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HONG KONG WEST CLUSTER, HOSPITAL AUTHORITY

DECOMMISSIONING AND DISPOSAL OF CLINICAL WASTE INCINERATORS AT BLOCK K, QUEEN MARY HOSPITAL SITE AUDIT REPORT NO. 3

MAY 31, 2018





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HOSPITAL AUTHORITY




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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 Established in 1937, Queen Mary Hospital (QMH) is a major acute hospital in the Hong Kong West Cluster (HKWC) of the Hospital Authority (HA), serving a population of over 531,000 in the Central and Western and Southern Districts as well as treating many patients in other geographical districts in Hong Kong. It provides a full range of acute and tertiary services, including 24-hour Accident and Emergency (A&E) services, in-patient services, ambulatory care and rehabilitation services, as well as specialist services covering a wide range of specialties and subspecialties for the residents.
- 1.1.2 The redevelopment plan, featuring the use of QMH's northern site to fit the hospital's future service model as an academic health sciences center, involves the decanting of existing facilities of the north end of QMH complex to the ex-Senior Staff Quarters (SSQ) (which had been converted to and renamed as Block T). It presents a golden opportunity to enable the hospital to enhance its role as a premier teaching hospital, as well as further improving the hospital environment for our patients, medical students, academic partners and colleagues.
- 1.1.3 The Phase 1 Redevelopment Project of Queen Mary Hospital is conducted in two stages:
- Stage I Preparatory Works:
- Conversion works at the vacated SSQ (renamed as Block T)
 - Construction of a link bridge connecting Block T and the buildings in the hospital complex
 - Road widening works within the hospital boundary
- Stage II Main Works (Commence August 2018):
- Demolition of Clinical Pathology Building (CPB) and Housemen Quarters (HQ) of QMH as well as Pathology Building (UPB) of the University of Hong Kong
 - Construction of New Block
 - Provision of an additional access road
 - Construction of a proposed rooftop helipad
- 1.1.4 As part of the demolition of CPB, the existing Body Storage Room at CPB will be relocated to LG4/F of Block K. One of the preparatory works would be decommissioning and disposal of the two existing clinical waste incinerators at Incinerator Room at LG4/F of Block K.
- 1.1.5 The decommissioning of the incinerator is classified as a Designated Project under Item 3 of Part II, Schedule 2 of Environmental Impact Assessment Ordinance (EIAO). The Designated Project covered two clinical waste incinerators and associated horizontal ductworks at Incinerator Room, LG4/F of Block K, and the two vertical flues (chimneys) from the ceiling of Incinerator Room, LG4/F to the Rooftop of Block K inside the Service Duct 1. Decommissioning and demolition works will be carried out in 2 Phases. In Phase 1, the incinerator units, the wall-mounted control panel and the horizontal ductworks section will be decommissioned and demolished. The two vertical flues of the incinerators will be decommissioned, and disconnected from the horizontal ductworks section (at ceiling level) and sealed up only in Phase 1. The chimneys will be demolished in Phase 2 when Block K is to be demolished.

1.2 TASKS UNDER ASSIGNMENT

- 1.2.1 With reference to the Environmental Permit (EP-545/2017), environmental monitoring is considered not necessary as no adverse environmental impacts are anticipated with the implementation of recommended mitigation measures. Environmental site audit should be conducted by an Independent Environmental Checker (IEC) during both phases of decommissioning and demolition works to check, review, verify and validate the overall environmental performance of the project, including the implementation of all the environmental protection and mitigation measures, submissions relating to environmental monitoring and auditing, and any other submissions required under the Environmental Permit for the project or the requirements outlined in the EIAO through report to EPD before and upon completion of the works.
- 1.2.2 WSP (Asia) Ltd (WSP) has been commissioned as the Independent Environmental Checker (IEC) for the Phase 1 of the Decommissioning and Demolition works.
- 1.2.3 The following monitoring procedures should be adopted and WSP as the IEC would be responsible for the monitoring operations:
- (a) To ensure that the general aspects of environmental quality will comply with the project requirements;
 - (b) To monitor the smoke test to ensure the tightness of the containment;
 - (c) To supervise the Contractor to ensure that the requirements in the Project Profile are fully complied with;
 - (d) To instruct the Contractor when action is required to reduce or prevent any impacts;
 - (e) To effectively and efficiently deal with any complaints on environmental performance; and
 - (f) To prepare a summary of the environmental performance of the Contractor on completion of the Project.

