Decommissioning and Disposal Of Incinerator at Yan Chai Hospital

Project Profile

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Decommissioning and Disposal of Yan Chai Hospital Incinerators Project

PROJECT PROFILE

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Prepared by

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1. BASIC INFORMATION

1.1 Project Title

Decommissioning and disposal of clinical waste incinerators at Yan Chai Hospital (the "Project").

1.2 Purpose and Nature of the Project

The Hospital Authority of Hong Kong is undertaking redevelopment of Yan Chai Hospital (the "Hospital"), to upgrade health care facilities in the Tsuen Wan District in line with the needs of a modern public hospital. Four blocks of the existing Yan Chai Hospital will be demolished and a community health and wellness centre will be built on the site which will provide community-focused and patient-centred services.

Two (2) incinerator units are located in the basement at the Hospital. Modification of the basement is required to provide linkage from the car park driveway to the basement floor level of the future community and wellness centre. This modification requires the existing clinical waste incinerators to be demolished and disposed as part of the Phase I of the redevelopment project.

The two (2) vertical flues of the incinerators will be disconnected from the horizontal flue section (at basement ceiling level) and sealed up only; but not demolished. Therefore, the demolition works covered under this Project Profile are limited to internal areas in the Hospital basement (in the incinerator room and in the basement immediately outside the incinerator room).

1.3 Name of Project Proponent

The Hong Kong Hospital Authority

1.4 Location and Scale of Project

Yan Chai Hospital is located in the centre of the Tsuen Wan District in the western area of the New Territories, Hong Kong.

The Hospital is bounded by Tsuen Lok, Kwan Mun Hau, Yan Chai and Tsuen Wan Market Streets. The location plan for the Hospital is included in Appendix A.

The Hospital is comprised of Blocks A, B, C, D, E and F. The two (2) identical incinerator units which are to be demolished are located in a

room in the basement of Block B. The incinerator units are identified as "Incinerator 1" and "Incinerator 2".

The size of the incinerator room is approximately 17 metres squared (m^2). The size of each incinerator is approximately 1.5Wx2.5Hx3.5D (metres) with each incinerator combustion furnace capacity being approximately 2 cubic metres (m^3). The incinerators are fuelled by gas and there are no oil storage tanks on site. Each of the two (2) horizontal flue extend to approximately 7 metres (for incinerator 1) and 3 metres (incinerator 2) outside the incinerator room and along the ceiling of the basement to the base of the vertical flue (chimney) section.

The demolition works shall include the combustion furnace, the associated panels and the horizontal flue section. The incinerator and flue are constructed mainly of steel except the combustion furnace which is lined with refractory ceramic fire bricks.

The two (2) chimneys of the incinerators will be disconnected from the horizontal flue section (at basement ceiling level) and sealed up; but not demolished. Therefore, the demolition works covered under this Project Profile are limited to internal areas in the Hospital basement (in the incinerator room and immediately outside the incinerator room).

The incinerators were installed in 1991 and ceased operation in 2008 (incinerator 1) and April 2009 (incinerator 2). Wastes incinerated included human tissues, organs, dressings contaminated with blood and wastes generated from the operating theatre. During operation the incinerators were operated for up to six hours per day during Monday to Friday. The maintenance and operation of the incinerator were undertaken by the Electrical and Mechanical Services Department (EMSD) and Hospital's technical personnel respectively during the operation period. No recorded accidents or incidents occurred during the operation of the incinerator.

1.5 Number of Designated Project to be Covered by this Project Profile

Under Item 3 in Part II, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO, Cap. 499), decommissioning of clinical waste incinerators is a Designated Project. It is required by the EIAO that an Environmental Permit is granted from the Environmental Protection Department (EPD) before the decommissioning and disposal works commence.

The designated projects covered by this project profile include two (2) clinical waste incinerator units and horizontal flue sections located in an incinerator room in the Hospital basement.

1.6 Name and Telephone Number of Contact Persons

The whole redevelopment project at Yan Chai Hospital is managed by Llewelyn-Davies Hong Kong Ltd. (LD Asia). Parsons Brinckerhoff (PB) has been commissioned as the Environmental Consultant.

The contact details for the relevant personnel at PB are shown below:

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2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Implementation

The decommissioning and disposal works shall be undertaken by a specialist contractor appointed by the Hospital Authority or its representatives.

Town Gas technicians will be contacted to disconnect the gas supply to the incinerators.

2.2 Project Timetable and Programme

The incinerators ceased operation in 2008 (incinerator 1) and April 2009 (incinerator 2).

The targeted date for the commencement of the decommissioning and demolition works is 1 May 2010 and the targeted completion date is by 31 July 2010. The actual works covering the incinerator units and associated flue are not likely to exceed 14 days within this period. A tentative programme for the works is shown in Table 2.1.

Table 2.1: Tentative Programme for the Decommissioning and Demolition of the Incinerator Units

Task and Brief Description	**Time Required**
Site Preparation and Containment Construction	
Preliminary site decontamination	0.5 day
Construction of containment	2 days
Smoke test	0.5 day
Removal	
Removal and decontamination of the incinerators	5 days
Disposal	Within 1 day from obtaining waste disposal permit

2.3 Interactions with Broader Programme Requirements

The demolition of the incinerator units will be carried out in parallel with other demolition works (namely, demolition of Blocks C and D) required as part of the Phase 1 Redevelopment Programme at the Hospital.

3. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 Sensitive Receptors

Sensitive receptors, as identified by the EIAO Technical Memorandum, include residential developments; educational institutions; healthcare facilities; places of worship: agricultural areas; watercourses; beaches; groundwater resources; marine water resources; industries sensitive to pollution; airsheds with limited capacity to disperse pollution; areas of conservation value; places of high visual value; and, sites of cultural heritage.

Sensitive receptors located within 250 m of the Project site (Block B incinerator room) include:

- The on-site facilities at the Yan Chai Hospital
- Tsuen Wan Catholic Primary School located immediately to the south of the Hospital
- Residential properties (namely, Ho Fai Garden and New Haven) and hotels, the nearest located within approximately 50 m of the Hospital
- Tak Wah Park located approximately 50 m northwest of the Hospital.

The sensitive receptors are shown on a Figure in Appendix A.

3.2 The Surrounding Environment

Major elements of the surrounding environment, as identified by the EIAO Technical Memorandum include: existing pollution blackspots; nearby, existing and/or discontinued industrial operations; nearby trunk roads, and primary or secondary distributors; nearby noisy commercial, community or recreational activities; aircraft noise, helicopter noise, rail noise; existing or planned waste handling, treatment and disposal facilities; potentially hazardous installations; noisy or dusty open storage uses; existing and past land uses of the project site and environs.

None of the above major elements are considered to be applicable to the Project site.

4. POSSIBLE IMPACT ON THE ENVIRONMENT AND ENVIRONMENTAL PROTECTION MEASURES

4.1 Introduction

The nature and scale of the project is considered to be small and the works will be limited to internal areas, therefore, the potential impacts are considered to be minimal.

Table 4.1 identifies the potential environmental impacts associated with the decommissioning and demolition of the incinerators at the Hospital.

Table 4.1: Potential Environmental Impacts

Source	**Likely to occur (without mitigating measures)**
Gaseous Emissions	x
Dust	✓
Odour	x
Noise	x
Night-time Operations	x
Traffic Generation	x
Liquid Effluents, Discharges or Contaminated Runoff	✓
Generation of Waste of By-Products	✓
Manufacturing, Storage, Use, Handling, Transport, or Disposal of Dangerous Goods, Hazardous Materials or Wastes	✓
Risk of Accidents which would results in Pollution or Hazard	✓
Disposal of Spoil Material, including Potentially Contaminated Material	✓
Disruption of Water Movement or Bottom Sediment	x
Unsightly Visual Appearance	x
Ecological Impacts	x

The key potential impacts are dust emissions and waste management. These key impacts along with liquid effluents and risk of accidents are discussed in more detail in Section 4.2 of this Project Profile Report.

4.2 Key Potential Environmental Impacts

4.2.1 Residual Ash

The key environmental impacts (dust emissions and waste management) are associated with the residual ash remaining in the incinerator units and ash collectors. Ash sampling and analysis was undertaken to identify the associated risks and enable environmental protection and mitigation measures to be proposed accordingly.

Visual inspection of the incinerator site was conducted in May 2009 and ash sampling was undertaken on 1 June 2009. There is minimal residual ash in the incinerator furnace and ash collector; approximately 0.5 m^3 in total. Based on the visual inspection, there is no residual ash on the incinerator room wall or floors as they had previously being subject to cleaning by the Hospital Engineering Department staff.

To establish the conditions in relation to the residual ash, detailed ash sampling and analysis was undertaken inside each of the incinerator units and from the ash collectors (at the base of the vertical flue).

4.2.1.1 Ash Sampling

The ash sampling locations are summarised in Table 4.2. Five (5) samples of residual ash were taken from the incinerator combustion furnaces and the ash collectors at the base of the vertical flue. One (1) sample was taken from incinerator 1 furnace and two (2) samples were taken from incinerator 2 furnace. There was insufficient residual ash in incinerator 1 to enable further samples to be taken. One (1) sample was taken from the residual ash in each ash collector.

The number of samples is considered to be sufficiently representative given the small capacity of the incinerator units (approximately 2 m^3 for each incinerator unit) and ash collectors and the total amount of residual ash (approximately 0.5 m^3).

Table 4.2: Ash Sampling Locations

Ash Sample Number	**Location**
001	Incinerator 2 furnace
002	Incinerator 2 furnace (including ash from the wall and ceiling of the furnace)
003	Incinerator 2 ash collector
004	Incinerator 1 ash collector
005	Incinerator 1 furnace (including ash from the wall and ceiling of the furnace)

4.2.1.2 Sampling Procedure

Ash samples were taken for laboratory analysis by laboratories accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS).

The personnel taking the sample wore personnel protective equipment (PPE) which included disposable protective overall with hood, inner and outer nitrile gloves, rubber boots, disposable dust mask and a protective hard hat. The samples were taken using clean ceramic spoons to collect the residual ash and the samples were put separately in to clean glass containers and properly sealed. The sampling procedure was repeated at each sampling location. The samples were then stored in a cool box (at or below 4°C but not frozen) and delivered to the laboratories for analysis.

Refer to Appendix B for a photographic log of the sampling procedure.

4.2.1.3 Sampling Analysis

The test methods, analytical reporting limits as well as the assessment criteria and test results are summarised in Table 4.3. The full laboratory test results are included in Appendix C.

The testing results (except dioxins/furans) were compared against applicable guidance standards for assessment contamination. As the residual ash will be handled by the specialist contractor, the testing results were compared against the EPD's Risk-Based Remediation Goals (RBRG) which are based on the risk to human health.

The laboratory results for the ash samples can be summarised as follows:

- Dioxins were found in the residual ash in incinerator 1 at <1TEQ which is considered to be low.

- Dioxins were found in the ash collectors for incinerator 1 and incinerator at 2.85 and 2.21 TEQ which is considered to be moderately contaminated.

- Dioxins were found in incinerator 2 at 141 TEQ; this is considered to be severely contaminated, however, it should be noted that there is little ash remaining in incinerator (approximately <0.2 m^3).

- Heavy metals were identified in the residual ash at various concentrations (refer to Table 4.3 below). Lead was identified at concentrations of 2,340 mg/kg and 2,490 mg/kg in the incinerator furnaces which exceeds the guidance limit in the Hong Kong RBRG value of 2,290 mg/kg.

- No polychlorinated biphenyls were identified in the ash.

- No petroleum hydrocarbons were identified in the ash.
- No polyaromatic hydrocarbons were identified in the ash.

The ash inside the incinerator furnaces as well as any found attached to the walls, and ceiling surfaces are therefore considered as contaminated. Decommissioning of the whole incinerator room shall be carried out with special care and protection to ensure that all residual ash inside the incinerator room are handled, transported and disposed of properly.

Table 4.3: Laboratory Test Results and Interpretation (mg/kg except dioxins)

Parameter	Test Method	Reporting Limit	Assessment Criteria	Sample Result					Compliance
				001	002	003	004	005	
Dioxins/furans									
Dioxins/furans concentration (pg I-TEQ/g)	USEPA Method 8290 or Equivalent	-	5 ppb TEQ	0.363	0.158	2.85	2.21	**141**	**No**
Polychlorinated Biphenyls									
Total Polychlorinated biphenyls	USEPA Method 8270 or Equivalent	0.1	7.48E-01	<0.1	<0.1	<0.1	<0.1	<0.1	Yes
Total Petroleum Hydrocarbons (TPH)									
C6-C9	USEPA Method 8260/8015 or Equivalent	2	1.00E+04	<2	<2	<2	<2	<2	Yes
C10-C14		50		<50	<50	<50	<50	<50	Yes
C15-C28		100		<100	<100	<100	<100	<100	Yes
C25-C36		100		<100	<100	<100	<100	<100	Yes
Polyaromatic Hydrocarbons (PAHs) / Semi-volatile Organic Chemical (SVOCs)									
Naphthalene	USEPA Method 8270 or Equivalent	0.5	4.53E+02	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Phenanthrene		0.5	1.00E+04	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Anthracene		0.5	1.00E+04	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Fluoranthene		0.5	1.00E+04	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Pyrene		0.5	1.00E+04	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Benzo(a)pyrene		0.5	9.18E+00	<0.5	<0.5	<0.5	<0.5	<0.5	Yes
Heavy Metals									
Arsenic	USEPA Method 6020 or Equivalent	1	1.96E+02	6	6	141	71	8	Yes
Barium		0.5	1.00E+04	1200	227	12	3.6	100	Yes
Cadmium		0.2	6.53E+02	1.2	1.9	1.5	0.9	8.0	Yes
Chromium		1	1.00E+04	1020	837	67	76	453	Yes
Cobalt		0.5	1.00E+04	3.2	3.2	36.5	31.8	4.5	Yes
Copper		1	1.00E+04	59	70	268	213	80	Yes
Lead		1	2.29E+03	1370	**2340**	384	184	**2490**	**No**
Mercury		0.05	3.84E+01	<0.05	<0.05	<0.05	0.05	<0.05	Yes
Molybdenum		1	3.26E+03	10	9	8	6	11	Yes
Nickel		1	1.00E+04	12	8	47	54	27	Yes
Tin		0.5	1.00E+04	75.3	51.7	78.6	45.3	94.8	Yes
Zinc		1	1.00E+04	498	615	64	35	1240	Yes

All values are in the unit of mg/kg dry weight basis unless otherwise specified.
Assessment criteria are referenced to the Hong Kong RBRG Standards (mg/kg)

4.2.2 Dust Emissions

4.2.2.1 Introduction

Environmental and human health protection measures can be implemented to control dust emissions.

Decommissioning of the incinerator room shall be conducted under full containment to avoid the release of any residual ash to the environment, which could be generated during the decommissioning works. The following sections detail the approach.

4.2.2.1.1 Site Preparation and Containment Construction

1. Preliminary site decontamination of all debris shall be carried out using High Efficiency Particulate Air (HEPA) vacuum cleaner. Except the incineration units, all other existing items shall be removed from the incinerator room as far as practicable to avoid obstructing work activities.

2. The doorway (which leads to a room associated with the Hospital boiler) in the southwest corner of the incinerator room shall be sealed with three-layers of fire retardant polythene sheets.

3. A temporary structure shall be built from the incinerator room to enclose the flue (located immediately outside the incinerator room in the Hospital basement). A three-compartment decontamination unit shall be constructed for entry and exit in to the works area. The unit shall comprise a dirty room, a shower room and a clean room or at least 1x1 metre base each with three-layers of fire retardant polythene sheet where all workers shall carry out decontamination procedures before leaving the work area.

4. Air movers shall be provided at the incinerator room to exhaust air from the works area. A stand-by air mover shall also be installed. Sufficient air movers shall be maintained to give a minimum of six (6) air changes per hour to the works area and, maintain a negative pressure of 1.5 to 4 mm of water within the works area throughout the entire course of the decommissioning works. A pressure monitor shall print out records and audible alarm shall be installed at an easily accessible location to demonstrate that negative pressure is maintained. New pre-filters and HEPA filters shall be used on the air movers.

5. A copy of the maintenance records of the air movers shall be kept on site for inspection upon request. The appointed specialist contractor shall also check the differential pressure of the air mover to ensure that the filter is not blocked. A differential pressure of above 5 mm of water indicates that the filters will need to be

changed. All items remain inside the containment shall be covered with at least two (2) layers of fire retardant polythene sheets before the decommissioning works proceed.

6. Prior to commencement of the decommissioning works, a smoke test with non-toxic smoke shall be carried out to ensure the tightness of the containment and to check whether there are any stagnant pockets of air (indicated by an aggregate of smoke that cannot be effectively extracted). After a successful test, the air mover shall be switched on to exhaust smoke from the containment and to give a minimum of 6 ACH, and visually check that the absolute filters screen out the smoke effectively and that the pressure gauges read normal. The normal reading of the pressure range for maintaining six (6) air changes per hour shall be 1.5 to 4 mm of water (negative pressure). The audible alarm's integrity shall also be checked, and the trigger shall be at least 1.5 mm of water (negative pressure).

7. Warning signs in both Chinese and English shall be put in conspicuous locations outside the temporary decontamination unit and displayed throughout the entire course of the decommissioning and demolition works.

8. All workers shall wear full PPE which should include disposable protective overall (such as Tyvek) with hood, nitrile gloves, shoe covers, and full-face positive pressure respirators equipped with a combination cartridge that filters particulate and removes organic vapour.

The proposed plan layout of containment during decommissioning and disposal works of the clinical waste incinerator is included as a Figure in Appendix A.

4.2.2.1.2 Decontamination, Demolition and Removal

1. *Removal of Residual Ash:*

   The residual ash inside the incinerator units, ash collectors and on the surfaces of the walls and ceiling of the incinerator units shall be removed by scrabbling. The inside of the incinerator units (walls, ceilings and ground) shall be cleaned with a HEPA vacuum cleaner followed by wet wiping.

   The scrabbled materials as well as filtered materials from the HEPA vacuum cleaner shall be packaged on site and placed in to polythene-lined steel drums for subsequent disposal at the Chemical Waste Treatment Facilities (CWTF).

2. *Removal of Incineration Units:*

   The horizontal flue and incinerator panels shall be dismantled from

the top down by removing the bolts or cutting the joints. Any ash or residues attached to the incinerators or flue shall be removed by scrabbling and HEPA vacuuming.

Any detached sections of the incinerator units shall be wrapped with two (2) layers of fire retardant polythene sheets and the third layer shall be wrapped and secured with duct tape. The outer wrapping shall be decontaminated by wet wiping in the decontamination unit.

The brick-lined combustion furnaces upon removal shall be wrapped with three layers of fire retardant polythene sheets and the outermost layer shall be secured with duct tape. The outer wrapping shall be decontaminated by wet wiping in the decontamination unit.

3. Following completion of the removal works, all surfaces in the incinerator room should be decontaminated by HEPA vacuuming and wet wiping. The innermost polythene sheet should be sprayed with Polyvinyl Alcohol (PVA). Upon drying, the innermost polythene layer should be removed and wrapped so that the previously exposed surface is contained on the inside of the wrapping and the package then sealed with duct tape.

   The above decontamination procedure shall be repeated for the second and third layers of polythene sheets.

Wastes generated during the decontamination works are discussed in Section 3.3.3 of this Project Profile Report.

Wastewater generated during decontamination works is discussed in Section 3.3.4 of this Project Profile Report.

4.2.2.2 Summary

Dust and ash emissions will be controlled by undertaking a containment approach during the demolition works. No significant dust emissions are expected during the decommissioning and demolition of the incinerators because the works shall be undertaken in an air-tight containment under negative pressure.

The Project Proponent will include a clause in the contract for the specialist contractor requiring the above environmental protection measures to be implemented.

4.2.3 Waste Management

4.2.3.1 Introduction

This section identifies the potential wastes arising from the decommissioning and demolition of the incinerator units.

4.2.3.2 Waste Sources

The following wastes will be generated by the project:

- Residual ash from the incinerator furnace and ash collector
- The ceramic refractory bricks which are lining the incinerator units
- Scrap metals from the incinerator units and flue
- Materials generated during the decommissioning process (filters and cloths)

4.2.3.3 Types of Waste and Disposal Method

Chemical Waste

Residual ash generated from the incinerator operation could be potentially contaminated waste under the Waste Disposal (Chemical Waste) (General) Regulation 1992. Chemical waste is defined by this regulation as any substance, listed in Schedule 1 (in any form, quantity and concentration).

Schedule 1 substances of relevance to this Project include: asbestos, furans, dioxins, polychlorinated biphenyls and heavy metals (arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, tin and zinc).

According to “A Guide to the Registration of Chemical Waste Producers” issued by the EPD, ash generated from the incineration of wastes is classified as chemical waste if any of the Schedule 1 substances are present.

An asbestos investigation of the incinerators, flue and incinerator room was undertaken on 1 June 2009 by a Registered Asbestos Consultant. No asbestos-containing materials (ACMs) were identified in the survey;

therefore, no asbestos-containing waste will be produced by the Project. The Asbestos Investigation Report is included as Appendix D.

The residual ash (estimated to be less than 1 m^3 remaining) and the materials generated during the decommissioning process (cloths and filters) will be disposed of at the Chemical Waste Treatment Centre (CWTC) under the surveillance of the trip ticket system. As a prudent approach all residual ash collected will be considered as chemical waste. A licensed waste collector will transport the waste.

Other Wastes

Subject to the EPD's approval, it is proposed that the some of the incinerator units and the flue can be recycled. As with any plant which has been used for thermal processes, it is likely that ash deposits will be contained on the material. Therefore, these materials should be subject to HEPA vacuum and wiping before being wrapped in polythene and segregated from the chemical waste. Consistent with the EPD's policies for reduction of waste, landfill be the secondary option.

4.2.3.4 Summary

Adverse environmental impacts due to waste generation are not expected. The Project Proponent will include a clause in the contract for the specialist contractor requiring the above environmental protection measures to be implemented.

4.2.4 Liquid Effluents and Discharges

4.2.4.1 Introduction

Wastewater generated from the works shall be limited to water used in dust suppression. The specialist contractor should take precautionary measures to minimise the quantity of wastewater generated. In addition, cloths which have been used for wet wiping will not be re-used therefore the only wastewater generated by this cleaning process will limited to that on the surfaces of the equipment; it is anticipated that this water will evaporate and therefore no contaminated wastewater will be generated.

The floor drain in the incinerator room shall be covered with a temporary seal during the decommissioning and demolition works. The top of the flue should be sealed with polyethene sheets at least twenty-four (24) hours before the works commence.

4.2.4.2 Summary

Following the implementation of the above control measures, there will be no discharges of effluents or wastewater.

