue of land contamination was identified in relation to the site activities in these rooms, supplementary sampling at these remaining areas is not considered to be necessary.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	8. Notwithstanding our position in para.4 above, you are advised to refer to our above comments in preparing the CAR/RAP (Section 2.1.4 & Appendix B in particular)	As no issue of land contamination was identified in the rooms with chamber underneath inside ex-GFS building, sampling at these remaining areas is not considered to be necessary.

**Agreement No. CE 35/2006(CE)  
Kai Tak Development Engineering Study  
cum Design and Construction of Advance Works  
– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study  
(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4  
Revised Contamination Assessment Plan (CAP)  
and Contamination Assessment Report/ Remediation Action Plan (CAR/RAP) for  
Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

**Comments Received**

**Date Received**

1. Environmental Protection Department

3 March 2008

**Agreement No. CE 35/2006(CE)**  
**Kai Tak Development Engineering Study**  
**cum Design and Construction of Advance Works**  
**– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study**  
**(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4**  
**Revised Contamination Assessment Plan (CAP)**  
**and Contamination Assessment Report/ Remediation Action Plan (CAR/RAP) for**  
**Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

<b><u>No.</u></b>	<b><u>Comments</u></b>	<b><u>Responses</u></b>
1.	<p><b>Environmental Protection Department,</b>  <b>memo ref. (12) in Ax(13) to EP2/K19/S3/10</b>  <b>Pt. 6 dated 3 March 2008</b></p> <p>I refer to your MUR confirming that you have instructed MCAL to prepare and submit, on behalf of CEDD, assessment methodologies and key assessment assumptions, etc, as required in the EIA study briefs for the captioned study for our agreement.</p> <p>2. In this connection, we have received MCAL's letter ref: PMC:IWLH:MPLL:cssk:60022408/08-2-1126 dated 14.2.2008 seeking our agreement to the revised CAP and CAR/RAP for the captioned under Section 3.4.10.4 and 3.4.10.5 of the EIA Study Brief No. ESB-152/2006.</p> <p>3. For avoidance of doubt, I have extracted the relevant requirements of the concerned EIA study brief clause as follows:</p> <p><u><i>EIA Study Brief No. ESB-152/2006</i></u></p> <p><i>S.3.4.10.4 – "During the course of the EIA study, the Applicant shall submit a contamination assessment plan (CAP) to the Director for agreement prior to conducting the contamination impact assessment of the relevant land or site(s) suspected to contain land contaminant(s) that shall require remediation. The CAP shall include proposals with details on representative sampling and analysis required to determine the nature and the extent of the contamination of the relevant land or site(s)."</i></p> <p><i>S.3.4.10.5 – "Based on the CAP agreed with the Director, the Applicant shall conduct a land contamination impact assessment. If land contamination is confirmed, a remedial action plan (RAP) shall be prepared to</i></p>	





No.	Comments	Responses
	<p>Environmental Permit is irrelevant to the objectives of this CAP and shall be deleted.</p> <p>(c) Section 3.5.7 to 3.5.16:</p> <p>(i) Please review available information for the remaining areas with potential land contamination impacts as identified in Section 3.5.11 and 3.5.12 and provide the findings accordingly (para.4(ii) of my memo ref (16) in Ax(13) to EP2/K19/S3/10 Pt.4 dated 17 October 2007 refers).</p> <p>(ii) Please provide an initial contamination evaluation of the remaining areas with potential land contamination impacts as identified in Section 3.5.11 and 3.5.12 and also provide possible remediation methods (para.4(iii) of my memo ref (16) in Ax(13) to EP2/K19/S3/10 Pt.4 dated 17 October 2007 refers).</p> <p>(iii) Please evaluate and confirm whether the contamination problem at these remaining areas would be surmountable and provide the findings accordingly (para.4(iv) of my memo ref (16) in Ax(13) to EP2/K19/S3/10 Pt.4 dated 17 October 2007 refers).</p> <p>(d) Section 4.1.3 – The revised CAP is for the whole Ex-GFS Building area, please provide supplementary sampling plan and tentative programme for the remaining areas with potential land contamination impacts as identified in Sections 3.5.11 and 3.5.12 (para.4(v) of my memo ref (16) in Ax(13) to EP2/K19/S3/10 Pt.4 dated 17 October 2007 refers).</p> <p>8. In views of the comments in para. 7 above, the revised CAP is yet to be revised and resubmitted for our agreement.</p> <p>9. Lastly, we note that the submitted CAR</p>	<p>deleted.</p> <p>Site geology and hydrogeology, aerial photos and relevant Information from Government Departments for the remaining areas with potential land contamination impacts have been reviewed in Section 3.1 to 3.4 of the revised CAP.</p> <p>The initial contamination evaluation at transformer room and generator room were conducted in form of a site inspection on 23 March 2007, 12 April 2007 and 16 April 2007. Information revealed from the site personnel during the site visits has been provided in Section 3.5.10-3.5.12.</p> <p>Based on the results of samples analysis, no exceedances in Dutch B/C levels were found among the soil samples collected at the vicinity of the transformer room and the generator room. Hence, the contamination, if any, within these areas are considered localized and surmountable and its impact on the surrounding environment is considered to be minimal.</p> <p>A supplementary sampling plan for the remaining areas with potential land contamination impacts has been provided as a new appendix (<b>Appendix B</b>) in the CAR/RAP of the ex-GFS building (Rev.1). This supplementary contamination assessment should be carried out upon the cessation of the operations and prior to the redevelopment of the ex- GFS building.</p> <p>Noted. The revised CAP will be resubmitted.</p> <p>The uncertainty in decontamination work is</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>has presented your Consultant's land contamination assessment findings at part of the Ex-GFS Building only and has recommended that land contamination assessment for the hotspots identified at transformer room and generator room be carried out upon the cessation of operations and prior to the re-development of the Study Area. In other words, the land contamination assessment for the whole Ex-GFS Building area cannot be completed until then. In this connection, without pre-empting our future decision under the EIAO, in case if the land contamination assessment results cannot be available and incorporated into the EIA Report and the land contamination level at the subject site and the required decontamination works are still subject to great uncertainty, the project proponent's intention to apply directly for Environmental Permit for decommissioning of the ex-GFS Building based on the "approved" EIA Report seems very remote.</p>	<p>considered limited and surmountable due to the following reasons: (1) the remaining inaccessible sampling locations are located inside the building. They are much protected by the solid concrete floor. (2) The scale of the contamination as reviewed by the activities and the size of the hotspot would be small.</p>

**Agreement No. CE 35/2006(CE)  
Kai Tak Development Engineering Study  
cum Design and Construction of Advance Works  
– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study  
(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4  
Contamination Assessment Plan (CAP) for Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

**Comments Received**

**Date Received**

1. Environmental Protection Department

26 July 2007

**Agreement No. CE 35/2006(CE)**  
**Kai Tak Development Engineering Study**  
**cum Design and Construction of Advance Works**  
**– Investigation, Design and Construction**

**Kai Tak Development Environmental Impact Assessment (EIA) Study**  
**(EIA Study Brief No. ESB-152/2006) Section 3.4.10.4**  
**Contamination Assessment Plan (CAP) for Ex-Government Flying Service (Ex-GFS Building)**

**Responses to Comments**

<u><b>No.</b></u>	<u><b>Comments</b></u>	<u><b>Responses</b></u>
1.	<p><b>Environmental Protection Department, memo ref. (3) in Ax(13) to EP2/K19/S3/10 Pt. 4 dated 25 July 2007</b></p> <p>I refer to your MUR confirming that you have instructed MCAL to prepare and submit, on behalf of CEDD, assessment methodologies and key assessment assumptions, etc, as required in the EIA study briefs for the captioned study for our agreement.</p> <p>2. In this connection, we have received MCAL's letter ref: PMC:NWHF:slw1:60022408/09.5-0470 dated 10.7.2007 seeking our agreement to the captioned CAP under Section 3.4.10.4 of the EIA Study Brief No. ESB-152/2006.</p> <p>3. For avoidance of doubt, I have reproduced the relevant requirements of the concerned EIA study brief clause as follows:</p> <p><u>EIA Study Brief No. ESB-152/2006</u></p> <p>S.3.4.10.4 – "During the course of the EIA study, the Applicant shall submit a contamination assessment plan (CAP) to the Director for agreement prior to conducting the contamination impact assessment of the relevant land or site(s) suspected to contain land contaminant(s) that shall require remediation. The CAP shall include proposals with details on representative sampling and analysis required to determine the nature and the extent of the contamination of the relevant land or site(s)."</p> <p>4. In addition, you should also be aware that Section 3.4.10.2 of the EIA Study Brief No. ESB-152/2006 clearly defines that "Assessment Area for land contamination impact shall include all areas within the boundary of the former Kai Tak International Airport as described in section 3.2.1 (of the brief)." The subject CAP submission is only for the Ex-GFS Building area and you are</p>	

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>reminded that CAPs for other areas within the Assessment Area shall be submitted in due course for our agreement prior to conducting the contamination impact assessment of the relevant land or site(s) suspected to contain land contaminant(s) that shall require remediation in accordance with Section 3.4.10.4 of the EIA Study Brief No. ESB-152/2006.</p> <p>5. Please note that our comments below on the CAP are only provided for the partial fulfilment of the specific requirements for agreement stipulated in the above-mentioned EIA study brief clause and for the Ex-GFS Building area only and shall not pre-empt our future decisions to the EIA report approval process for the Kai Tak Development EIA and any future related EIA studies within the Kai Tak Development EIA study area under the EIA Ordinance. Moreover, our views below shall not absolve your responsibility to fulfil requirements in other statutory legislation, including the Waste Disposal Ordinance.</p> <p>6. Subject to the above caveats, we have the following comments, provided on an advisory basis, on your Consultant's submission:</p> <p>(a) Section 3.1 – Please provide information (including a drawing and/or photographs) regarding the sensitive receptors in the general vicinity of the subject Site.</p> <p>(b) Section 3.5.15 – The “4 sampling locations” as appeared in the 3<sup>rd</sup> line should read as “4 trial pits”, please amend accordingly.</p> <p>(c) Section 4.9.5 – It should be noted that landfill disposal should only be considered as the last resort.</p> <p>(d) Drawing 3.2 – Please insert a note to indicate that all proposed boreholes will also serve as groundwater monitoring/sampling wells (Section 4.5.2 refers).</p> <p>7. In views of the comments in para. 6 above, the CAP is yet to be revised and resubmitted for our agreement.</p>	<p>As stated in Section 3.1.1, surrounding environment of the ex-GFS building is mainly industrial and commercial landuses. A drawing showing the general vicinity of the ex-GFS building has been provided as <b>Drawing 3.1</b> in the revised CAP.</p> <p>The 3<sup>rd</sup> line of Section 3.5.15 has been revised accordingly.</p> <p>The 1<sup>st</sup> line of Section 4.9.5 has been revised as: “If contamination is found and landfill disposal is identified as the last resort to remediate the contaminated soil”.</p> <p>A note indicating that groundwater monitoring/sampling wells should be constructed if groundwater is encountered during excavation has been appended in <b>Drawing 3.3</b>.</p>