1.3 OBJECTIVES

- 1.3.1 The objective of this Site Audit Report No.3 is to present the key findings of the site audits conducted during the reporting period from 6 April 2018 to 11 May 2018.

2 INDEPENDENT ENVIRONMENTAL CHECKER

2.1.1 The staff organisation chart for this Project is shown in **Figure 2.1**.



Figure 2.1 Organisation Chart of Project Team

2.1.2 Independent Environmental Checker – Dr. James Xiong

Dr. James Xiong is the Director of WSP, in charge of consultancy services relating to environment and sustainability. James has over 25 years of academic and practical experience in environmental studies, especially, EIA, EM&A and environmental issues for urban development master plan, infrastructure and industry environmental protection including the IEC for Pillar Point Sewerage Treatment Works and Tsim Sha Tsui Station Carnarvon Road Subway and Wan Chai Station Lee Tung Street Subway for MTR Corporation Ltd. and the EIA Study of the Tai Po Sewage Treatment Works Stage 5.

2.1.3 Deputy Independent Environmental Checker – Dr. Alex Cheung

Dr. Alex Cheung is an Associate of WSP with over 25 years' experience. He has been involved in numerous research projects and environmental assessment for a wide range of development projects in Hong Kong, Macau and Australia as Project Manager including the IEC for Pillar Point Sewerage Treatment Works and Tsim Sha Tsui Station Carnarvon Road Subway and Wan Chai Station Lee Tung Street Subway for MTR Corporation Ltd.

3 WORK CONDUCTED AND KEY FINDINGS

3.1 WORKS CONDUCTED

3.1.1 The IEC works conducted in this reporting period are as follows:

- (1) IEC site audit on 06 April 2018
 - (2) IEC site audit on 13 April 2018
 - (3) IEC site audit on 20 April 2018
 - (4) IEC site audit on 05 May 2018
 - (5) IEC site audit on 11 May 2018
-

3.2 KEY FINDINGS OF SITE AUDITS

3.2.1 Site audits were carried out for the Incinerator Room for the two existing clinical waste incinerators at LG4/F of Block K. Photos showing the site conditions are shown in **Figures 3.1 to 3.10** during the site audits.

3.2.2 06 April 2018 – IEC Site Audit



Figure 3.1 Worker wearing full Personal Protective Equipment (PPE)

3.2.3 Removal and decommissioning of clinical waste incinerators and associated ductworks were commenced on 6 April 2018.

3.2.4 During the site audit conducted on 6 April 2018, no specific observation was identified from the site inspection.

3.2.5 PPE including particulate filters and disposal coverall were provided on-site. All workers have worn full PPE which include disposable protective overall with hood, nitrile gloves, shoe covers, and full-face positive pressure respirators equipped with a combination cartridge.

3.2.6 13 April 2018 – IEC Site Audit



Figure 3.2 View of Incinerator Room

- 3.2.7 During the site audit conducted on 13 April 2018, no specific observation was identified from the site inspection.
- 3.2.8 The refractory bricks of the combustion chamber were removed individually and the outer steel shell was cut to smaller pieces for disposal at designated landfill.

3.2.9 20 April 2018 – IEC Site Audit



Figure 3.3 Demolition of Incinerator No.2

- 3.2.10 Removal and decommissioning of incinerator No.2 were in progress on 20 April 2018.
- 3.2.11 During the site audit conducted on 20 April 2018, no specific observation was identified from the site inspection.