4.2.5 Risk of Accidents Which Results in Pollution or Hazard

4.2.5.1 Introduction

As with any project there are risks involved with the Project which if not managed could result in a pollution event or hazard.

4.2.5.2 Control Measures

The key potential accidents and hazards and control measures are identified the table below.

Table 4.4: Potential Risks and Control Measures

Risk	Control Measure
Accidents associated with disconnecting the gas supply – potential impacts to human health	A Town Gas technician will be employed to undertake this work. This is routine work for this company and the technician would be considered adequately qualified to undertake the work.
Release of dust (ash) in to the environment – potential impacts to human health	The decommissioning and demolition work will be undertaken in full containment, a specialist contractor will be employed who will wear PPE.
Release of chemical waste during transport – potential impacts to human health / the environment	A suitably licensed waste carrier will be used to transport the chemical wastes to the disposal sites under the trip ticket system.

4.2.5.3 Summary

The control measures are considered adequate to minimise the risk of a pollution event or hazard.

4.3 Other Environmental Impacts Not Likely to Occur

This section details the other environmental impacts which are not likely to occur in undertaking the project.

4.3.1 Asbestos-Containing Materials

An asbestos investigation of the incinerators, flue and incinerator room was undertaken on 1 June 2009 by a Registered Asbestos Consultant. No asbestos-containing materials were identified in the survey. The Asbestos Investigation Report is included as Appendix D.

4.3.2 Gaseous Emissions

No process will be undertaken in the demolition works which will generate gaseous emissions.

4.3.3 Odour

No odours are expected as the majority of waste materials which will be generated by the project are of solid residues and no odour generating process will be undertaken in the demolition works.

4.3.4 Noise

The demolition activities are not expected to give rise to any significant noise impacts. Demolition activities will be undertaken in an indoor environment using hand tools and small electric tools only and are unlikely to affect receptors outside the basement of the Hospital.

4.3.5 Night-time Operations

Decommissioning and demolition works will be undertaken between the hours of 0800 and 1900; therefore, there will be no night-time operations associated with the Project.

4.3.6 Traffic Generation

Given the limited quantity of demolition waste associated with the decommissioning works, traffic-associated environmental impact is not identified to be significant. In addition, vehicular access is provided (via a ramp from ground level) to the Block B basement which will allow vehicles to collect the wastes directly from incinerator room.

4.3.7 Disruption of Water Movement or Bottom Sediment

No discharges to surface water, dredging or reclamation will be undertaken during the Project; therefore no disruption of water movement of bottom sediment is anticipated.

4.3.8 Land Contamination

The two (2) incinerators, each with a furnace of approximately 2 m^3, were constructed with a durable steel fabrication structure with a high temperature resistance lining and insulating refractory ceramic bricks. The incinerators were each constructed on concrete solid bases which were built on top of a concrete slab in the incinerator room. The concrete bases and slabs are considered to be in good condition.

Given the above conditions land contamination arising from the past operation of the incinerators is not considered to be significant.

4.3.9 Unsightly Visual Appearance

The decommissioning and demolition of the incinerators will be undertaken internally; therefore no visual impacts outside the basement are anticipated.

4.3.10 Ecological Impacts

There are no nearby areas of ecological or conservation value. The Project will not have any ecological impacts.

5. USE OF PREVIOUSLY APPROVED EIA REPORTS

In terms of the decommissioning method and the size of the incinerators involved, the nature of this project is found to be similar to the following those in the following approved Project Profile Reports:

- Decommissioning and Disposal of Clinical Waste Incinerator at Wai Oi Block of Caritas Medical Centre (Project Profile ref: PP-312/2007, DEP's decision ref: DIR-149/2007 and Environmental Permit ref: EP-278/2007)

- Decommissioning of a Clinical Waste Incinerator at Pok Oi Hospital (Project Profile ref: PP-150/2001, DEP's decision ref: DIR-062/2001 and Environmental Permit ref: EP-117/2002)

- Decommissioning and Disposal of a Clinical Waste Incinerator at Tang Shiu Kin Hospital (Project Profile ref: PP-180/2002, DEP's decision ref: DIR-074/2002 and Environmental Permit: EP-154/2003)

The above Project Profiles shall serve as references for this Project at Yan Chai Hospital. The findings of these Project Profiles suggested that it was not necessary to carry out a full-scale EIA study for the decommissioning of the clinical waste incinerators at the respective hospitals.

6. CONCLUSIONS

The potential environmental impacts of the decommissioning works of the clinical waste incinerator units have been discussed and the appropriate mitigation measures to implement environmental control measures have been detailed.

The key focus from an environmental perspective is to avoid release of residue ash to the environment and to avoid contamination of the on-site facilities. Given the small size of the clinical waste incinerators, decommissioning and disposal is not expected to generate any significant environmental impact to the surrounding environment.

Other previously approved Project Profiles for similar projects have been referenced. It was suggested in these Project Profiles that it was not necessary to carry out a full-scale EIA study for the decommissioning of the clinical waste incinerators at the respective hospitals.

APPENDIX A

Figures

APPENDIX B

Photographic Record

APPENDIX C

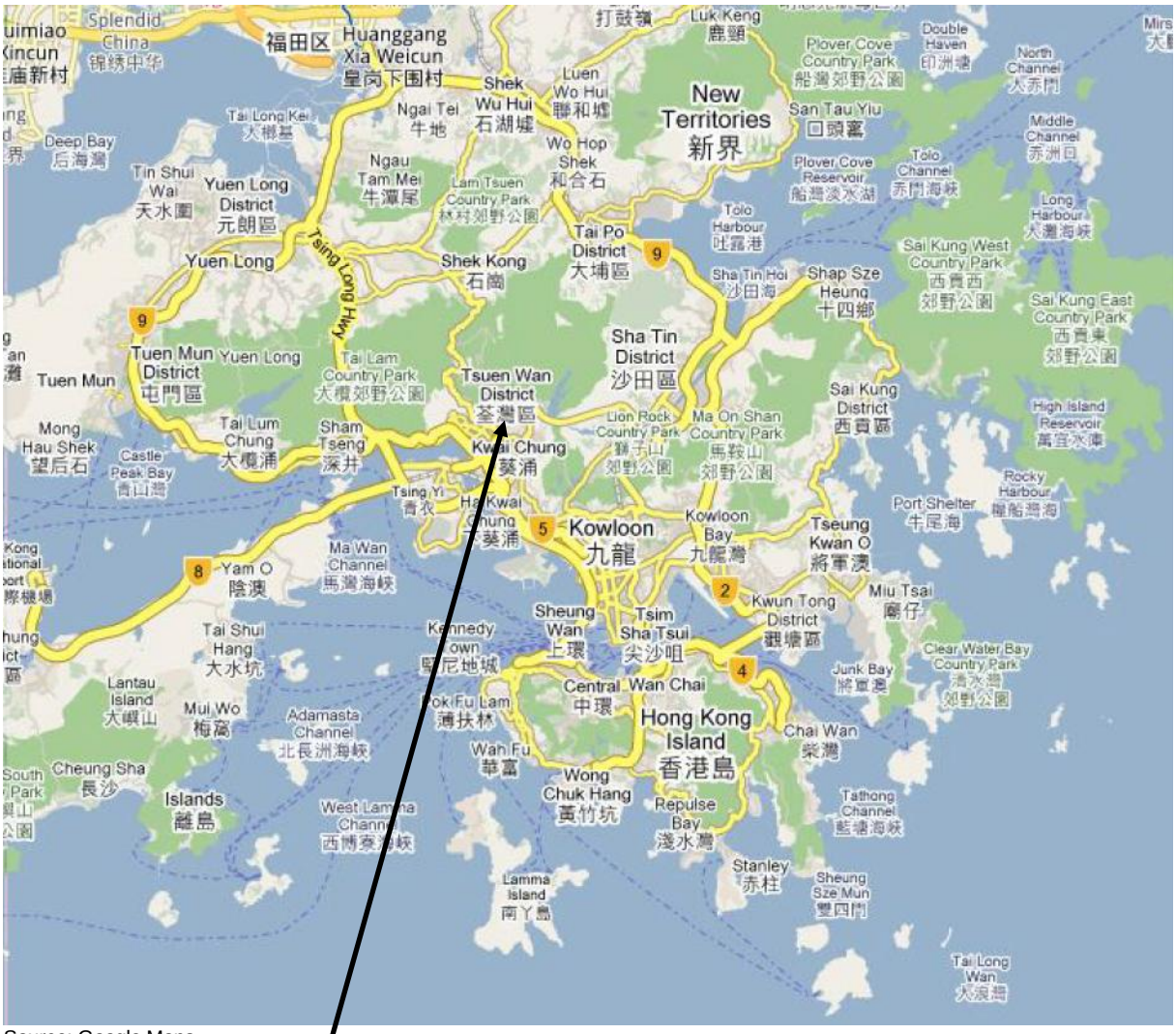
Ash Testing Laboratory Results

APPENDIX D

Asbestos Survey Report

APPENDIX A

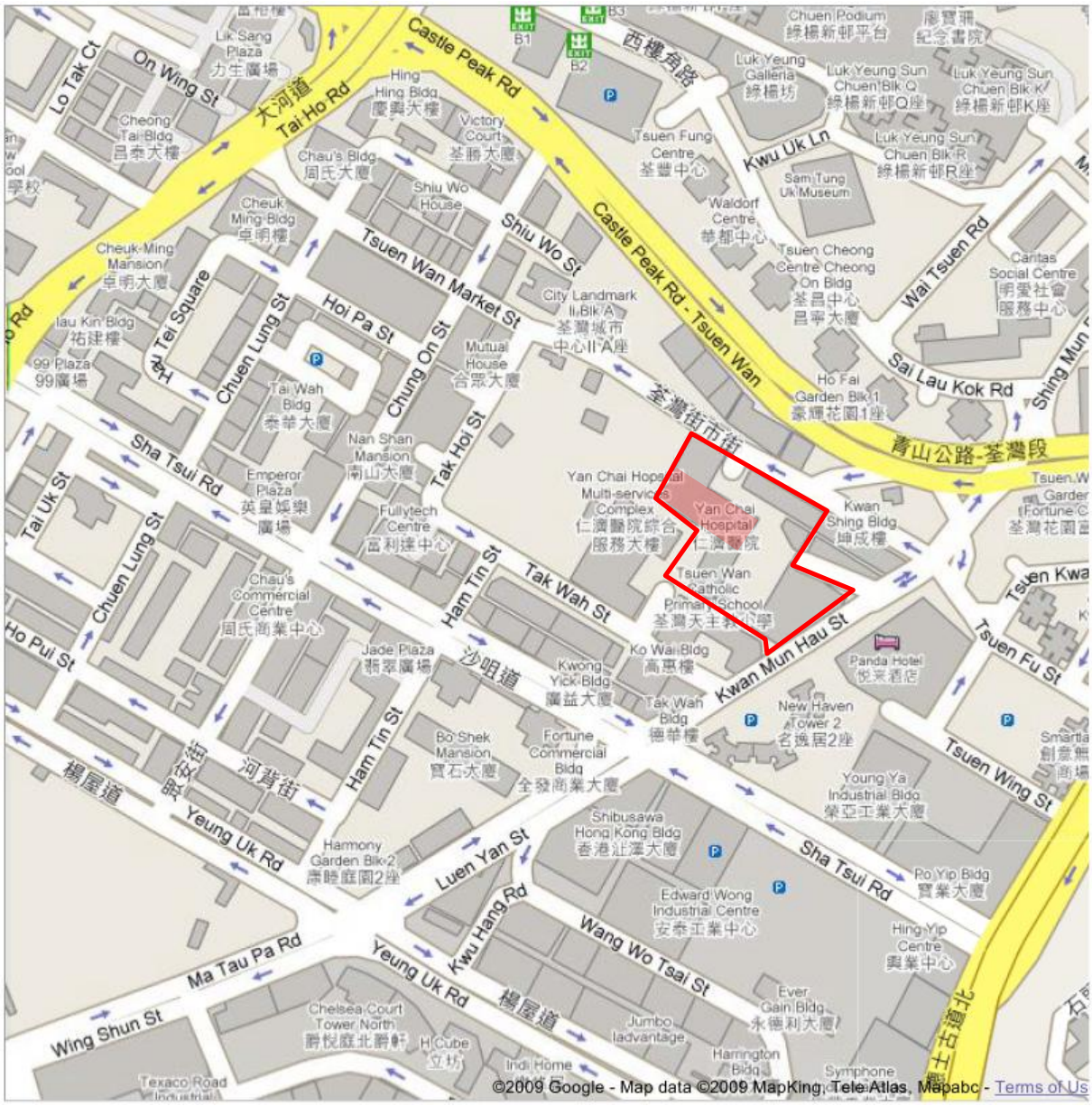
Figures



Source: Google Maps

Project Location
工程項目地點

Title: 標題:	Figure 1: Site location in Hong Kong 圖一：工程項目在香港的地點	**July 2009** 2009年七月
Project: 工程項目:	Decommissioning and Disposal of Incinerators at Yan Chai Hospital 清拆及處理位於仁濟醫院的醫療廢物焚化爐工程	

