

DSD

Ngong Ping Sewage Treatment Works
Quarterly EM&A Report of Odour Impact Monitoring

May 2007

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EXECUTIVE SUMMARY

This serves as part of the Environmental Monitoring and Audit (EM&A) Report for the Ngong Ping Sewage Treatment Works at Ngong Ping, Lantau Island, operated by Sewage Treatment Division 2 of Drainage Services Department (ST2, DSD). This report contains the results of the fifth quarterly odour impact monitoring conducted by the Environmental Team (ET).

There were no breaches in odour action and limit levels and the odour mitigation measures at the sewage treatment works were performing adequately. Thus, the environmental protection was in compliance with the regulations. No complaints were received in the period.

1. Introduction

This is the third Environmental Monitoring and Audit (EM&A) Report for Ngong Ping Sewage Treatment Works (STW) at Ngong Ping, Lantau Island, operated by Sewage Treatment Division 2 of Drainage Services Department (ST2, DSD). This report presents the results of odour monitoring in the month of May 2007 and has been prepared by the Environmental Team of ST2, DSD.

Odour monitoring and the mitigation measures during operation of the sewage treatment works are carried out as recommended in the EM&A Manual.

The contact information for the key environmental personnel and the site location of Ngong Ping STW are shown in appendices 1 and 2, respectively.

2. Status of Environmental Protection

The EM&A Manual has stated that there would be potential odour impacts associated with the operation of the sewage treatment plant and recommended mitigation measures during the operation phase. As a result all the major odour sources within the proposed STW namely the inlet work, the sequencing batch reactors, the sludge thickeners, and the emergency storage tank are all contained by building structures and ventilated to centralised deodorisation units.

Prior to the operation of the odour generating activities, H₂S (hydrogen sulfide) measurements had been carried out at the site boundary and at nearby ASR's. This established the averaged baseline H₂S concentration conditions at each measurement position at the site boundary and at nearby ASR's. These baseline H₂S concentrations had been used to set the action levels of the odour EM&A program. Low H₂S concentrations at the monitoring locations were reported in the baseline study. No noticeable impact was found near the monitoring stations, thus their findings could be used as background indicator at Ngong Ping Sewage Treatment Works.

3. EM&A requirements

The EM&A Manual originally recommended that the first set of odour monitoring at the site boundary, at selected ASRs, and at the exhaust of the centralised deodorisation units should consist of both odour sampling and H₂S measurement. