

**Mr. WONG Sui Kan**  
Chief Engineer/Sewerage Projects  
Drainage Services Department  
Projects and Development Branch  
Sewerage Projects Division  
44/F, Revenue Tower,  
5 Gloucester Road,  
Wan Chai, Hong Kong

**Our Reference**  
TC/DC/dc/377000/03/02/L  
-005

20/F AIA Kowloon Tower  
Landmark East  
100 How Ming Street  
Kwun Tong  
Kowloon  
Hong Kong

T +852 2828 5757  
F +852 2827 1823  
mottmac.hk

**Contract No. SPW 09/2016**  
**Independent Environmental Checker for Environmental Monitoring and Audit**  
**for Operation of Tai Po Sewage Treatment Works Stage 5 Phase 2B**  
EP Condition 6.6 – Monthly EM&A Report

24 April 2017

Dear Sir,

With reference to the ET's letter ref: MCL/ED/0246/2017/C dated 19 April 2017 associated with the Monthly EM&A Report for March 2016 (Rev.1), we have no further comment.

This letter serves as verification of the captioned submission in line with the requirements as set out in the EM&A Manual.

Should you have any queries, please feel free to contact the undersigned at 2828 5970.

Yours faithfully  
FOR MOTT MACDONALD HONG KONG LIMITED



Dulcie Chan  
Independent Environmental Checker  
T 2828 5970  
Dulcie.Chan@mottmac.com

## MATERIALAB CONSULTANTS LIMITED

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong  
Tel : +852-2450 8238  
Fax : +852-2450 8032  
E-mail : mcl@fugro.com.hk  
Website : www.materialab-consultant.com

Date : 19 April 2017

Our Ref. : MCL/ED/0246/2017/C

Mott MacDonald Hong Kong Limited  
20/F, AIA Kowloon Tower  
Landmark East  
100 Hau Ming Street  
Kwun Tong, Kowloon  
Hong Kong

**BY HAND**

Attn.: Ms. Dulcie Chan, IEC

Dear Madam,

**Agreement No. CE 21/2014 (EP)  
Environmental Monitoring and Audit (EM&A) for Operation of  
Tai Po Sewage Treatment Works Stage V Phase 2B – Investigation  
EP Condition 6.6 – Monthly EM&A Report**

Pursuant to Condition 6.6 of the Environmental Permit (EP No. EP-265/2007/A) for the captioned contract, we are pleased to submit the certified Monthly EM&A Report for March 2016 (Rev.1) for your on-ward submission.

Should you require further information, please do not hesitate to contact our Miss Jamie Tam at 3565 4157 or the undersigned at 3565 4114.

Assuring you of our best attention at all times.

Yours faithfully,  
for and on behalf of  
MATERIALAB – WASTE  
& ENVIRONMENTAL TECHNOLOGIES JOINT VENTURE



---

Colin Yung  
Environmental Team Leader

CY/jt

Encl.

## MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the company name in a bold, sans-serif font with horizontal lines above and below the text.

Report No.: 0151/15/ED/0737

### Monthly EM&A Report March 2016 (Rev. 1)

Client : Drainage Services Department

Project : Agreement No. CE 21/2014(EP)  
Environmental Monitoring and Audit (EM&A)  
for Operation of Tai Po Sewage Treatment  
Works Stage V Phase 2B – Investigation

Report No. : 0151/15/ED/0737

Prepared by: L.M. Kwok & Jamie K.K. Tam

Certified by:

A handwritten signature in blue ink, appearing to be 'Colin Yung', written over a horizontal line.

Colin Yung  
Environmental Team Leader

Report No.: 0151/15/ED/0737

## CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. AIR QUALITY MONITORING .....</b>	<b>2</b>
<b>3. MARINE WATER QUALITY MONITORING .....</b>	<b>6</b>
<b>4. ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS .....</b>	<b>7</b>
<b>5. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES .....</b>	<b>7</b>
<b>6. SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS .....</b>	<b>7</b>
<b>7. CONCLUSION .....</b>	<b>8</b>

## FIGURES

Figure 2.1 Air Quality (H<sub>2</sub>S) Monitoring Stations

## APPENDICES

Appendix A Project Organization Chart

Appendix B Monitoring Schedule

Appendix C Event / Action Plan for Air Quality Monitoring (Operation Phase)

Appendix D Calibration Certificates

Appendix E Air Quality (H<sub>2</sub>S) Monitoring Data and Graphical Plots

Appendix F Site Record

Appendix G Implementation Schedule of Environmental Mitigation Measures (EMIS) for operation phase

Appendix H Chemical Waste Producer Registration License

Report No.: 0151/15/ED/0737

## **EXECUTIVE SUMMARY**

This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Agreement No. CE 21/2014 (EP) – “Environmental Monitoring and Audit for Operation of Tai Po Sewage Treatment Works Stage V Phase 2B – Investigation” (hereafter referred to as “the Assignment”) for the Drainage Services Department (DSD) of Hong Kong Special Administrative Region. MaterialLab – Waste & Environmental Technologies Joint Venture (hereafter referred to as “MLAB”) was appointed as the Environmental Team by DSD.

The Assignment is part of the Tai Po Sewage Treatment Works (TPSTW) Stage V extension (hereinafter referred as “the Project”) which is a Designated Project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The Environmental Permit (EP) for TPSTW Stage V, namely No. EP-265/2007 was issued in March 2007. A Variation Environmental Permit (VEP) EP-265/2007/A was issued on 30 April 2014. These documents are available through the EIA Ordinance Register.

Commencement of the Assignment took place on 9 June 2015, while the operation phase EM&A programme commenced on 1 March 2016.

This is the first Monthly EM&A Report for the Assignment which summaries the progress of the EM&A programme during the reporting period from 01 March 2016 to 31 March 2016 (the “reporting period”). The monthly EM&A programme was undertaken in accordance with the EM&A Manual for TPSTW Stage V. According to the EM&A Manual, air quality and marine water quality are the key environmental concerns of the Project.

### **Breaches of Action and Limit Levels**

Air quality monitoring was carried out from 17 March 2016 to 18 March 2016. Exceedances of Action/Limit levels at three ASRs (AS1, AS12 and AS4) were recorded.

There was no marine water quality monitoring conducted during this reporting period and therefore, no marine water quality monitoring result is reported.

### **Complaint Log**

There were no complaints received in relation to the environmental impact during this reporting period.

### **Notifications of Summons and Successful Prosecutions**

There were no notifications of summons or prosecutions received during this reporting period.

### **Reporting Changes**

There was no reporting change during this reporting period.

### **Future key issues**

There were no construction activities and no future key issue is reported during this reporting period.

## 1. INTRODUCTION

### 1.1 Background

1.1.1 Tai Po Sewage Treatment Works (TPSTW) is located within the Tai Po Industrial Estate. It currently comprises four Stages: I, II, IVA and IVB works. The TPSTW Stage V aims to upgrade the existing TPSTW to provide additional sewage treatment capacity from the present design flow of 88,000 m<sup>3</sup>/day to 130,000 m<sup>3</sup>/day to meet the demands of both existing and future developments and to meet the revised discharge license requirements. The TPSTW Stage V will be implemented in two phases, i.e. Phase 1 and Phase 2. The design capacity of Phase 1 is 100,000 m<sup>3</sup>/day and Phase 2 is 130,000 m<sup>3</sup>/day.

1.1.2 The TPSTW Stage V is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 449). A study of Environmental Impact Assessment has been carried out to evaluate the environmental impacts associated with the project. An EIA Report and Environmental Monitoring and Audit (EM&A) Manual were approved by the Environmental Protection Department on 28 October 2004. An Environmental Permit (EP) No.EP-202/2007 and a Variation Environmental Permit (VEP) No. EP-202/2007A were issued on 22 March 2007 and 30 April 2014 for TPSTW Stage V Phase 2B (hereafter referred to as “the Project”) to DSD as the Permit Holder. The EP stipulates that an EM&A programme is required to ensure the mitigation measures recommended in the EIA Report and the EM&A Manual, are implemented during the construction and operation of the Project.