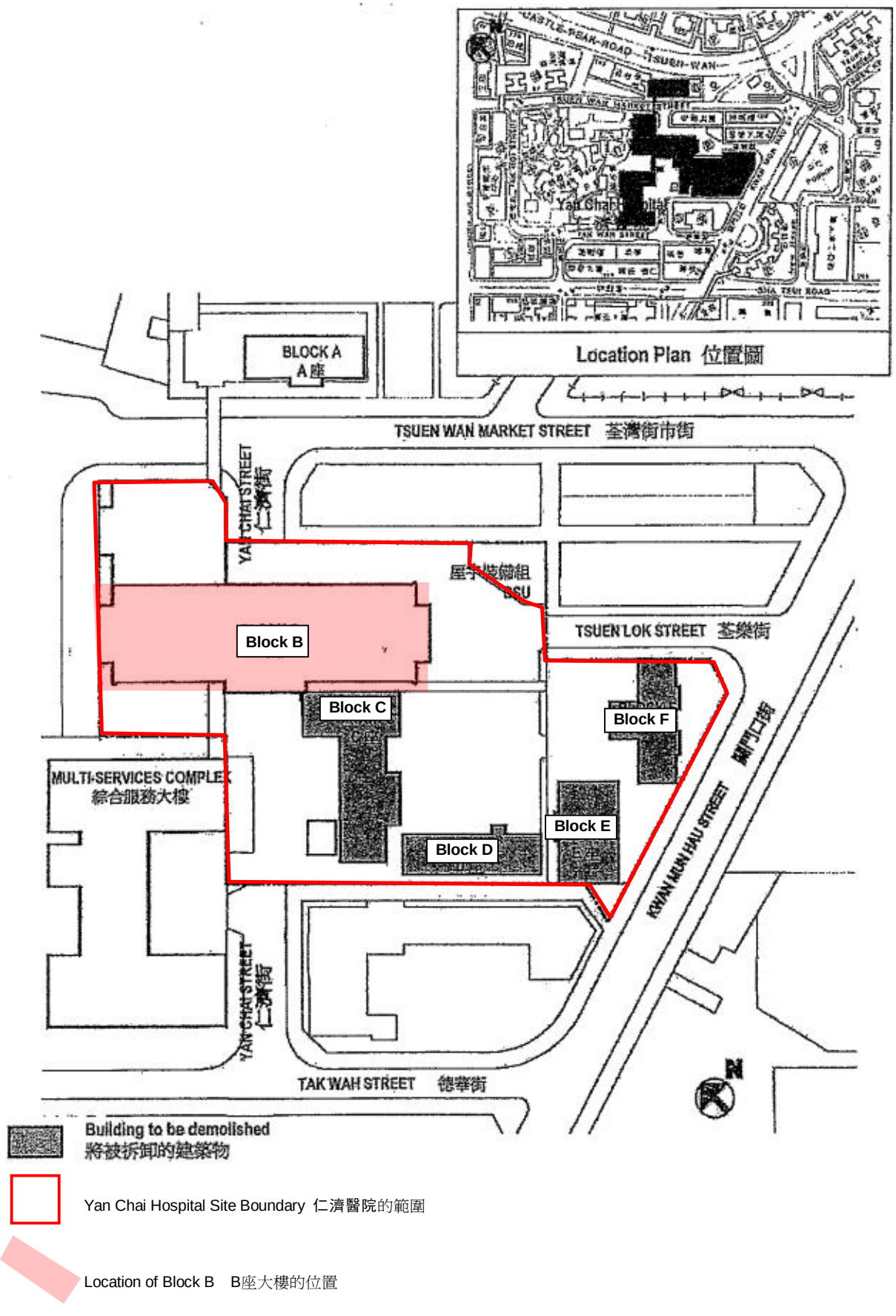


Source: Google Maps

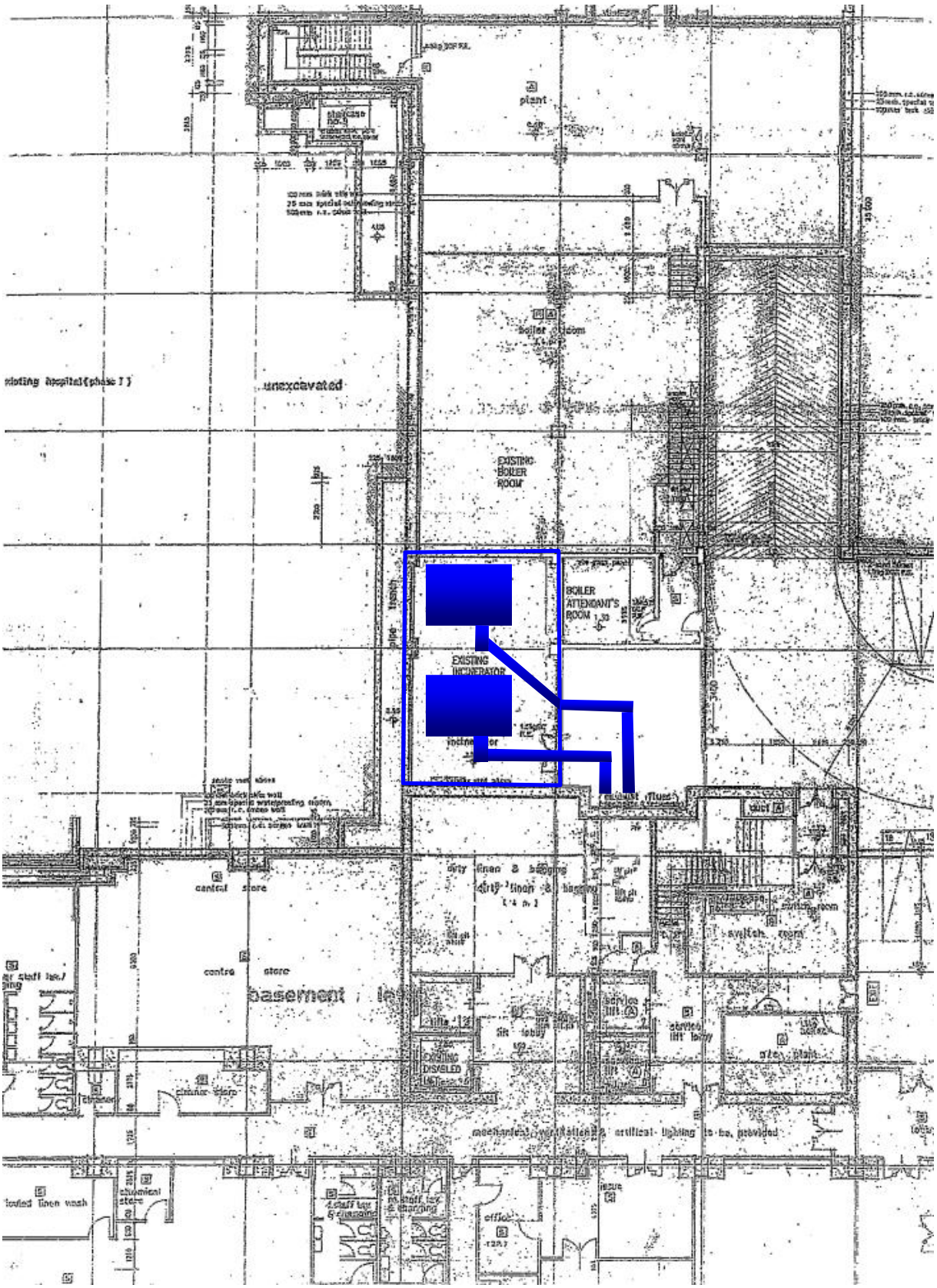
Yan Chai Hospital Site Boundary 仁濟醫院的範圍

Location of Block B B座大樓的位置

Title: 標題:	Figure 2: Site location in Tsuen Wan 圖二：工程項目在荃灣的地點	**July 2009** 2009年七月
Project: 工程項目:	Decommissioning and Disposal of Incinerators at Yan Chai Hospital 清拆及處理位於仁濟醫院的醫療廢物焚化爐工程	



Title: 標題:	Figure 3: Detailed Site location in Tsuen Wan 圖三：工程項目在荃灣的詳細地點	**July 2009** 2009年七月
Project: 工程項目:	Decommissioning and Disposal of Incinerators at Yan Chai Hospital 清拆及處理位於仁濟醫院的醫療廢物焚化爐工程	



Incinerator Room Boundary in the Basement of Block B 在B座大樓地下室的焚化爐房邊界

Approximate Location of Incinerators and Flue 焚化爐及煙道的位置

Title: 標題:	Figure 4: Existing Basement Layout in Block B 圖四：現有B座大樓地下室的平面圖	**July 2009** 2009年七月
Project: 工程項目:	Decommissioning and Disposal of Incinerators at Yan Chai Hospital 清拆及處理位於仁濟醫院的醫療廢物焚化爐工程	

Title: 標題:	Figure 5: Proposed Basement Layout in Block B 圖五：建議中B座大樓地下室平面圖	**July 2009** 2009年七月
Project: 工程項目:	Decommissioning and Disposal of Incinerators at Yan Chai Hospital 清拆及處理位於仁濟醫院的醫療廢物焚化爐工程	

APPENDIX B

Photographic Record

Incinerator 1

Incinerator 2

Incinerator 1

Incinerator 2

Horizontal flue in the incinerator room

Horizontal flue immediately outside the incinerator room in the Hospital basement

Horizontal flue joining the vertical chimney section (2 flue for incinerator at the far right, 2 flue nearest for the boiler)

Ash collectors at the bottom of the chimney

Electrical equipment for the incinerators has been switched off

No visible ash outside incinerator unit

No visible ash on the incinerator room floor

Residual ash in the ash collector (bottom of chimney)

Residual ash in incinerator 1

Residual ash in incinerator 2

Ash sampling

Ash sampling

APPENDIX C

Ash Testing Laboratory Results

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: PARSONS BRINCKERHOFF	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 6
Contact	: MR FLEUR PARKINSON	Contact	: Wong Wai Man, Alice	Work Order	: HK0910725
Address	: 7/F, ONE KOWLOON, 1 WANG YUEN STREET, KOWLOON BAY, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Parkinsonf@PBWorld.com	E-mail	: Alice.Wong@alsenviro.com		
Telephone	: +852 2963 7640	Telephone	: +852 2610 1044		
Facsimile	: +852 2856 9902	Facsimile	: +852 2610 2021		
Project	: 2525007A ENVIRONMENTAL SERVICES FOR YAN CHAI HOSPITAL INCINERATOR	Quote number	: ----	Date Samples Received	: 01-JUN-2009
Order number	: ----			Issue Date	: 16-JUN-2009
C-O-C number	: ----			No. of samples received	: 5
Site	: ----			No. of samples analysed	: 5

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client. The completion date of analysis is: 11-JUN-2009

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

Specific comments for Work Order: **HK0910725**

Sample(s) were received in a chilled condition.

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

Sample(s) as received, digested by In-house method E-ASTM D3974-81 based on ASTM D3974-81, prior to the determination of metals.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	*Position*	*Authorised results for*
Anh Ngoc Huynh	**Senior Chemist**	**Organics**
Fung Lim Chee, Richard	**General Manager**	**Inorganics**

Analytical Results

Sub-Matrix: ASH			Client sample ID	001	002	003	004	005
			Client sampling date / time	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]
Compound	CAS Number	LOR	Unit	HK0910725-001	HK0910725-002	HK0910725-003	HK0910725-004	HK0910725-005
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	6	6	141	71	8
EG020: Barium	7440-39-3	0.5	mg/kg	1200	227	12.0	3.6	100
EG020: Cadmium	7440-43-9	0.2	mg/kg	1.2	1.9	1.5	0.9	8.0
EG020: Chromium	7440-47-3	1	mg/kg	1020	837	67	76	453
EG020: Cobalt	7440-48-4	0.5	mg/kg	3.2	3.2	36.5	31.8	4.5
EG020: Copper	7440-50-8	1	mg/kg	59	70	268	213	80
EG020: Lead	7439-92-1	1	mg/kg	1370	2340	384	184	2490
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	<0.05	0.05	<0.05
EG020: Molybdenum	7439-98-7	1	mg/kg	10	9	8	6	11
EG020: Nickel	7440-02-0	1	mg/kg	12	8	47	54	27
EG020: Tin	7440-31-5	0.5	mg/kg	75.3	51.7	78.6	45.3	94.8
EG020: Zinc	7440-66-6	1	mg/kg	498	615	64	35	1240
EP-071: Total Petroleum Hydrocarbons (TPH)								
C6 - C9 Fraction	----	2	mg/kg	<2	<2	<2	<2	<2
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
EP-075B: Polyaromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-066: Polychlorinated Biphenyls								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-080S: TPH(Volatile)/BTEX Surrogate							Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	88.7	82.5	84.4	86.7	94.6
Toluene-D8	2037-26-5	0.1	%	96.9	96.9	94.8	95.6	97.3
4-Bromofluorobenzene	460-00-4	0.1	%	94.4	90.9	90.2	90.0	94.8
EP-075S: Acid Extractable Surrogates							Surrogate control limits listed at end of this report.	
2-Fluorophenol	367-12-4	0.1	%	62.5	83.5	112	99.7	95.7
Phenol-d6	13127-88-3	0.1	%	102	93.2	110	94.9	108
2.4.6-Tribromophenol	118-79-6	0.1	%	47.6	47.3	77.0	75.0	57.4
EP-075T: Base/Neutral Extractable Surrogates							Surrogate control limits listed at end of this report.	
Nitrobenzene -d5	4165-60-0	0.1	%	73.3	65.7	78.6	67.5	72.9
2-Fluorobiphenyl	321-60-8	0.1	%	72.7	66.6	80.0	68.0	76.9

Sub-Matrix: ASH			Client sample ID	001	002	003	004	005
			Client sampling date / time	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]	[01-JUN-2009]
Compound	CAS Number	LOR	Unit	HK0910725-001	HK0910725-002	HK0910725-003	HK0910725-004	HK0910725-005
EP-075T: Base/Neutral Extractable Surrogates - Continued								Surrogate control limits listed at end of this report.
4-Terphenyl-d14	1718-51-0	0.1	%	**87.2**	**84.6**	**104**	**89.0**	**88.3**
EP-066S: PCB Surrogate								Surrogate control limits listed at end of this report.
Tetrachlorometaxylene	877-09-8	0.1	%	**67.3**	**49.7**	**58.6**	**54.6**	**72.5**
Dibutylchlorendate	1770-80-5	0.1	%	**60.2**	**72.1**	**77.2**	**80.3**	**62.6**

Laboratory Duplicate (DUP) Report

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 1001902)								
HK0910725-002	002	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	1.9	1.7	10.3
		EG020: Barium	7440-39-3	0.5	mg/kg	227	199	13.4
		EG020: Cobalt	7440-48-4	0.5	mg/kg	3.2	3.6	12.5
		EG020: Tin	7440-31-5	0.5	mg/kg	51.7	54.8	5.8
		EG020: Arsenic	7440-38-2	1	mg/kg	6	6	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	837	890	6.2
		EG020: Copper	7440-50-8	1	mg/kg	70	77	10.2
		EG020: Lead	7439-92-1	1	mg/kg	2340	2320	0.9
		EG020: Molybdenum	7439-98-7	1	mg/kg	9	9	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	8	7	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	615	663	7.4
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 1000853)								
HK0910725-001	001	C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0
		C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0
		C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 998406)								
HK0910675-006	Anonymous	C6 - C9 Fraction	----	2	mg/kg	<2	<2	0.0
EP-075B: Polyaromatic Hydrocarbons (PAHs) (QC Lot: 998336)								
HK0910753-044	Anonymous	Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0
		Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0
		Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0
		Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0
		Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0
EP-066: Polychlorinated Biphenyls (QC Lot: 1000854)								
HK0910725-001	001	Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0

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

Matrix: SOIL

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 1001902)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	104	----	85	115	----	----
EG020: Barium	7440-39-3	1	mg/kg	<0.5	5 mg/kg	93.2	----	85	115	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	91.6	----	85	115	----	----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	97.1	----	85	115	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<0.5	5 mg/kg	85.7	----	85	115	----	----

Matrix: **SOIL**

Method: Compound	CAS Number	Method Blank (MB) Report LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report: Spike Concentration	Spike Recovery (%) LCS	DCS	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 1001902) - Continued											
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	88.6	----	85	115	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	86.0	----	85	115	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	85.6	----	85	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	90.2	----	85	115	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	87.1	----	85	115	----	----
EG020: Tin	7440-31-5	1	mg/kg	<0.5	5 mg/kg	88.3	----	85	115	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	86.0	----	85	115	----	----
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 1000853)											
C10 - C14 Fraction	----	50	mg/kg	<50	16 mg/kg	84.8	----	58	138	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	53 mg/kg	82.3	----	62	116	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	45 mg/kg	54.6	----	40	122	----	----
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 998406)											
C6 - C9 Fraction	----	2	mg/kg	<2	4 mg/kg	104	----	70	123	----	----
EP-075B: Polyaromatic Hydrocarbons (PAHs) (QC Lot: 998336)											
Naphthalene	91-20-3	0.5	mg/kg	<0.5	0.25 mg/kg	92.0	----	61	104	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	0.25 mg/kg	101	----	72	108	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	0.25 mg/kg	93.4	----	65	110	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.25 mg/kg	99.5	----	65	108	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.25 mg/kg	100	----	66	109	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	0.25 mg/kg	85.6	----	58	115	----	----
EP-066: Polychlorinated Biphenyls (QC Lot: 1000854)											
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	104	----	71	135	----	----

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

Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report: Spike Concentration	Spike Recovery (%) MS	MSD	Recovery Limits (%) Low	High	RPD (%) Value	Control Limit
EG: Metals and Major Cations (QC Lot: 1001902)										
HK0910725-001	001	EG020: Arsenic	7440-38-2	5 mg/kg	82.9	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	82.4	----	75	125	----	----
		EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	83.2	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----

Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Spike Recovery (%) MSD	Recovery Limits (%) Low	Recovery Limits (%) High	RPD (%) Value	RPD (%) Control Limit
EG: Metals and Major Cations (QC Lot: 1001902) - Continued										
HK0910725-001	001	**EG020: Lead**	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Mercury	7439-97-6	0.1 mg/kg	86.6	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	80.5	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	80.8	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 1000853)										
HK0910725-002	002	**C10 - C14 Fraction**	----	16 mg/kg	78.9	----	50	130	----	----
		C15 - C28 Fraction	----	53 mg/kg	76.8	----	50	130	----	----
		C29 - C36 Fraction	----	45 mg/kg	53.1	----	50	130	----	----
EP-071: Total Petroleum Hydrocarbons (TPH) (QC Lot: 998406)										
HK0910675-007	Anonymous	**C6 - C9 Fraction**	----	4 mg/kg	103	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: **ASH**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP-080S: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	25	121
Phenol-d6	13127-88-3	24	113
2.4.6-Tribromophenol	118-79-6	20	122
EP-075T: Base/Neutral Extractable Surrogates			
Nitrobenzene -d5	4165-60-0	23	120
2-Fluorobiphenyl	321-60-8	30	115
4-Terphenyl-d14	1718-51-0	20	137
EP-066S: PCB Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130

Hong Kong Baptist University
Dioxin Analysis Laboratory
RM W700-703, OEN HALL
HONG KONG BAPTIST UNIVERSITY,
224 WATERLOO ROAD, KOWLOON TONG,
KOWLOON, HONG KONG
TEL: (852)34112583, 34112369
FAX: (852)34112367

TEST REPORT

1. NAME AND ADDRESS OF CLIENT
Ms Fleur Parkinson
Parsons Brinckerhoff
7/F One Kowloon
1 Wang Yuen Street
Kowloon Bay
Hong Kong

2. SAMPLE TYPE
Ash

3. NUMBER OF SAMPLE
5

4. SAMPLE RECEIPT DATE
2-Jun-09

5. TEST PERIOD
Commencement Date: 8-Jun-09
Completion Date: 20-Jun-09

6. ANALYTICAL METHOD
In-house method TM-01a

7. APPROVED SIGNATORY

Prof. Zongwei CAI
Director, Dioxin Analysis Laboratory

ANY INFORMATION BELOW THIS LINE IS INVALID

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224 WATERLOO ROAD, KOWLOON TONG,
KOWLOON, HONG KONG
TEL: (852)34112583, 34112369
FAX: (852)34112367

Customer's Sample ID: 001
Laboratory ID: 0906001

Analyte	Analyte Concentration (pg/g)	I-TEF	TEQ (pg I-TEQ/g)
2,3,7,8-TeCDF	(0.198)	0.1	(0.0198)
1,2,3,7,8-PeCDF	(0.0900)	0.05	(0.00450)
2,3,4,7,8-PeCDF	(0.456)	0.5	(0.228)
1,2,3,4,7,8-HxCDF	(0.0655)	0.1	(0.00655)
1,2,3,6,7,8-HxCDF	(0.0469)	0.1	(0.00469)
2,3,4,6,7,8-HxCDF	(0.0442)	0.1	(0.00442)
1,2,3,7,8,9-HxCDF	(0.0238)	0.1	(0.00238)
1,2,3,4,6,7,8,-HpCDF	(0.304)	0.01	(0.00304)
1,2,3,4,7,8,9-HpCDF	(0.0680)	0.01	(0.000680)
OCDF	(0.0805)	0.001	(0.0000805)
2,3,7,8-TeCDD	(0.0280)	1	(0.0280)
1,2,3,7,8-PeCDD	(0.0725)	0.5	(0.0362)
1,2,3,4,7,8-HxCDD	(0.0925)	0.1	(0.00925)
1,2,3,6,7,8-HxCDD	(0.0600)	0.1	(0.00600)
1,2,3,7,8,9-HxCDD	(0.0595)	0.1	(0.00595)
1,2,3,4,6,7,8-HpCDD	(0.250)	0.01	(0.00250)
OCDD	(0.730)	0.001	(0.000730)
		Total TEQ	**0.363**

Labelled Compound		Recovery (%)	Control Limit (%)
IS	13C12-2,3,7,8-TeCDF	34	24 ~ 169
IS	13C12-1,2,3,7,8-PeCDF	62	24 ~ 185
IS	13C12-2,3,4,7,8-PeCDF	70	21 ~ 178
IS	13C12-1,2,3,4,7,8-HxCDF	73	26 ~ 152
IS	13C12-1,2,3,6,7,8-HxCDF	84	26 ~ 123
IS	13C12-2,3,4,6,7,8-HxCDF	85	28 ~ 136
IS	13C12-1,2,3,7,8,9-HxCDF	93	29 ~ 147
IS	13C12-1,2,3,4,6,7,8-HpCDI	85	28 ~ 143
IS	13C12-1,2,3,4,7,8,9-HpCDI	96	26 ~ 138
IS	13C12-2,3,7,8-TeCDD	46	25 ~ 164
IS	13C12-1,2,3,7,8-PeCDD	92	25 ~ 181
IS	13C12-1,2,3,4,7,8-HxCDD	88	32 ~ 141
IS	13C12-1,2,3,6,7,8-HxCDD	93	28 ~ 130
IS	13C12-1,2,3,4,6,7,8-HpCDI	95	23 ~ 140
IS	13C12-OCDD	107	17 ~ 157
CS	$^{37}Cl_4$-2,3,7,8-TeCDD	43	35 ~ 197

Notes:

1. Value in parenthesis means that the concentration of congener was not detected or its concentration is less than MDL or LOR. The half MDL value is reported if the congener was not detected or its concentration is less than MDL. The half LOR value is reported if the concentration of congener is less than LOR but higher than or equal to MDL.
2. The values of MDL and LOR of each congener are shown in the last page of this test report.
3. Sample was tested as received basis.

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Customer's Sample ID: 002
Laboratory ID: 0906002

Analyte	Analyte Concentration (pg/g)	I-TEF	TEQ (pg I-TEQ/g)
2,3,7,8-TeCDF	(0.198)	0.1	(0.0198)
1,2,3,7,8-PeCDF	(0.0900)	0.05	(0.00450)
2,3,4,7,8-PeCDF	(0.0456)	0.5	(0.0228)
1,2,3,4,7,8-HxCDF	(0.0655)	0.1	(0.00655)
1,2,3,6,7,8-HxCDF	(0.0469)	0.1	(0.00469)
2,3,4,6,7,8-HxCDF	(0.0442)	0.1	(0.00442)
1,2,3,7,8,9-HxCDF	(0.0238)	0.1	(0.00238)
1,2,3,4,6,7,8,-HpCDF	(0.304)	0.01	(0.00304)
1,2,3,4,7,8,9-HpCDF	(0.0680)	0.01	(0.000680)
OCDF	(0.0805)	0.001	(0.0000805)
2,3,7,8-TeCDD	(0.0280)	1	(0.0280)
1,2,3,7,8-PeCDD	(0.0725)	0.5	(0.0362)
1,2,3,4,7,8-HxCDD	(0.0925)	0.1	(0.00925)
1,2,3,6,7,8-HxCDD	(0.0600)	0.1	(0.00600)
1,2,3,7,8,9-HxCDD	(0.0595)	0.1	(0.00595)
1,2,3,4,6,7,8-HpCDD	(0.250)	0.01	(0.00250)
OCDD	(0.730)	0.001	(0.000730)
		Total TEQ	**0.158**

Labelled Compound		Recovery (%)	Control Limit (%)
IS	13C12-2,3,7,8-TeCDF	56	24 ~ 169
IS	13C12-1,2,3,7,8-PeCDF	71	24 ~ 185
IS	13C12-2,3,4,7,8-PeCDF	73	21 ~ 178
IS	13C12-1,2,3,4,7,8-HxCDF	70	26 ~ 152
IS	13C12-1,2,3,6,7,8-HxCDF	83	26 ~ 123
IS	13C12-2,3,4,6,7,8-HxCDF	76	28 ~ 136
IS	13C12-1,2,3,7,8,9-HxCDF	78	29 ~ 147
IS	13C12-1,2,3,4,6,7,8-HpCDI	76	28 ~ 143
IS	13C12-1,2,3,4,7,8,9-HpCDI	82	26 ~ 138
IS	13C12-2,3,7,8-TeCDD	67	25 ~ 164
IS	13C12-1,2,3,7,8-PeCDD	85	25 ~ 181
IS	13C12-1,2,3,4,7,8-HxCDD	78	32 ~ 141
IS	13C12-1,2,3,6,7,8-HxCDD	87	28 ~ 130
IS	13C12-1,2,3,4,6,7,8-HpCDI	86	23 ~ 140
IS	13C12-OCDD	96	17 ~ 157
CS	$^{37}Cl_4$-2,3,7,8-TeCDD	63	35 ~ 197

Notes:

1. Value in parenthesis means that the concentration of congener was not detected or its concentration is less than MDL or LOR. The half MDL value is reported if the congener was not detected or its concentration is less than MDL. The half LOR value is reported if the concentration of congener is less than LOR but higher than or equal to MDL.
2. The values of MDL and LOR of each congener are shown in the last page of this test report.
3. Sample was tested as received basis.

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Customer's Sample ID: 003
Laboratory ID: 0906003

Analyte	Analyte Concentration (pg/g)	I-TEF	TEQ (pg I-TEQ/g)
2,3,7,8-TeCDF	2.99	0.1	0.299
1,2,3,7,8-PeCDF	(0.900)	0.05	(0.0450)
2,3,4,7,8-PeCDF	2.06	0.5	1.03
1,2,3,4,7,8-HxCDF	1.85	0.1	0.185
1,2,3,6,7,8-HxCDF	1.07	0.1	0.107
2,3,4,6,7,8-HxCDF	(0.442)	0.1	(0.0442)
1,2,3,7,8,9-HxCDF	(0.238)	0.1	(0.0238)
1,2,3,4,6,7,8,-HpCDF	2.53	0.01	0.0253
1,2,3,4,7,8,9-HpCDF	(0.680)	0.01	(0.00680)
OCDF	1.98	0.001	0.00198
2,3,7,8-TeCDD	(0.280)	1	(0.280)
1,2,3,7,8-PeCDD	(0.725)	0.5	(0.362)
1,2,3,4,7,8-HxCDD	(0.925)	0.1	(0.0925)
1,2,3,6,7,8-HxCDD	1.53	0.1	0.153
1,2,3,7,8,9-HxCDD	1.22	0.1	0.122
1,2,3,4,6,7,8-HpCDD	6.37	0.01	0.0637
OCDD	6.53	0.001	0.00653
		Total TEQ	**2.85**

Labelled Compound		Recovery (%)	Control Limit (%)
IS	13C12-2,3,7,8-TeCDF	59	24 ~ 169
IS	13C12-1,2,3,7,8-PeCDF	79	24 ~ 185
IS	13C12-2,3,4,7,8-PeCDF	73	21 ~ 178
IS	13C12-1,2,3,4,7,8-HxCDF	80	26 ~ 152
IS	13C12-1,2,3,6,7,8-HxCDF	95	26 ~ 123
IS	13C12-2,3,4,6,7,8-HxCDF	89	28 ~ 136
IS	13C12-1,2,3,7,8,9-HxCDF	83	29 ~ 147
IS	13C12-1,2,3,4,6,7,8-HpCDI	85	28 ~ 143
IS	13C12-1,2,3,4,7,8,9-HpCDI	89	26 ~ 138
IS	13C12-2,3,7,8-TeCDD	72	25 ~ 164
IS	13C12-1,2,3,7,8-PeCDD	79	25 ~ 181
IS	13C12-1,2,3,4,7,8-HxCDD	89	32 ~ 141
IS	13C12-1,2,3,6,7,8-HxCDD	99	28 ~ 130
IS	13C12-1,2,3,4,6,7,8-HpCDI	98	23 ~ 140
IS	13C12-OCDD	104	17 ~ 157
CS	$^{37}Cl_4$-2,3,7,8-TeCDD	69	35 ~ 197

Notes:

1. Value in parenthesis means that the concentration of congener was not detected or its concentration is less than MDL or LOR. The half MDL value is reported if the congener was not detected or its concentration is less than MDL. The half LOR value is reported if the concentration of congener is less than LOR but higher than or equal to MDL.
2. The values of MDL and LOR of each congener are shown in the last page of this test report.
3. Sample was tested as received basis.

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Customer's Sample ID: 004
Laboratory ID: 0906004

Analyte	Analyte Concentration (pg/g)	I-TEF	TEQ (pg I-TEQ/g)
2,3,7,8-TeCDF	2.17	0.1	0.217
1,2,3,7,8-PeCDF	(0.900)	0.05	(0.0450)
2,3,4,7,8-PeCDF	1.61	0.5	0.804
1,2,3,4,7,8-HxCDF	(0.655)	0.1	(0.0655)
1,2,3,6,7,8-HxCDF	(0.469)	0.1	(0.0469)
2,3,4,6,7,8-HxCDF	1.02	0.1	0.102
1,2,3,7,8,9-HxCDF	(0.238)	0.1	(0.0238)
1,2,3,4,6,7,8,-HpCDF	1.98	0.01	0.0198
1,2,3,4,7,8,9-HpCDF	(0.680)	0.01	(0.00680)
OCDF	(0.805)	0.001	(0.000805)
2,3,7,8-TeCDD	(0.280)	1	(0.280)
1,2,3,7,8-PeCDD	(0.725)	0.5	(0.362)
1,2,3,4,7,8-HxCDD	(0.925)	0.1	(0.0925)
1,2,3,6,7,8-HxCDD	(0.600)	0.1	(0.0600)
1,2,3,7,8,9-HxCDD	(0.595)	0.1	(0.0595)
1,2,3,4,6,7,8-HpCDD	2.54	0.01	0.0254
OCDD	2.74	0.001	0.00274
		Total TEQ	**2.21**

Labelled Compound		Recovery (%)	Control Limit (%)
IS	13C12-2,3,7,8-TeCDF	61	24 ~ 169
IS	13C12-1,2,3,7,8-PeCDF	81	24 ~ 185
IS	13C12-2,3,4,7,8-PeCDF	76	21 ~ 178
IS	13C12-1,2,3,4,7,8-HxCDF	84	26 ~ 152
IS	13C12-1,2,3,6,7,8-HxCDF	99	26 ~ 123
IS	13C12-2,3,4,6,7,8-HxCDF	88	28 ~ 136
IS	13C12-1,2,3,7,8,9-HxCDF	86	29 ~ 147
IS	13C12-1,2,3,4,6,7,8-HpCDI	88	28 ~ 143
IS	13C12-1,2,3,4,7,8,9-HpCDI	92	26 ~ 138
IS	13C12-2,3,7,8-TeCDD	72	25 ~ 164
IS	13C12-1,2,3,7,8-PeCDD	98	25 ~ 181
IS	13C12-1,2,3,4,7,8-HxCDD	92	32 ~ 141
IS	13C12-1,2,3,6,7,8-HxCDD	100	28 ~ 130
IS	13C12-1,2,3,4,6,7,8-HpCDI	101	23 ~ 140
IS	13C12-OCDD	105	17 ~ 157
CS	$^{37}Cl_4$-2,3,7,8-TeCDD	71	35 ~ 197

Notes:

1. Value in parenthesis means that the concentration of congener was not detected or its concentration is less than MDL or LOR. The half MDL value is reported if the congener was not detected or its concentration is less than MDL. The half LOR value is reported if the concentration of congener is less than LOR but higher than or equal to MDL.
2. The values of MDL and LOR of each congener are shown in the last page of this test report.
3. Sample was tested as received basis.