3.2.12 5 May 2018 – IEC Site Audit



Figure 3.4 View of Incinerator Room

3.2.13 11 May 2018 – IEC Site Audit



Figure 3.5 Demolition of Incinerator No.1 was completed



Figure 3.6 Demolition of Incinerator No.2 was completed



Figure 3.7 Chimneys were sealed up



Figure 3.8 Wall-mounted control panel for incinerators was demolished



Figure 3.9 View of Incinerator Room



Figure 3.10 Fused link boxes to be retained

- 3.2.14 Removal and decommissioning of incinerators, as well as clearance of compartments and the site are completed on 11 May 2018.
- 3.2.15 During the site audits conducted on 05 May 2018 and 11 May 2018, no specific observation was identified from the site inspection.
- 3.2.16 Upon completion of the demolition work, all surfaces in the incinerator room were decontaminated by HEPA vacuuming and wet wiping. Then the innermost polythene sheet was sprayed with Polyvinyl Alcohol (PVA) and upon drying, the inner polythene sheet was peeled off. The PVA decontamination process was repeated for the second and third layers of the polythene sheets. All residual ash collected from the incinerator, used HEPA filters, scrubbed materials, the HEPA filtered materials and the gaskets to the primary and secondary burner of the incinerators were disposal of at Chemical Waste Treatment Centre. Good quality containers compatible with the chemical wastes were used. Appropriate labels were affixed securely on each chemical waste container indicating the chemical characteristics of the chemical waste.
- 3.2.17 All asbestos waste generated during the decommissioning works were collected, transported and disposed to the designated landfill by a licensed waste collector. The trip ticket of the asbestos waste disposal can be referred to **Appendix A**.
- 3.2.18 Other wastes such as the combustion chambers and outer shell panels and ductworks, polythene wrapping sheets, used PPE, waste generated from the dismantling work of the containment and cloths used for wet wiping were properly stored and waiting for disposal of at designated landfill site. The wall-mounted control panel for incinerators was removed for disposal of at designated landfill site as well. The control panel for exhaust fan for LG501D compressor / vacuum EQP. Room, fused link boxes, DDC control panel, FAD KLG6 and air conditioning ductworks are retained (**Figures 3.8 and 3.10**).
- 3.2.19 Based on the findings of the site audits during the reporting period, the overall EM&A performance of the Project is satisfactory.

4 CONCLUSION

- 4.1.1 Site audits have been conducted during the reporting period from 6 April 2018 to 11 May 2018. No specific observation was identified from the site inspection.
- 4.1.2 The proposed Phase 1 demolition works, including removal and decommissioning of clinical waste incinerators and associated ductworks, were commenced on 6 April 2018 and completed on 11 May 2018.
- 4.1.3 PPE including particulate filters and disposal coverall were provided on-site. During the demolition work, all workers have worn full PPE which include disposable protective overall with hood, nitrile gloves, shoe covers, and full-face positive pressure respirators equipped with a combination cartridge.
- 4.1.4 The refractory bricks of the combustion chamber were removed individually and the outer steel shell was cut to smaller pieces for disposal at designated landfill. Upon completion of the demolition work, all surfaces in the incinerator room were decontaminated by HEPA vacuuming and wet wiping. Then the innermost polythene sheet was sprayed with Polyvinyl Alcohol (PVA) and upon drying, the inner polythene sheet was peeled off. The PVA decontamination process was repeated for the second and third layers of the polythene sheets. All residual ash collected from the incinerator, used HEPA filters, scrubbed materials, the HEPA filtered materials and the gaskets to the primary and secondary burner of the incinerators were disposal of at Chemical Waste Treatment Centre. Good quality containers compatible with the chemical wastes were used. Appropriate labels were affixed securely on each chemical waste container indicating the chemical characteristics of the chemical waste.
- 4.1.5 All asbestos waste generated during the decommissioning works were collected, transported and disposed to the designated landfill by a licensed waste collector under Trip Ticket System.
- 4.1.6 Other wastes such as the combustion chambers and outer shell panels and ductworks, polythene wrapping sheets, used PPE, waste generated from the dismantling work of the containment and cloths used for wet wiping were properly stored and waiting for disposal of at designated landfill site. The wall-mounted control panel for incinerators was removed for disposal of at designated landfill site as well. The control panel for exhaust fan for LG501D compressor / vacuum EQP. Room, fused link boxes, DDC control panel, FAD KLG6 and air conditioning ductworks are retained.
- 4.1.7 Based on the findings of the site audits during the reporting period, the overall EM&A performance of the Project is satisfactory.

APPENDIX



APPENDIX A TRIP TICKET FOR THE ASBESTOS WASTE DISPOSAL

Waste Collector's Copy 廢物收集者存根

Import 入口 Part A 甲類
 Export 出口 Part B 乙類
 Waste No. 廢物編號: 1705-0521-1

**Environmental Protection Department
環境保護署**
**Waste Disposal Ordinance (Chapter 354)
香港法例第354章廢物處置條例**
**Waste Disposal (Chemical Waste) (General) Regulation
廢物處置(化學廢物)(一般)規例**

**TRIP TICKET
運載紀錄**

Ticket Number (運載紀錄編號): **H17129**
1189642

E PRODUCER (廢物產生者)

Name: **AAA Services Ltd.**
 Address: **Block A K, Queen Mary Hotel, 102 Pokfulam Road.**
 Contact Person: **Vincent Lam**
 Capacity: **Manager**
 Tel. No.: **2380 6862**
 Producer Number: **5919-221-A2031-02**