### 1.2 Project Description

1.2.1 MaterialLab – Waste and Environmental Technologies Joint Venture (MLAB) was commissioned by DSD to undertake the EM&A services of the Project including Odour Monitoring, Odour Complaint Register and Marine Water Quality Monitoring during the operation phase, under the Agreement No. CE 21/2014 (EP) Environmental Monitoring and Audit for Tai Po Sewage Treatment Works Stage V Phase 2B – Investigation (hereafter referred to as “the Assignment”).

### 1.3 Project Organization

1.3.1 The project organization for environmental works is shown in Appendix A. The contact person and telephone numbers of key personnel for the captioned project are shown in Table 1.1.

Table 1.1 Contact Persons and Telephone Numbers of Key Personnel

Party	Role	Position	Contact Person	Telephone No.	Fax No.
DSD	SP Division	Engineer	Ms. Suki Pun	2594 7472	2519 3615
Mott MacDonald	IEC	IEC	Ms. Dulcie Chan	2828 5970	2827 1823
MLAB	Environmental Team	Environmental Team Leader	Mr. Colin Yung	3565 4114	2450 8032

**2. AIR QUALITY MONITORING**

**2.1 Methodology**

2.1.1 The H<sub>2</sub>S analyzer, type Jerome 631-X, was used for the air quality monitoring. The analyzer is capable of measuring H<sub>2</sub>S concentration in the range of 1 ppb to 50 ppm, with a resolution of 1 ppb. The analyzer operates within a temperature range of 0°C to 40°C, at an air flow rate of 0.15 L/min. Grab air sample is drawn by built-in suction pump of the analyzer and passes through a gold film sensor. The electrical resistance of the gold film changes according to the change in mass of hydrogen sulphide in the gas sample. Table 2.1 summaries the equipment used in air quality (H<sub>2</sub>S) monitoring.

Table 2.1 Equipment for Air Quality (H<sub>2</sub>S) Monitoring

Equipment	Manufacturer / Model	Serial Number	Sensor Number	Calibration Date	Next Calibration Date
Gold Film Hydrogen Sulphide Analyzer	JEROME X631 0003	2966	14-11-23-R2D	27 July 2015	26 July 2016
Gold Film Hydrogen Sulphide Analyzer	JEROME X631 0003	2967	14-11-22-R2A	30 July 2015	29 July 2016

**2.2 Monitoring Location**

2.2.1 Five monitoring stations were set up inside and outside of TPSTW. Table 2.2 and Figure 2.1 show the description and location of the H<sub>2</sub>S monitoring stations. The level for odour monitoring agreed with the DSD and EPD is 1.5m from the ground.

Table 2.2 Air Quality (H<sub>2</sub>S) Monitoring Stations

ID No.	EM&A Ref.	Monitoring Location	Description
PRI 203 <sup>1</sup>	OSM1	Stage I/II Primary Sedimentation Tank	Source
PRI 401 <sup>1</sup>	OSM2	Stage IV Primary Sedimentation Tank	Source
AS 12 <sup>1,2</sup>	OAM1	Government Staff Quarter (Inside)	ASR
AS 4 <sup>1,2</sup>	OAM2	Interpac Containers Ltd (Outside)	ASR
AS 1 <sup>1,2</sup>	OAM3	Watson’s Water Centre (Outside)	ASR

<sup>1</sup>EIA Reference No.

<sup>2</sup>Air Sensitive Receiver

**2.3 Monitoring Frequency and Duration**

2.3.1 The sampling duration and frequency of air quality (H<sub>2</sub>S) monitoring is summarised in Table 2.3.

Table 2.3 Air Quality (H<sub>2</sub>S) Monitoring Programme

Sampling Duration	Frequency	
24 hour	Year 1	Once every three months after operation of Stage V Phase 2B works; frequency would increase to monthly interval if exceedances are recorded.
	Year 2 and Year 3	Once every six months after operation of Stage V Phase 2B works; frequency would increase to monthly interval if exceedances are recorded.

2.3.2 A 15-min integrated gaseous H<sub>2</sub>S sample was collected every 3 hours for a period of 24 hours at the monitoring locations. Maximum and minimum H<sub>2</sub>S levels for each monitoring station were recorded.

2.3.3 The monitoring schedule for the present and next reporting period is provided in Appendix B.

**2.4 Action / Limit Level**

2.4.1 Table 2.4 shows the Action and Limit Levels for air quality (H<sub>2</sub>S) monitoring at ASRs.

Table 2.4 Action and Limit Levels for Air Quality Monitoring at ASRs

Monitoring Stations	Action Level	Limit Level*
AS12: Government Staff Quarter	2.5 ppb	2.5 ppb
AS4: Interpac Containers Limited		
AS1: Watson’s Water Centre		

\*Limit Level at ASRs only.

2.4.2 The event and action plan for air quality monitoring is provided in Appendix C.

**2.5 Quality Assurance / Quality Control**

2.5.1 In order to ensure the analyzer is functioning properly, manual sensor regeneration and zero adjustment were performed before each set of odour monitoring.

2.5.2 Calibration of the analyzer is conducted every year at the laboratory of the manufacturer. The calibration certificates for the analyzers are shown in Appendix D.

2.5.3 To obtain accurate results from the H<sub>2</sub>S monitoring at Stage IV Primary Sedimentation Tanks, sulphide formation at the bottom shall be cleaned and minimised.



**2.6 Monitoring Results and Observations**

- 2.6.1 The first odour impact monitoring was carried out from 17 March 2016 to 18 March 2016 after the commissioning of the Project.
- 2.6.2 The meteorological data including temperature, wind speed and direction of the monitoring period obtained from the HKO's Tai Mei Tuk weather station is summarised in Table 2.5.

Table 2.5 Summary of meteorological data of the monitoring period#

Date	Mean Temperature(° C)	Prevailing Wind Direction	Mean Wind speed (km/h)
17 March	16.5	South East	6.8
18 March	19.4	East	4.3

# The meteorological data was extracted from the website of HKO.

- 2.6.3 The monitoring results are summarised in Table 2.5. Graphical plots of results and details of monitoring data are shown in Appendix E (24-hour average, maximum and minimum H<sub>2</sub>S concentration) and Appendix F (site record).

Table 2.6 Summary of Monitoring Results

ID No.	EM&A Ref.	Monitoring Location	24-hour Average H <sub>2</sub> S Concentration (ppb)
PRI203 <sup>1</sup>	OSM1	Stage I Primary Sedimentation Tank	16.7
PRI401 <sup>1</sup>	OSM2	Stage IV Primary Sedimentation Tank	6.3
AS12 <sup>1,2</sup>	OAM1	Government Staff Quarter (Inside)	4.2
AS4 <sup>1,2</sup>	OAM2	Interpac Containers Ltd (Outside)	12.5
AS1 <sup>1,2</sup>	OAM3	Watson's Water Centre (Outside)	6.7

<sup>1</sup>EIA Reference No.

<sup>2</sup>Air Sensitive Receiver

- 2.6.4 Comparison of the average H<sub>2</sub>S concentration for ASRs and the corresponding Action/Limit levels established in the odour baseline study is shown in Table 2.7.