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Customer's Sample ID: 005
Laboratory ID: 0906005

Analyte	Analyte Concentration (pg/g)	I-TEF	TEQ (pg I-TEQ/g)
2,3,7,8-TeCDF	110	0.1	11.0
1,2,3,7,8-PeCDF	73.4	0.05	3.67
2,3,4,7,8-PeCDF	120	0.5	59.9
1,2,3,4,7,8-HxCDF	64.5	0.1	6.45
1,2,3,6,7,8-HxCDF	65.0	0.1	6.50
2,3,4,6,7,8-HxCDF	71.7	0.1	7.17
1,2,3,7,8,9-HxCDF	20.0	0.1	2.00
1,2,3,4,6,7,8,-HpCDF	109	0.01	1.09
1,2,3,4,7,8,9-HpCDF	15.4	0.01	0.154
OCDF	27.1	0.001	0.0271
2,3,7,8-TeCDD	11.5	1	11.5
1,2,3,7,8-PeCDD	25.8	0.5	12.9
1,2,3,4,7,8-HxCDD	27.9	0.1	2.79
1,2,3,6,7,8-HxCDD	60.9	0.1	6.09
1,2,3,7,8,9-HxCDD	47.3	0.1	4.73
1,2,3,4,6,7,8-HpCDD	442	0.01	4.42
OCDD	769	0.001	0.769
		Total TEQ	**141**

Labelled Compound		Recovery (%)	Control Limit (%)
IS	13C12-2,3,7,8-TeCDF	75	24 ~ 169
IS	13C12-1,2,3,7,8-PeCDF	80	24 ~ 185
IS	13C12-2,3,4,7,8-PeCDF	79	21 ~ 178
IS	13C12-1,2,3,4,7,8-HxCDF	84	26 ~ 152
IS	13C12-1,2,3,6,7,8-HxCDF	86	26 ~ 123
IS	13C12-2,3,4,6,7,8-HxCDF	86	28 ~ 136
IS	13C12-1,2,3,7,8,9-HxCDF	88	29 ~ 147
IS	13C12-1,2,3,4,6,7,8-HpCDI	84	28 ~ 143
IS	13C12-1,2,3,4,7,8,9-HpCDI	94	26 ~ 138
IS	13C12-2,3,7,8-TeCDD	80	25 ~ 164
IS	13C12-1,2,3,7,8-PeCDD	92	25 ~ 181
IS	13C12-1,2,3,4,7,8-HxCDD	91	32 ~ 141
IS	13C12-1,2,3,6,7,8-HxCDD	92	28 ~ 130
IS	13C12-1,2,3,4,6,7,8-HpCDI	100	23 ~ 140
IS	13C12-OCDD	107	17 ~ 157
CS	$^{37}Cl_4$-2,3,7,8-TeCDD	79	35 ~ 197

Notes:

1. Value in parenthesis means that the concentration of congener was not detected or its concentration is less than MDL or LOR. The half MDL value is reported if the congener was not detected or its concentration is less than MDL. The half LOR value is reported if the concentration of congener is less than LOR but higher than or equal to MDL.
2. The values of MDL and LOR of each congener are shown in the last page of this test report.
3. Sample was tested as received basis.

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Analyte	**Method Detection Limit (pg/g)**	**Limit of Reporting (pg/g)**
2,3,7,8-TeCDF	0.0397	0.397
1,2,3,7,8-PeCDF	0.180	1.80
2,3,4,7,8-PeCDF	0.0911	0.911
1,2,3,4,7,8-HxCDF	0.131	1.31
1,2,3,6,7,8-HxCDF	0.0938	0.938
2,3,4,6,7,8-HxCDF	0.0883	0.883
1,2,3,7,8,9-HxCDF	0.0476	0.476
1,2,3,4,6,7,8,-HpCDF	0.0609	0.609
1,2,3,4,7,8,9-HpCDF	0.136	1.36
OCDF	0.161	1.61
2,3,7,8-TeCDD	0.0561	0.561
1,2,3,7,8-PeCDD	0.145	1.45
1,2,3,4,7,8-HxCDD	0.185	1.85
1,2,3,6,7,8-HxCDD	0.120	1.20
1,2,3,7,8,9-HxCDD	0.119	1.19
1,2,3,4,6,7,8-HpCDD	0.0501	0.501
OCDD	0.146	1.46

END OF REPORT

APPENDIX D

Asbestos Survey Report

MATERIALAB CONSULTANTS LIMITED
Fugro Development Centre,
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APPENDICES

1.0 INTRODUCTION

MateriaLab Consultants Limited was appointed by Parsons Brinkerhoff Ltd. to conduct an asbestos survey at the Incinerator Room at the Basement of Block B, Yan Chai Hospital. The surveyed areas were shown in Appendix 1.

The surveyed areas were built in 1990's and were occupied at the time of survey. There are no sensitive receivers identified in the immediate vicinity.

2.0 PARTICULARS OF CONCERNED PARTIES

Owner's Representative

Parsons Brinkerhoff Limited
Address: 7/F, One Kowloon,
1 Wang Yuen Street,
Kowloon Bay, Kowloon
Tel. : 2579 8899
Fax : 2856 9902
Contact Person: Ms. Fleur Parkinson

Registered Asbestos Consultant

Mr. Steven Wong (1071)
Address: Fugro Development Centre,
5 Lok Yi Street,
17 M.S. Castle Peak Road,
Tai Lam, Tuen Mun,
N.T., Hong Kong.
Tel. : 2450 8238
Fax : 2450 6138

Registered Asbestos Laboratory

Fugro Technical Services Limited
MateriaLab Division (4001)
Address: Fugro Development Centre,
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Tai Lam, Tuen Mun,
N.T., Hong Kong.
Tel. : 2450 8233
Fax : 2450 6138
Contact Person: Mr. John Ho

3.0 SCOPE OF WORKS

MateriaLab Consultants Limited was appointed by Parsons Brinkerhoff Limited to:

- conduct an asbestos survey at the project site;
- identify and locate asbestos-containing materials at the project site;
- collect suspected asbestos-containing materials for further analysis; and
- prepare an Asbestos Investigation Report (AIR) and Asbestos Abatement Plan (AAP), if any.

4.0 WORK UNDERTAKEN

4.1 Record Review

Drawings, specifications and previous survey records regarding asbestos-containing materials of the building were not available for review.

4.2 Field Work

The asbestos survey was carried out on 1 June 2009 at the above project site. The survey consisted of visual inspection of each occurrence and representative sampling of suspected materials. The survey was limited to exposed areas of the building, which were accessible to the consultant without the removal of any external or internal building fabrics, fixtures and fittings. The consultant did not for the purpose of this survey, examine any unexposed areas of the buildings such as concealed or underground water pipes, cables, mains etc and any areas of the buildings which were dangerous or hazardous to the consultant. There were no inaccessible areas to the consultant at the time of survey.

The following materials were inspected during the survey and are summarised in Table 1. Photographic records of these materials are enclosed in Appendix 2.

Table 1

Items Inspected	Location	Composition
Chimney Gasket *	Near Ceiling Level	Suspected asbestos-containing Chimney Gasket
Incinerator Insulation *	Surface of Incinerator	Suspected asbestos-containing Glass Gasket
Insulation Brick *	Inside Incinerator	Suspected asbestos-containing Insulation Brick
Water Pipe	Front of Incinerator No. 1	Metal
Incinerator Door Insulation	Incinerator Door	Nylon

* Samples were taken for laboratory analysis

4.3 Sampling

Sampling and analysis of suspected asbestos-containing materials were carried out by Fugro Technical Services Limited (MateriaLab Division), the Laboratory. The following sampling strategies were adopted as far as practicable:-

Type of Materials	Area or Length	Number of Samples
Homogeneous surface materials e.g. coating, plaster, etc.	<100 sq.m.	At least 3
	100 - 500 sq.m.	5
	> 500 sq.m.	At least 7
Thermal insulation e.g. pipe lagging, boiler insulation, etc.	Each homogeneous run	At least 3
Miscellaneous materials e.g. corrugated sheet, etc.	Each homogeneous material	At least 2

4.4 Laboratory Analysis

6 samples of suspected asbestos-containing materials were collected. The samples were then analysed for the presence and type of asbestos according to the Laboratory's HOKLAS accredited testing procedures. The results are summarised in Table 2.

Table 2

Sample Code	Sample Nature	Sampling Location	Photo No.	Type and Content of Asbestos Present
PE90592/1	Insulation Brick	Incinerator No. 1, Incinerator Room, B/F, Block B	1	Non – ACM
PE90592/2	Insulation Brick	Incinerator No. 2, Incinerator Room, B/F, Block B	2	Non – ACM
PE90592/3	Chimney Gasket	Incinerator No. 1, Incinerator Room, B/F, Block B	3	Non – ACM
PE90592/4	Chimney Gasket	Incinerator No. 2 Incinerator Room, B/F, Block B	4	Non – ACM
PE90592/5	Incinerator Insulation	Incinerator No. 1, Incinerator Room, B/F, Block B	5	Non – ACM
PE90592/6	Incinerator Insulation	Incinerator No. 2 Incinerator Room, B/F, Block B	6	Non – ACM

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5.0 RECOMMENDATIONS AND CONCLUSIONS

5.1 Based on the information gathered during the survey, it is concluded that asbestos-containing materials were not identified in the project site.

5.2 Every effort has been made to visually examine all materials within the scope of this project and, where appropriate and accessible to us, these materials have been sampled and tested by the Laboratory to ascertain the presence or otherwise of asbestos. The ACMs identified in this report, if any, may not be the only ACMs within the premises.

5.3 It should be noted that the information presented in this report describes the conditions at the time of survey. If suspected ACMs not identified or sampled during this survey are revealed, a registered asbestos consultant should be consulted before proceeding with any asbestos abatement work in the premises.