I certify in my best knowledge and belief that the information given in the Waste Declaration, A, D(I), and E(I) sections is correct and the waste described in D(I) has been properly labelled and consigned to the waste collector at B.
 據本人所知及所信，在廢物聲明、A, D(I)及E(I)欄內填報的資料，全屬真實無訛，而D(I)欄開列的廢物是已作適當的標識及委託B欄的廢物收集者付運，此證。

Signed: **Vincent Lam** Co. Chop:
 Name: **Vincent Lam** Date: **28/3/2018** Time: **9:00**

E COLLECTOR (廢物收集者) (*State the appropriate one 選擇適用者)

Name: **AAA Services Ltd.**
 Address: **16/F, Bullkin Centre, 332-334 and St. Mongkok, Kln.**
 Operator: **KAN SAI HO**
 Tel. No.: **2380 6862**
 Vehicle Registration or Vessel Licence No.: **S19791**
 Disposal Site: **WENT LANDFILL.**

I certify in my best knowledge and belief that I have checked and then collected the waste set out in D(I), and the information given in B, D(II), and E(II) is correct.
 據本人所知及所信，本人經核對後已收集D(I)欄開列的廢物，而B, D(II)及E(II)欄內填報的資料，全屬真實無訛，此證。

Signed: **Vincent Lam** Co. Chop:
 Name: **Vincent Lam** Date: **28/3/2018** Time: **9:00**

RECEPTION POINT (廢物收集處)

Name: **SITA Waste Services Ltd.**
 Address: **Room 702, 7/F Lee Garden Two, 28 Yun Ping Road, Causeway Bay, Hong Kong.**
 Contact Person: **Mr. W. Y. Lam**
 Capacity: **Landfilling Manager**
 Tel. No.: **2472-7836**
 Disposal Licence Number: **9210-431-S3505-OS**

I (Reception Point Manager) certify that the waste set out in D(I) has been received by this reception point and the information given in C, D(III) and E(III) is correct.
 本人(收集處經理)證明本收集處已接收D(I)欄開列的廢物，而C, D(III)及E(III)欄內填報的資料，全屬真實無訛，此證。

Signed: **W. Y. Lam** Co. Chop:
 Name: **W. Y. Lam** Date: **28 MAR 2018** Time: **12:00**

E DESCRIPTION (廢物資料) (* State the appropriate one 選擇適用者)

(I) Waste Type/Chemical Name 廢物種類/化學名稱	Waste Identification 廢物鑑定		Physical Form* 廢物形態	Containers 容器			Quantity Notified 報稱的數量 (Part A Waste only) (只適用於甲類化學廢物) (L or kg)* (升或公斤)	(II) Quantity Collected 收集的數量 (L or kg)* (升或公斤)		(III) Quantity Received 接收的數量 (L or kg)* (升或公斤)	
	Waste Code 廢物代號	Dangerous Goods (Category) 危險物品(類別) (If applicable) (如適用者)	Solid 固體 Liquid 液體 Sludge 污泥 Others 其他	No. 數目	Type 種類	Capacity 容量 (L or kg)* (升或公斤)		L 升	kg 公斤	L 升	kg 公斤
Asbestos Waste Type 2 Asbestos Gasket	M33S09	-	Solid	68	Bags	0.06 cum	2000	680			

KS (註釋) (Include any additional information necessary for safe handling of the waste.)
 (包括確保廢物安全處理的其他附加資料。)

Waste Producer 廢物產生者:
 Waste Collector 廢物收集者:
 Reception Point 廢物收集處:

Part A chemical waste, Waste Producer, Waste Collector and Reception Point must strictly follow the Directions for Disposal issued by the Director of Environmental Protection under Section 17 of the Waste Disposal Ordinance.
 者、廢物收集者及廢物收集處在處理甲類化學廢物時，必須遵守環境保護署長根據廢物處置條例第17條所簽發的指令。

G: Any person(s) who knowingly or recklessly provide incorrect or misleading information or omit material particulars or information or knowingly or recklessly certify as correct anything which is incorrect, in relation to any requirement in the Regulation, commits an offence punishable with a maximum fine of \$200,000 and imprisonment for 6 months.

根據廢物處置(化學廢物)(一般)規例的規定，任何人士填報本表格時故意或罔顧後果地提供不確或誤導資料或遺漏重要事項，又或故意或罔顧後果地證明任何不確事項為正確，即屬違法，最高可被判罰款港幣200,000元及入獄6個月。