Table 2.7 Comparison of Average H<sub>2</sub>S Concentration with Action/Limit Levels

Location	H <sub>2</sub> S Concentration (ppb)			Exceedance	
	Odour Impact monitoring	Action Level	Limit Level	Action Level	Limit Level
AS12	4.2	2.5	2.5	Y	Y
AS4	12.5	2.5	2.5	Y	Y
AS1	6.7	2.5	2.5	Y	Y

- 2.6.5 Exceedances of A/L levels of 2.5 ppb H<sub>2</sub>S concentration at three Air Sensitive Receivers (AS12, AS4 and AS1) were recorded.
- 2.6.6 Odour mitigation measures such as the use of weir launders at Stage I/II and Stage IV Primary Sedimentation Tanks and addition of chemical (calcium nitrate) at Tai Yuen Sewage Pumping Station Package No. 4 were implemented during the odour impact monitoring. However, exceedances of A/L levels of H<sub>2</sub>S were resulted.
- 2.6.7 Even though specific sources of odour that would contribute to the odour nuisance at ASRs was not observed in this monitoring exercise. It is important to consider the location and surrounding environment of the Tai Po Sewage Treatment Works. Located at the Tai Po Industrial Estate, the TPSTW is surrounded by different industrial buildings. Exceedances of A/L levels at ASRs might be attributed to other sources such as nearby Refuse Collection Station and the industrial nature of the surrounding environment. These potential sources may cause odour nuisance to the Air Sensitive Receivers and hence, the high H<sub>2</sub>S levels measured at ASRs may be contributed by the emissions from sources other than that of the TPSTW.
- 2.6.8 In accordance with the Event and Action Plan for Operation Phase Air Quality Monitoring, the following actions have been taken in response to the exceedance of limit level.
- 2.6.9 The ET had repeated measurement to confirm exceedance. Then they had tried to identify the causes of exceedance and took photos for record. The operation team and DSD/SPD had been notified immediately when exceedance was recorded. After finishing the odour monitoring, the operation team was reminded to have better housekeeping of the TPSTW.

### **3 MARINE WATER QUALITY MONITORING**

There was no marine water quality monitoring conducted during the reporting period and therefore, no marine water quality monitoring result is reported.

#### **4 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS**

- 4.1.1 TPSTW had registered as a chemical waste producer for this Project. The license number of Chemical Waste Producer Registration is 0014-727-D2226-15 which is presented in Appendix H.
- 4.1.2 TPSTW is reminded that chemical waste should be properly handled and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. TPSTW should also engage a licensed waste collector to collect the chemical waste for proper disposal.
- 4.1.3 Sludge cake of TPSTW was temporarily stored within the dewatering house. Normally, all the sludge cake was disposed to Sludge Treatment Facility (STF). When STF breaks down, the sludge cake was disposed to WENT.

#### **5 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES**

- 5.1.1 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) for operation phase is presented in Appendix G. Most of the necessary mitigation measures at this stage of works were implemented properly.
- 5.1.2 Implementation status of operational landfill gas monitoring was confirmed with operation team of TPSTW. There is no accumulation of landfill gas at area for normal occupation inside TPSTW. When confined space works were being conducted, gas monitoring was performed before entry in accordance with Code of Practice on Safety and Health at Work in Confined Spaces.

#### **6 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

- 6.1.1 There was no complaint received in relation to the environmental impact during this reporting period.
- 6.1.2 There were no notifications of summons or prosecutions received during this reporting period.

## **7 CONCLUSION**

- 7.1.1 The first odour impact monitoring was carried out from 17 March 2016 to 18 March 2016 during this reporting period in accordance with the EM&A requirements.
- 7.1.2 Air quality monitoring of hydrogen sulphide (H<sub>2</sub>S) was conducted at five monitoring stations including three Air Sensitive Receivers around TPSTW. Exceedances of A/L levels of 2.5 ppb at three ASRs (AS1, AS12 and AS4) were recorded.
- 7.1.3 There was no marine water quality monitoring conducted during this reporting period and therefore, no marine water quality monitoring result is reported.



---

Report No.: 0151/15/ED/0737

**Figure 2.1**  
**Air Quality (H<sub>2</sub>S) Monitoring Stations**

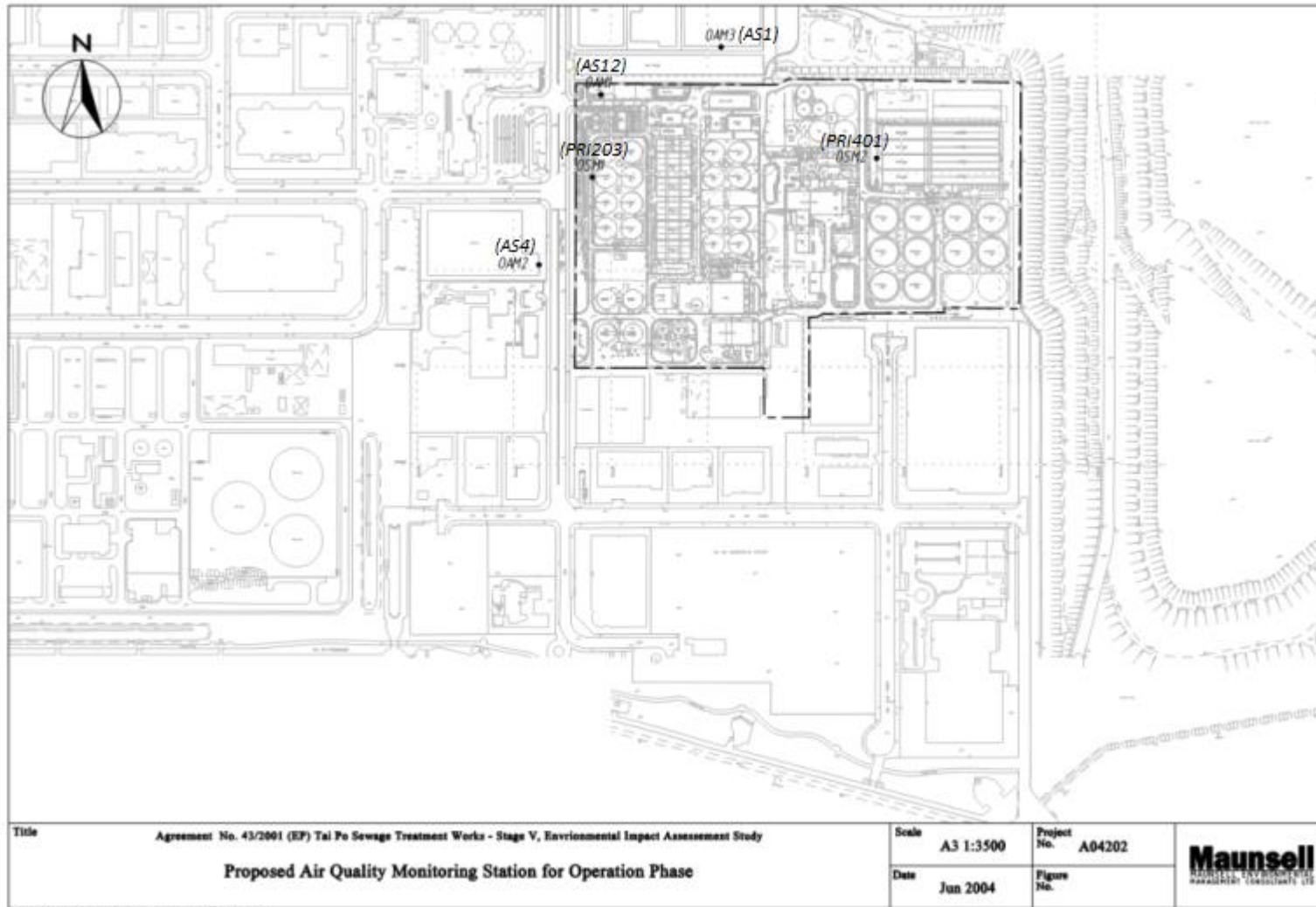
# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
 Profit Industrial Building,  
 1-15 Kwai Fung Crescent, Kwai Fong,  
 Hong Kong.

Tel : (852)-24508238  
 Fax : (852)-24508032  
 Email : mcl@fugro.com



Report No.: 0151/15/ED/0737



The copyright of this document is owned by MaterialLab – Waste & Environmental Technologies Joint Venture. It may not be reproduced except with prior written approval from the Company.

## **MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the word "MaterialLab" in a bold, black, sans-serif font. The text is centered between two thick, horizontal black bars, one above and one below the text.

---

Report No.: 0151/15/ED/0737

### **Appendix A Project Organization Chart**



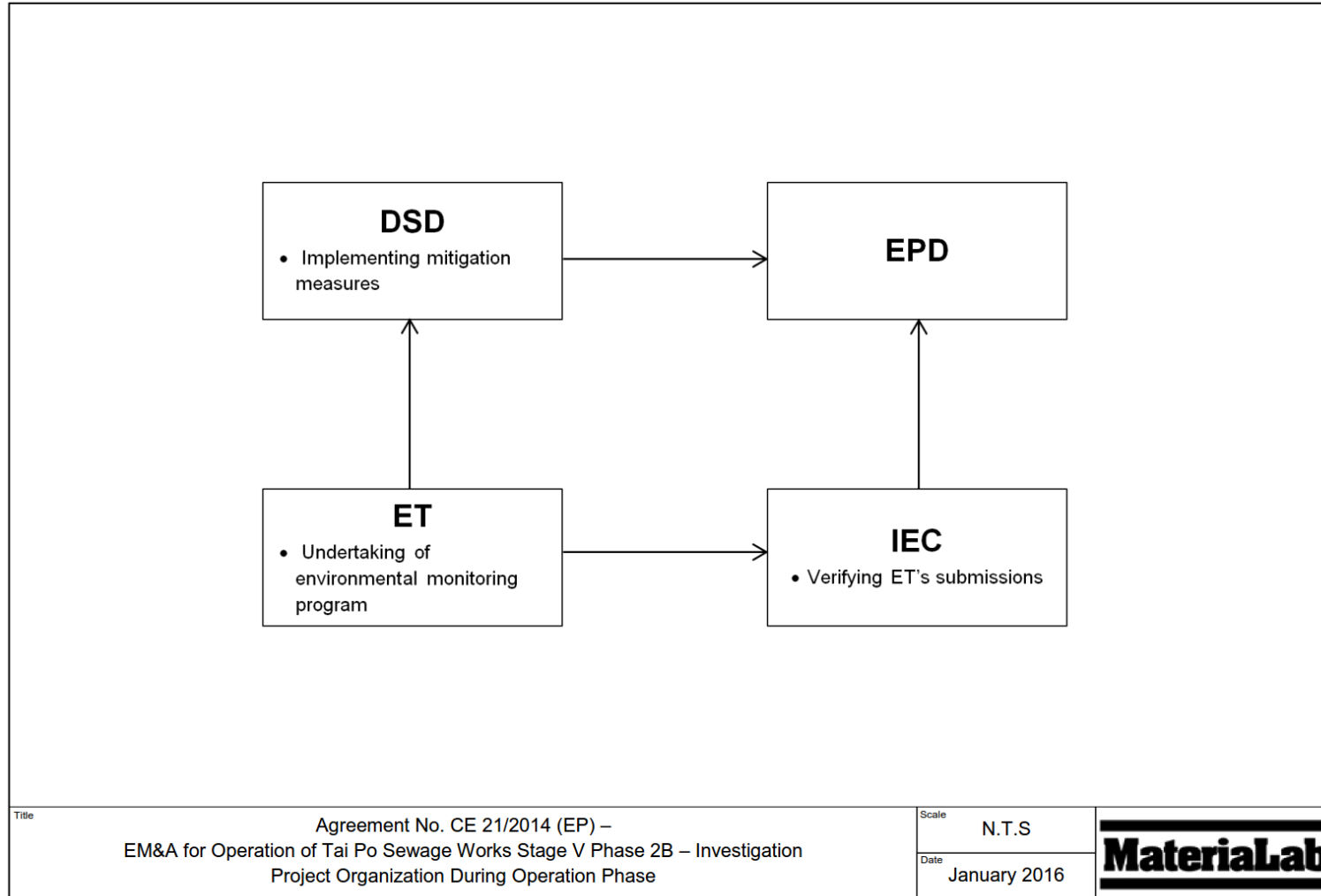
# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
 Profit Industrial Building,  
 1-15 Kwai Fung Crescent, Kwai Fong,  
 Hong Kong.

Tel : (852)-24508238  
 Fax : (852)-24508032  
 Email : mcl@fugro.com



Report No.: 0151/15/ED/0737



P:\MCL\EM&A\2015\0151-15\IO-Chart

The copyright of this document is owned by MaterialLab – Waste & Environmental Technologies Joint Venture. It may not be reproduced except with prior written approval from the Company.

## **MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the word "MaterialLab" in a bold, black, sans-serif font. The text is centered between two thick, horizontal black bars, one above and one below the text.

---

Report No.: 0151/15/ED/0737

### **Appendix B Monitoring Schedule**

Report No.: 0151/15/ED/0737

**Air Quality Monitoring Schedule for March 2016**

<b>Mar-2016</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17 Odour (H <sub>2</sub> S) Monitoring	18 Odour (H <sub>2</sub> S) Monitoring
19	20	21	22	23	24	25
26	27	28	29	30	31	

Note: There was no marine water quality monitoring conducted during March 2016

**Tentative Air Quality Monitoring Schedule for July 2016**

<b>Jul-2016</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15 Odour (H <sub>2</sub> S) Monitoring	16 Odour (H <sub>2</sub> S) Monitoring
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						



---

Report No.: 0151/15/ED/0737

**Appendix C**  
**Event / Action Plan for Air Quality Monitoring (Operation Phase)**

Report No.: 0151/15/ED/0737

Event	Action		
	TPSTW Engineer – in-charge of Odour Monitoring	DSD ST1	DSD/SP / E &MP (*)
Exceedance of action level or receipt of any odour complaints	<ol style="list-style-type: none"> <li>1. Identify source/ reason of exceedance or odour complaints; and</li> <li>2. Repeat measurement confirm finding.</li> </ol>	<ol style="list-style-type: none"> <li>1. carry out investigation to identify the source / reason of exceedance or complaints. Investigation shall be completed within 1 week;</li> <li>2. rectify any unacceptable practice;</li> <li>3. amended working methods if required;</li> <li>4. inform DSD SP/E&amp;MP if cause of complaints or exceedance is considered to be caused by civil or E &amp;M design problems;</li> <li>5. Correspond to the complaints within 10 days to inform the cause of nuisance and action taken; and</li> <li>6. Implement amended working methods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Assist ST1 to find the root cause of the complaint or exceedance; and</li> <li>2. modify or improve design as appropriate.</li> </ol>
Exceedance of Limit level or receipt of two or more complaints in 3 months	<ol style="list-style-type: none"> <li>1. Identify source / reason of exceedance or odour complaints;</li> <li>2. Repeat measurements to confirm findings;</li> <li>3. Increase monitoring frequency to monthly; and</li> <li>4. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Carry out investigation to identify the source / reason of exceedance or complaints. Investigation shall be completed within 1 week;</li> <li>2. rectify any unacceptable practice;</li> <li>3. amended working methods if required;</li> <li>4. notify DSD SP / E&amp;MP;</li> <li>5. formulate remedial actions;</li> <li>6. ensure amended working methods and remedial actions properly implemented;</li> <li>7. if exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated; and</li> <li>8. correspond to the complaints within 10 days to inform the cause of the nuisance and action taken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Assist ST1 to find the root cause of the complaint or exceedance;</li> <li>2. modify or improve design as appropriate; and</li> <li>3. formulate remedial actions in association with ST1</li> </ol>

## **MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the word "MaterialLab" in a bold, black, sans-serif font. The text is centered between two thick, horizontal black bars, one above and one below the text.

---

Report No.: 0151/15/ED/0737

### **Appendix D Calibration Certificates**

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

# MaterialLab

Report No.: 0151/15/ED/0737

**ARIZONA INSTRUMENT LLC**  
3375 N. Delaware St., Chandler, AZ 85225  
(800) 528-7411 • (602) 470-1414  
www.azic.com • customerservice@azic.com



## Certification of Instrument Calibration

Arizona Instrument LLC New Unit  
3375 N. Delaware Street  
Chandler, AZ 85225

RMA # 2208840

This is to certify that the Jerome X631 0003 Gold Film Hydrogen Sulfide Analyzer, Serial Number 2966, with Sensor Number 14-11-23-R2D, was calibrated with standard units traceable to NIST.

Calibration Status as Received: New

	Actual	Calibration Gas	Allowable Range
<b>Incoming:</b>			
Range 1	ppm H <sub>2</sub> S	ppm H <sub>2</sub> S	+/- 6%
RSD %			<5%
<b>Outgoing:</b>			
Range 1	0.509 ppm H <sub>2</sub> S	0.505 ppm H <sub>2</sub> S	+/- 5%
RSD %	2.17		<3%

Calibration Status as Left: New

Estimated Uncertainty of Calibration System: 3.5%

Calibration Date: 27-Jul-2015      Recalibration Date: 26-Jul-2016

Temperature °F: 73.60      % Relative Humidity: 31.70

Approved By: Cheryl Hradek  
Title: Cheryl Hradek - Quality Control

Date Approved: 27-Jul-2015

### Equipment Used:

Permeation Tube: 56-46388 NIST#: ISO13265: 072958-798-121714  
Calibration Date: 24-Apr-2015 Calibration Date Due: 24-Apr-2016

DynaCalibrator: MU-1221 NIST#: 15-2545  
Calibration Date: 14-May-2015 Calibration Date Due: 15-May-2016

Digital Multimeter: 89990030 NIST#: 7000660  
Calibration Date: 14-Apr-2015 Calibration Date Due: 14-Apr-2016

Flowmeter: US10H44183 NIST#: 1813: 1817: 1796  
Calibration Date: 21-Jan-2015 Calibration Date Due: 22-Jan-2016

Estimated Uncertainty of Calibration: 3.5%

Calibration Procedure Used: 730-0032

Arizona Instrument certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy are traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques.

Disclaimer: Any unauthorized adjustments, removal or breaking of QC seals, or other customer modifications on your Jerome Analyze WILL VOID this factory calibration. Because any of the above are could affect the calibration and readings of the instrument, this certification will no longer be valid and, further, Arizona Instrument LLC WILL NOT be responsible for any data bias created as a result of using the instrument after such adjustments, seal removal, or modifications.

As long as a functional test is within range, according to the procedure outlined in the Operator's Manual, the instrument is performing correctly.

This document shall not be reproduced, except in full, without the written approval of Arizona Instrument.

RMA#EDD

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

**ARIZONA INSTRUMENT LLC**  
3375 N. Delaware St., Chandler, AZ 85225  
(800) 528-7411 • (602) 470-1414  
www.azic.com • customerservice@azic.com



## Certification of Instrument Calibration

Arizona Instrument LLC New Unit  
3375 N. Delaware Street  
Chandler, AZ 85225

RMA # 2208841

This is to certify that the Jerome X631 0003 Gold Film Hydrogen Sulfide Analyzer, Serial Number 2967, with Sensor Number 14-11-22-R2A, was calibrated with standard units traceable to NIST.

Calibration Status as Received: New

		Actual	Calibration Gas	Allowable Range
<b>Incoming:</b>	Range 1	ppm H2S	ppm H2S	+/- 6%
	RSD %			<5%
<b>Outgoing:</b>	Range 1	0.502 ppm H2S	0.505 ppm H2S	+/- 5%
	RSD %	2.64		<3%

Calibration Status as Left: New

Estimated Uncertainty of Calibration System: 3.5%

Calibration Date: 30-Jul-2015      Recalibration Date: 29-Jul-2016

Temperature °F: 76.50      % Relative Humidity: 33.30

Approved By: Cheryl Hradek  
Title: Cheryl Hradek - Quality Control

Date Approved: 30-Jul-2015

### Equipment Used:

**Permeation Tube:** 56-46388 NIST#: ISO13265; 072958-798-121714  
Calibration Date: 24-Apr-2015 Calibration Date Due: 24-Apr-2016

**DynaCalibrator:** MJ-1221 NIST#: 15-2545  
Calibration Date: 14-May-2015 Calibration Date Due: 15-May-2016

**Digital Multimeter:** 89990030 NIST#: 7000660  
Calibration Date: 14-Apr-2015 Calibration Date Due: 14-Apr-2016

**Flowmeter:** US10E44183 NIST#: 1813, 1817, 1796  
Calibration Date: 21-Jan-2015 Calibration Date Due: 22-Jan-2016

Estimated Uncertainty of Calibration: 3.5%

Calibration Procedure Used: 730-0032

Arizona Instrument certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy are traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques.

Disclaimer: Any unauthorized adjustments, removal or breaking of QC seals, or other customer modifications on your Jerome Analyzer WILL VOID this factory calibration. Because any of the above acts could affect the calibration and readings of the instrument, this certification will no longer be valid and, further, Arizona Instrument LLC WILL NOT be responsible for any failures or errors created as a result of using the instrument after such adjustments, seal removal, or modifications.

As long as a functional test is within range, according to the procedure outlined in the Operator's Manual, the instrument is performing correctly.

This document shall not be reproduced, except in full, without the written approval of Arizona Instrument.

0151/15/ED/0737



---

Report No.: 0151/15/ED/0737

**Appendix E**  
**Air Quality (H<sub>2</sub>S) Monitoring Data and Graphical Plots**

**MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

Location	Time Interval	H <sub>2</sub> S concentration (ppb)*							
		1 <sup>st</sup> Odour Impact Monitoring (17-18 March 2016)							
		15-minute integrated average	24-hour average	Maximum	Minimum	Action Level	Exceedance	Limit Level	Exceedance
AS12 <sup>1,2</sup>	0700-1000	0.0	4.2	16.7	0.0	2.5	Yes	2.5	Yes
	1000-1300	0.0							
	1300-1600	0.0							
	1600-1900	0.0							
	1900-2200	0.0							
	2200-0100	16.7							
	0100-0400	0.0							
	0400-0700	16.7							
AS4 <sup>1,2</sup>	0700-1000	0.0	12.5	56.7	0.0	2.5	Yes	2.5	Yes
	1000-1300	3.3							
	1300-1600	0.0							
	1600-1900	0.0							
	1900-2200	0.0							
	2200-0100	56.7							
	0100-0400	13.3							
	0400-0700	26.7							
AS1 <sup>1,2</sup>	0700-1000	16.7	6.7	16.7	0.0	2.5	Yes	2.5	Yes
	1000-1300	0.0							
	1300-1600	0.0							
	1600-1900	0.0							
	1900-2200	0.0							
	2200-0100	13.3							
	0100-0400	6.7							
	0400-0700	16.7							

<sup>1</sup>EIA Reference No.

<sup>2</sup>Air Sensitive Receiver

\*Accuracy is not guaranteed by the manufacturer for readings that are lower than 0.003 ppm (3 ppb).

**MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
 Profit Industrial Building,  
 1-15 Kwai Fung Crescent, Kwai Fong,  
 Hong Kong.

Tel : (852)-24508238  
 Fax : (852)-24508032  
 Email : mcl@fugro.com



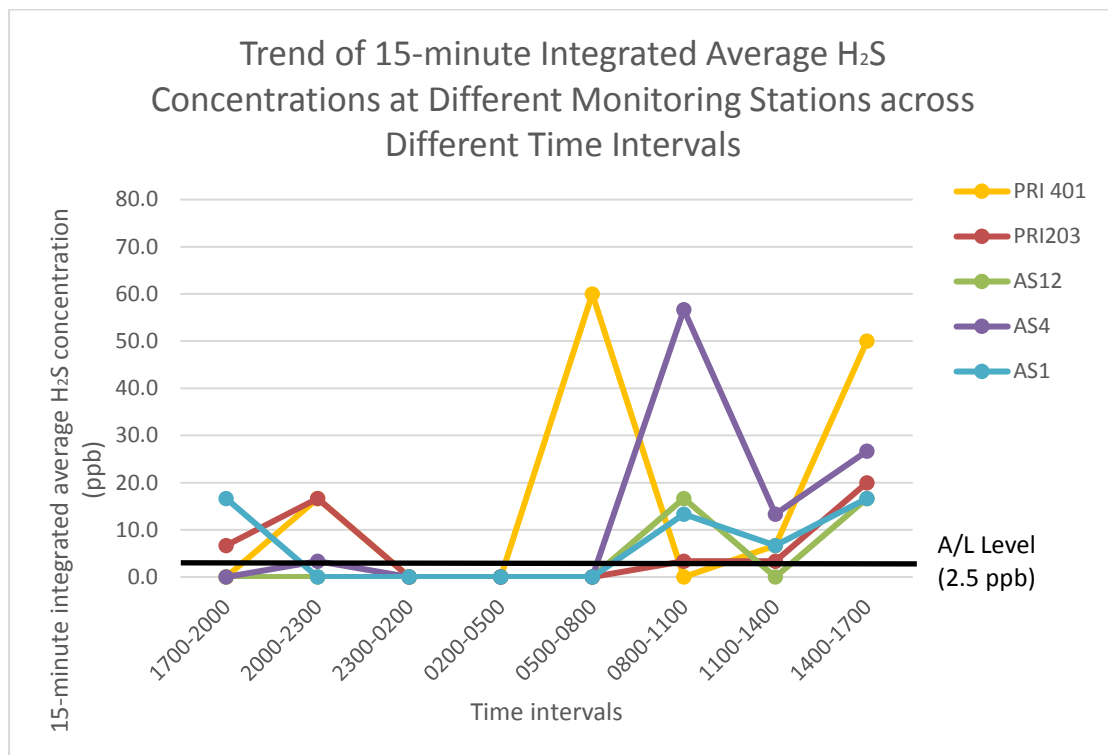
Report No.: 0151/15/ED/0737

Location	Time Interval	H <sub>2</sub> S concentration (ppb)*							
		1 <sup>st</sup> Odour Impact Monitoring (17-18 March 2016)							
		15-minute integrated average	24-hour average	Maximum	Minimum	Action Level	Exceedance	Limit Level	Exceedance
PRI401	0700-1000	0.0	16.7	60.0	0.0	-	-	-	-
	1000-1300	16.7							
	1300-1600	0.0							
	1600-1900	0.0							
	1900-2200	60.0							
	2200-0100	0.0							
	0100-0400	6.7							
	0400-0700	50.0							
PRI203	0700-1000	6.7	6.3	20.0	0.0	-	-	-	-
	1000-1300	16.7							
	1300-1600	0.0							
	1600-1900	0.0							
	1900-2200	0.0							
	2200-0100	3.3							
	0100-0400	3.3							
	0400-0700	20.0							

\*Accuracy is not guaranteed by the manufacturer for readings that are lower than 0.003 ppm (3 ppb).

Report No.: 0151/15/ED/0737

	1700-2000	2000-2300	2300-0200	0200-0500	0500-0800	0800-1100	1100-1400	1400-1700
<b>PRI401</b>	0.0	16.7	0.0	0.0	60.0	0.0	6.7	50.0
<b>PRI203</b>	6.7	16.7	0.0	0.0	0.0	3.3	3.3	20.0
<b>AS12</b>	0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.7
<b>AS4</b>	0.0	3.3	0.0	0.0	0.0	56.7	13.3	26.7
<b>AS1</b>	16.7	0.0	0.0	0.0	0.0	13.3	6.7	16.7



## **MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the word "MaterialLab" in a bold, black, sans-serif font. The text is centered between two thick, horizontal black bars, one above and one below the text.

---

Report No.: 0151/15/ED/0737

### **Appendix F Site Record**

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

## MaterialLab - Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-2450 8238  
Fax : (852)-2450 8032  
Email : mcl@fugro.com.hk



Report No.: 0151/15/ED/0069B

### Air Quality (H<sub>2</sub>S) Monitoring Data Record Sheet

General Information				
Monitoring Station	PR1401			
Date	17-3-2016			
Weather	Rainy			
Monitoring Results				
Sample No.	Time	Wind Speed	Wind Direction	Level (ppb)
Sample 1	Start: 12:15	0.5m/s	N	0, 0, 0
	Stop: 12:30			
Sample 2	Start: 20:15	/	/	0, 0, 0.05
	Stop: 20:30			
Sample 3	Start: 21:07	0.6m/s	N	0, 0, 0
	Stop: 23:17			
Sample 4	Start: 02:20	0.1m/s	N	0, 0, 0
	Stop: 02:35			
Sample 5	Start: <del>07:10</del> 07:10	0.6m/s	N	0.05, 0.001, 0.08
	Stop: 09:21			
Sample 6	Start: 08:15	0.1m/s	NE	0, 0, 0
	Stop: 08:50			
Sample 7	Start: 11:08	0.1m/s	E	0, 0.01, 0.01
	Stop: 11:23			
Sample 8	Start: 14:00	0.3m/s	E	0.05, 0.01, 0.06
	Stop: 14:15			
Other Observation: No special observations				

	Name and Designation	Signature	Date
Recorded by:	Ken ATO		17/3
	To Ji TIN ATO		17/3
Checked by:	Ting ATO		18/3
	LM Kuo, SEC		21/3/2016

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

## MaterialLab - Waste & Environmental Technologies Joint Venture

Room 725 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong. Tel : (852)-2450 8238  
Fax : (852)-2450 8032  
Email : mcl@fugro.com.hk



Report No.: 0151/15/ED/0069B

### Air Quality (H<sub>2</sub>S) Monitoring Data Record Sheet

General Information				
Monitoring Station	PR1303			
Date	17-3-2016			
Weather	Fair			
Monitoring Results				
Sample No.	Time	Wind Speed	Wind Direction	Level (ppb)
Sample 1	Start: 18:04	0.6 m/s	NE	0, 0, 002
	Stop: 19:10			
Sample 2	Start: 22:13	0.3 m/s	N	0, 005, 0
	Stop: 22:28			
Sample 3	Start: 01:01	0.6 m/s	N	0, 2, 0
	Stop: 01:16			
Sample 4	Start: 01:45	0.1 m/s	N	0, 2, 0
	Stop: 02:00			
Sample 5	Start: 04:40	0.1 m/s	N	0, 2, 0
	Stop: 05:05			
Sample 6	Start: 09:44	0.1 m/s	E	0, 0, 001
	Stop: 09:58			
Sample 7	Start: 12:28	0.1 m/s	E	0, 0, 001
	Stop: 12:43			
Sample 8	Start: 15:25	0.1 m/s	E	0.01, 003, 001
	Stop: 15:40			
Other Observation: No special observations				

	<u>Name and Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded by:	Ken ATU	<i>Ken ATU</i>	17/3
	To Ji Tin ATU	<i>To Ji Tin</i>	17/3
Checked by:	Ting ATU	<i>Ting ATU</i>	18/3
	LM Rusk, JEC	<i>LM Rusk</i>	21/3/2016

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

## MaterialLab - Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-2450 8238  
Fax : (852)-2450 8032  
Email : mcl@fugro.com.hk