Prepared by : **Leung Cheok Wai**

Certified by : **Steven Wong**
Registered Asbestos Consultant

Date : _____

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APPENDIX 1

Scope of Investigation

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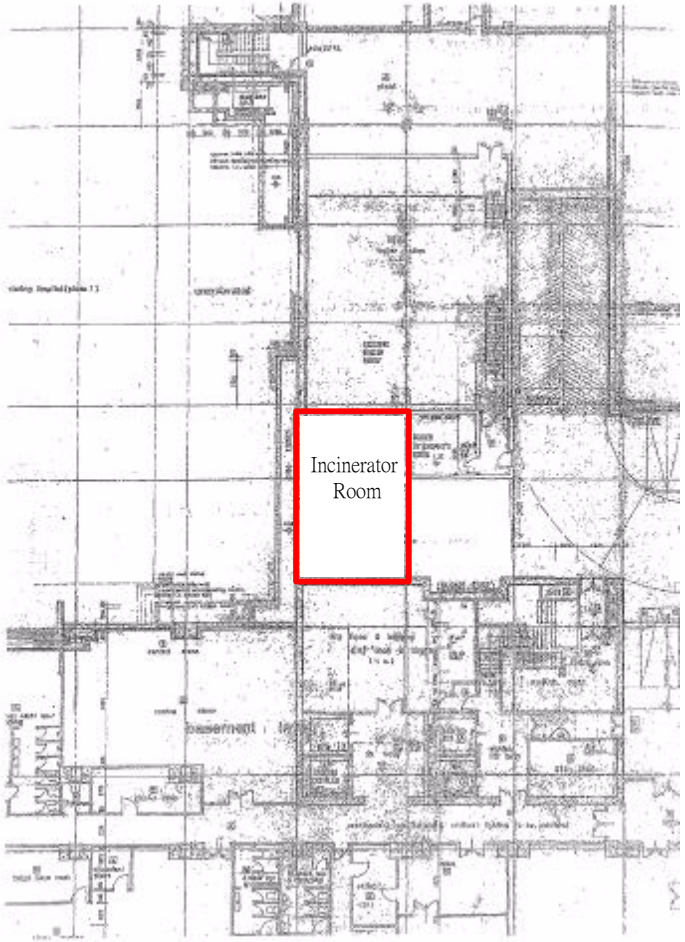
MaterialLab



Block B, Basement of Yan Ch ai Hospital

Figure: 1

Project Title:
Asbestos Survey for the Decommisioning of t e Incinerators at Yan Cha i Hospital, Tsuen Wan

Drawing Title:
Scope of Investigat ion

Our ref. no.:
0026/09/ED/0032

Prepared by:
Leung Cheok W ai

Scale: Not to Scal e

Legend:

Scope of Investigat ion

Rev.	Date
0	16/06/2009

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APPENDIX 2

Photographic Records of Site Survey

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Report No.: 0026/09/ED/0032

Photo 1. Insulation Brick (PE90592/1) sampled at Incinerator 1, Incinerator Room, B/F was confirmed as Non-ACM.

Photo 2. Insulation Brick (PE90592/2) sampled at Incinerator 2, Incinerator Room, B/F was confirmed as Non-ACM.

Photo 3. Chimney Gasket (PE90592/3) sampled at Chimney of Incinerator 1 was confirmed as Non-ACM.

Photo 4. Chimney Gasket (PE90592/4) sampled at Chimney of Incinerator 2 was confirmed as Non-ACM.

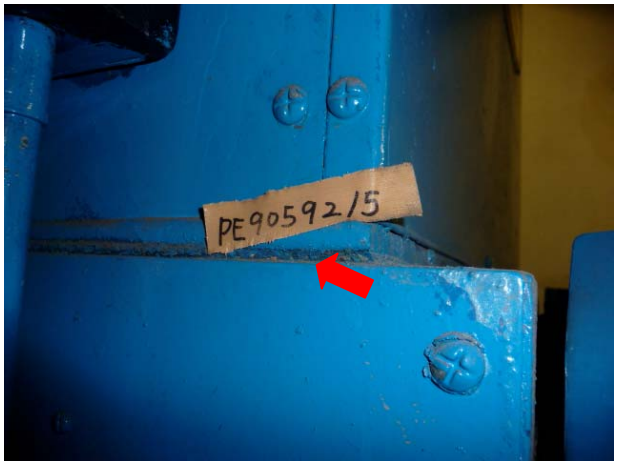

Photo 5. Incinerator Insulation (PE90592/5) sampled at Incinerator 1 was confirmed as Non-ACM.

Photo 6. Incinerator Insulation (PE90592/6) sampled at Incinerator 2 was confirmed as Non-ACM.

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Photo 7. Metal Water Pipe, photo taken at Incinerator Room.

Photo 8. Metal Chimney with no gasket, photo taken at the outside of Incinerator Room.

Photo 9 The general view of Incinerator 1.

Photo 10. The general view of Incinerator 2.

Photo 11. The general view inside the incinerator.

Photo 12. Glass fibre insulation of the incinerator, photo taken at Incinerator 2.

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Photo 13. Nylon Insulation of the Incinerator Door, photo taken at Incinerator 1.

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APPENDIX 3

Sampling Location Plans

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MateriaLab

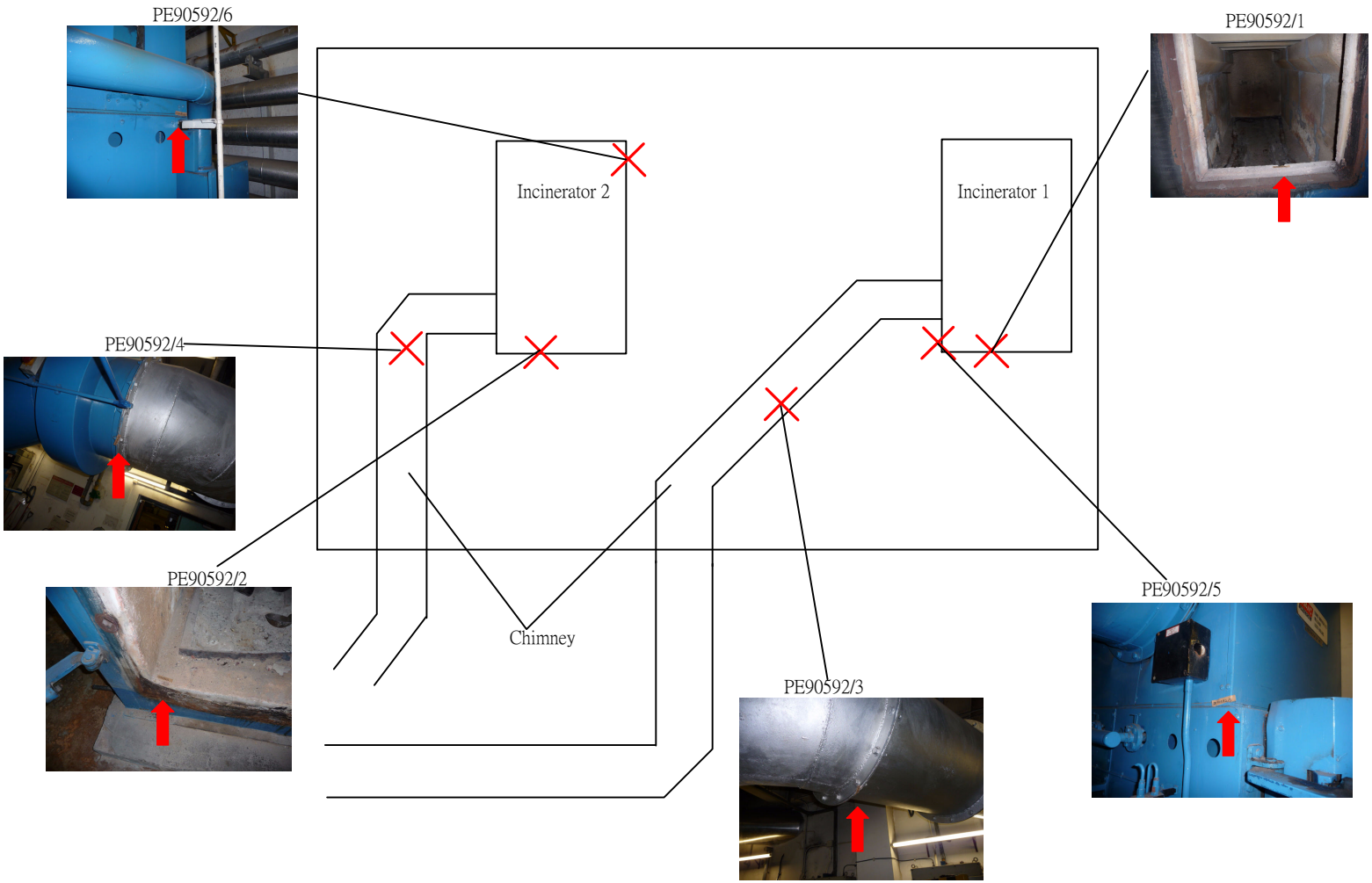

Figure: 2

Project Title:
Asbestos Survey for the Decommissioning of the Incinerators at Yan Chai Hospital, Tsuen Wan

Drawing Title:
Sampling Location

Our ref. no.:
0026/09/ED/0032

Prepared by:
Leung Cheok Wai

Scale: Not to Scale

Legend:
Sampling Location

Rev.	Date
0	16/06/2009

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APPENDIX 4

Laboratory Test Results

FUGRO TECHNICAL SERVICES LIMITED
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Website : www.materialab.com.hk

MateriaLab

Report No. : 090549PE90592

HOKLAS 015

I. TEST REPORT ON SAMPLING AND ANALYSIS OF BULK MATERIALS

Information Supplied by Client

Client : MateriaLab Consultants Limited

Client's address : Fugro Development Centre, 5 Lok Yi Street, 17 M.S. Castle Peak Road, Tai Lam, Tuen Mun, N.T.

Project : Asbestos Survey for the Decomissioning of the Incinerators at Yan Chai Hospital, Tsuen Wan

Test required : 1. Presence of asbestos
2. Type of asbestos, if present
3. Determination of ACM by visual examination

Laboratory Information

Lab. sample I.D. : PE90592/1 to 6

Sample description : 6 nos. bulk materials sampled from the project site

Date of sampling : 01/06/2009

Sampling method : In-house methods G-T-021 & G-T-022

Sampled by : K.L. Yung

Date of test completed : 15/06/2009

Test method : In-house methods G-T-023 & G-T-028

Test Results :

Lab. Sample I.D.	Sample Nature	Sampling Location	Sampling Method	Asbestos Fibres		ACM / Non-ACM
				Presence	Type	
PE90592/1	Insulation Brick	Incinerator No. 1, Incinerator Room, B/F, Block B	G-T-022	Not detected	-	Non-ACM
PE90592/2	Insulation Brick	Incinerator No. 2, Incinerator Room, B/F, Block B	G-T-022	Not detected	-	Non-ACM
PE90592/3	Chimney Gasket	Incinerator No. 1, Incinerator Room, B/F, Block B	G-T-021	Not detected	-	Non-ACM

FUGRO TECHNICAL SERVICES LIMITED
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MateriaLab

Report No. : 090549PE90592

HOKLAS 015

Test Results :

Lab. Sample I.D.	Sample Nature	Sampling Location	Sampling Method	Asbestos Fibres		ACM / Non-ACM
				Presence	Type	
PE90592/4	Chimney Gasket	Incinerator No. 2, Incinerator Room, B/F, Block B	G-T-021	Not detected	-	Non-ACM
PE90592/5	Incinerator Insulation	Incinerator No. 1, Incinerator Room, B/F, Block B	G-T-021	Not detected	-	Non-ACM
PE90592/6	Incinerator Insulation	Incinerator No. 2, Incinerator Room, B/F, Block B	G-T-021	Not detected	-	Non-ACM

Remarks: 1. The sample is either classified as an ACM (>1% asbestos by weight) or a non-ACM (not >1% asbestos by weight) as defined in the Air Pollution Control Ordinance.
2. Sampling location plans and photographic records are detailed in asbestos investigation report.

Tested by : C.F. Lam

Certified by : _____
Approved Signatory : LEUNG Man Wai, Donney
Assistant Manager – Micro-Materials Section

Date : 19/06/2009