Report No.: 0151/15/ED/0089B

### Air Quality (H<sub>2</sub>S) Monitoring Data Record Sheet

General Information				
Monitoring Station	AS12			
Date	17-3-2016			
Weather	Fine			
Monitoring Results				
Sample No.	Time	Wind Speed	Wind Direction	Level (ppb)
Sample 1	Start: 17:47	0.2 m/s	N	0, 0, 0
	Stop: 19:02			
Sample 2	Start: 21:56	0.2 m/s	NW	0, 0, 0
	Stop: 22:11			
Sample 3	Start: 00:41	0		0, 0, 0
	Stop: 00:56			
Sample 4	Start: 04:02	0		0, 0, 0
	Stop: 04:17			
Sample 5	Start: 04:05	0.2	N	0, 0, 0
	Stop: 04:21			
Sample 6	Start: 10:04	0.2 m/s	E	003, 0, 002
	Stop: 10:19			
Sample 7	Start: 12:42	0.2 m/s	E	0, 0, 0
	Stop: 12:59			
Sample 8	Start: 15:42	0.2 m/s	E	003, 003, 0
	Stop: 15:57			
Other Observation: No special observations				

	<u>Name and Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded by:	Ken ATO		17/3
Checked by:	To Ji, Tin ATO		17/3
	Ting ATO		18/3
	Lin Kwok, SEC		21/3/2016



# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

## MaterialLab - Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-2450 8238  
Fax : (852)-2450 8032  
Email : mcl@fugro.com.hk



Report No.: 0151/15/ED/0069B

### Air Quality (H<sub>2</sub>S) Monitoring Data Record Sheet

General Information				
Monitoring Station	AC4			
Date	17-3-2016			
Weather	Fog			
Monitoring Results				
Sample No.	Time	Wind Speed	Wind Direction	Level (ppb)
Sample 1	Start: 19:25	/	/	0, 0, 0
	Stop: 19:40			
Sample 2	Start: 22:31	/	/	0, 0, 001
	Stop: 22:46			
Sample 3	Start: 01:25	0		0, 0, 0
	Stop: 01:40			
Sample 4	Start: 04:03	0		0, 0, 0
	Stop: 04:18			
Sample 5	Start: 05:14	0.2	N	0, 0, 0
	Stop: 05:29			
Sample 6	Start: 10:21	0.5m/s	E	003, 02, 002
	Stop: 10:36			
Sample 7	Start: 13:02	0.2m/s	E	0, 003, 001
	Stop: 13:17			
Sample 8	Start: 15:06	0.2m/s	E	001, 003, 004
	Stop: 16:13			
Other Observation: No special observations				

	<u>Name and Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded by:	hem ATU		17/3
	To J. TIN ATU		17/3
Checked by:	Ting ATU		18/3
	LM Kwok, IEL		21/3/2016

The copyright of this document is owned by MaterialLab – Waste & Environmental Technologies Joint Venture. It may not be reproduced except with prior written approval from the Company.  
A Fugro Group Company

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com



Report No.: 0151/15/ED/0737

## MaterialLab - Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-2450 8238  
Fax : (852)-2450 8032  
Email : mcl@fugro.com.hk



Report No.: 0151/15/ED/0069B

### Air Quality (H<sub>2</sub>S) Monitoring Data Record Sheet

General Information				
Monitoring Station	A51			
Date	12-3-2016			
Weather	Fine			
Monitoring Results				
Sample No.	Time	Wind Speed	Wind Direction	Level (ppb)
Sample 1	Start: 17:47	/	/	0.02, 0.02, 0.03
	Stop: 20:02			
Sample 2	Start: 22:51	/	/	0, 0, 0
	Stop: 23:06			
Sample 3	Start: 01:44	0		0, 0, 0
	Stop: 01:59	0		
Sample 4	Start: 04:21	0		0, 0, 0
	Stop: 04:46	0		
Sample 5	Start: 07:46-07:52 SE 04	0	N/E	0, 0, 0
	Stop: 07:58-08:01			
Sample 6	Start: 10:39	0	E	0.04, 0.00, 0
	Stop: 10:54			
Sample 7	Start: 13:20	0	E	0.01, 0, 0.01
	Stop: 13:35			
Sample 8	Start: 16:20	0	E	0, 0, 0.05
	Stop: 16:35			
Other Observation: No special observations				

	Name and Designation	Signature	Date
Recorded by:	Ann ATU		17/3
	To Ji TIN ATU		17/3
Checked by:	Ting ATU		18/3
	LM Kwok, SEC		21/3/2016

Report No.: 0151/15/ED/0737

**Hourly Temperature of the Monitoring Period:**

Date	Time	Temperature (° C)
17-Mar-16	17:00	16
	18:00	16
	19:00	17
	20:00	17
	21:00	17
	22:00	17
	23:00	17
18-Mar-16	0:00	17
	1:00	17
	2:00	17
	3:00	17
	4:00	17
	5:00	17
	6:00	17
	7:00	17
	8:00	17
	9:00	18
	10:00	18
	11:00	19
	12:00	19
	13:00	19
	14:00	19
	15:00	19
	16:00	19
17:00	19	

---

Report No.: 0151/15/ED/0737

**Appendix G**  
**Implementation Schedule of Environmental Mitigation Measures (EMIS) for**  
**Operation Phase**

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

# MaterialLab

Report No.: 0151/15/ED/0737

EIA Ref.	Environmental Protection Measures	Location of the measures	Implementation Status
<b>Air Quality</b>			
S3.7.5 & 3.7.8	Exposed area at Stage I/II & IV of inlet pumping stations, sludge digestion tank outlet chambers should be covered, with the foul air drawn through deodorization units and discharged after treatment. The grit removal & flume channel at Stage I/II inlet works and the grit removal at Stage IV inlet works should be covered.	TPSTW	V
S3.7.6	Weir launders of the Stage I/II and Stage IV primary sedimentation tanks should be covered to control odour emission. Chemical should also be added to the sewage at Tai Yuen Sewage Pumping Station No.4 for the control of odour at Stage IV inlet pumping station, screen house and primary sedimentation tanks.	TPSTW	V
S3.7.7	The sludge gravity thickeners, sludge consolidation tanks, screening unit (next to dewatering house), exposed area of wet well of Stage I/II returned activated sludge pumping station and wet well of Stage I/II sludge pumping station should be enclosed to ensure no leakage of odorous gas whereas foul air from the sludge gravity thickeners and sludge consolidation tanks would be discharged via deodorizers.	TPSTW	V
<b>Water Quality</b>			
S4.8.10	Silt curtains should be installed at the Shatin and Tai Po Seawater Intakes. Relevant government departments including EPD and WSD should be informed of their maintenance.	TPSTW	V
S4.8.11	Dual power supply or ring main supply from CLP should be provided for the Project to avoid any loss of electrical supply. In addition, standby facilities for the main treatment units, standby parts/accessories to the equipment should also be provided in order to minimize the chance of emergency discharge.	TPSTW	V
S4.8.10 S4.8.12	Shutdown of the THEES, if unavoidable, should be shortened as far as possible. The relevant procedures established in the contingency plan as attached in Appendix 4.5 of the EIA report should be properly followed.	TPSTW	V
S4.8.13	Dye test is recommended for detection of pipe leakage.	Submarine pipeline at Tolo Harbour	V
S4.10.1	Effluent monitoring is recommended to ensure the effectiveness of the proposed treatment process. Details of the monitoring requirements are specified in the EM&A.	Exit of disinfection facilities	V
S4.10.2	A post project monitoring (PPM) programme for Victoria Harbour should be implemented to confirm the predictions of the water quality made in the EIA report. The PPM would consist of one- year baseline monitoring before commissioning and one-year impact monitoring after commissioning of the Project. The extent of PPM programme is subject to the prevailing environmental conditions at the time before commissioning of the Project. A more detailed description of the PPM requirements is given in the standalone EM&A Manual	Victoria Harbour	V
S4.10.3	A PPM programme will be also implemented in the Tolo Harbour during the operational phase. The PPM would	Tolo Harbour	To be conducted in 2016

# MaterialLab – Waste & Environmental Technologies Joint Venture

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

# MaterialLab

Report No.: 0151/15/ED/0737

	involve water quality monitoring at the Tai Po and Sha Tin seawater intake during the first wet season (June to August) after full commissioning of the Project. Marine water quality parameters including SS and NH <sub>3</sub> -N should be monitored. The water quality monitoring frequency shall be twice per month and should cover the effects of different tidal status (at least one for high tide and one for low tide) for each seawater intake.		
S4.8.10 & S4.10.4	Marine water quality monitoring should be carried out under emergency condition or during maintenance of the THEES tunnel to verify the findings of the water quality modelling. It is recommended that the maintenance of the THEES tunnel, if unavoidable, should be conducted during winter season or low flow periods and to avoid the "blooming" season of algae (normally from April to June) if practicable. Details of the monitoring requirements are specified in the EM&A Manual.	Tolo Harbour	V
<b>Waste Management</b>			
S5.5.9	<b>Chemical Waste</b> For the disposal of spent UV lamps, the STW operator would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. A chemical waste producer must engage a licensed waste collector to transport and dispose of the chemical wastes in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	TPSTW	V
<b>Landfill Gas Hazard</b>			
S6.6.9	When service voids, manholes or inspection chambers within the proposed site are entered for maintenance, monitoring and a checklist system of safety requirements should be performed before entry in accordance with Code of Practice on Safety and Health at Work in Confined Spaces.	Area of TPSTW within 250m consultation zone	V
S6.6.10	For newly built permanent structures, gas-resistant polymeric membranes shall be incorporated into floor or wall construction to act as a continuous sealed layer for the structure. In addition, forced ventilation shall be installed in such rooms or buildings. Gas detection systems should also be proposed where there is an organization involved in the long-term or frequently use of the development in order to monitor internal spaces inside buildings.	Area of TPSTW within 250m consultation zone	V
S6.6.11	Forced ventilation should be used if methane of more than 0.5% (by volume) in the internal atmosphere (e.g. In service voids, manholes, inspection chambers or rooms as mentioned above) is detected.	Area of TPSTW within 250m consultation zone	V
S6.6.12	No person should enter or remain in any confined spaces or trenches where the carbon dioxide concentration exceeds 1.5% (by volume).	Area of TPSTW within 250m consultation zone	V
S6.6.13	Oxygen concentration should be monitored and no person shall enter or remain in any confined spaces or trenches where the oxygen content of air has fallen below 18 % by volume.	Area of TPSTW within 250m consultation zone	V
S6.6.14	All the access to these confined spaces should be restricted only to authorized personnel who should be aware of the LFG hazard. No member of general public should be permitted or allowed to access these confined spaces, manholes or inspection chambers.	Area of TPSTW within 250m consultation zone	V

## **MaterialLab – Waste & Environmental Technologies Joint Venture**

Room 723 & 725, 7/F, Block B,  
Profit Industrial Building,  
1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

Tel : (852)-24508238  
Fax : (852)-24508032  
Email : mcl@fugro.com

The logo for MaterialLab, featuring the word "MaterialLab" in a bold, black, sans-serif font. The text is centered between two thick, horizontal black bars, one above and one below the text.

---

Report No.: 0151/15/ED/0737

### **Appendix H Chemical Waste Producer Registration License**

MEMO

From : <u>Director of Environmental Protection</u>	To : <u>Director of Drainage Services</u>
Ref. : <u>( ) in EP CW/D2226/727/15</u>	(Attn. Mr. Ho Wai Hung) <i>(ms)</i> 2/3 <u>/ Tai Po STW</u>
Tel. : <u>2634 3884</u> Fax <u>2685 1155</u>	Your Ref. : <u>          </u> in <u>TP/A57</u>
Date : <u>19 APRIL, 2000</u>	dated : <u>          </u> Fax no <u>26660207</u>

Waste Disposal Ordinance (Cap.354)  
Waste Disposal (Chemical Waste) (General) Regulation  
Registration as a Chemical Waste Producer  
Tai Po Sewage Treatment Works

I refer to your memo under reference.

2. Our records show that there are duplicate registration as a chemical waste producer (CWP) for the Tai Po Sewage Treatment Works. As per your request, we have removed one of the CWP registration (WPN of 0014-727-D2158-02 dated 26.10.1992) from the register with effect from the date of this memo. As a result, the registration form (Form EPD 130) with WPN of 0014-727-D2158-02 dated 26.10.1992 for the above premises is no longer valid.

3. On the other hand, I am pleased to inform you that your revised registration (WPN of 0014-727-D2226-15) with this Department as a CWP has been completed. Your assigned Waste Producer Number (WPN) and the particulars of your establishment are printed in the enclosed form (EPD 130). Please check these entries in the form and notify this Department immediately in any irregularities are detected. Please note that this registration is not transferable and will be valid only in respect of the applicant and the premises registered. In case of any change in the registration particulars, you should inform this Department as soon as possible so that our record so that our record can be amended accordingly.

4. Should you have any queries, please contact our Mr. YIU on 26851156 or the undersigned.



( W.C. SUN )  
Local Control Office (Territory North)  
for Director of Environmental Protection

Encl.



Environmental Protection Department

環境保護署

Waste Disposal Ordinance (Chapter 354)

香港法例第354章廢物處理條例

Waste Disposal (Chemical Waste) (General) Regulation

廢物處理(化學廢物)(一般)規例

Registration of Waste Producer

廢物產生者登記證

To:  
致

Waste Producer 廢物產生者	Full Name (English) DIRECTOR OF 全名:(英文) DRAINAGE SERVICES	(Chinese) 渠務署署長 (中文) 渠務署署長
	I.D. Card No. (if any) - - - 身份證號碼:(如有者)	
	Business Reg. Cert. No. (if any) 商業登記證號碼:(如有者)	
	Address for Correspondence 通訊地址: DSD, TAI PO SEWAGE TREATMENT WORKS, 7 DAI KWAI STREET, TAI PO INDUSTRIAL ESTATE, TAI PO, N.T.	
	Tel. No. 電話: 26640011	Fax No. 圖文傳真: 26660207

With reference to your application dated 09 / 03 / 2000 for registration as a Waste Producer under the Waste Disposal (Chemical Waste) (General) Regulation, the Waste Producer Number, WPN 010114-71217-D121216-115 is assigned to you in respect of the location or premises listed below:—

前於 2000 年 三 月 九 日根據廢物處理(化學廢物)(一般)規例而來信,申請登記為廢物產生者,茲特配予廢物產生者編號第 010114-71217-D121216-115 號,予下開地點或樓宇:—

Location or Premises where the waste is produced 產生廢物的地點或樓宇	Name of Establishment 機構名稱: DSD, TAI PO SEWAGE TREATMENT WORKS	
	Business Reg. Cert. No. (if any) 商業登記證號碼:(如有者)	
	Nature of Business 業務性質: SEWAGE TREATMENT	
	Major chemical waste types 主要化學廢物種類: SPENT LUBRICATING OIL & SPENT SOLVENT	
	Address 地址: DSD, TAI PO SEWAGE TREATMENT WORKS, 7 DAI KWAI STREET, TAI PO INDUSTRIAL ESTATE, TAI PO, N.T.	
	Tel. No. 電話: 26640011	Fax No. 圖文傳真: 26660207
Contact Person (Full Name) 聯絡人: (全名) HO WAI HUNG	(Capacity) (職位) WORKS MANAGER	



*(Handwritten signature)*

( W.C. SUN )  
for Director of Environmental Protection  
環境保護署署長 ( 辛偉才 代行 )

Date  
日期 19 / 04 / 2000

**WARNING:** Any registered waste producer who fails to inform the Director of Environmental Protection of any change in his registration particulars commits an offence and is liable on conviction to a fine of \$10,000.  
**警告:** 任何已登記的廢物產生者,若其登記資料有任何改變而不知會環境保護署署長,即屬違法,被定罪者最高罰款港幣10,000元。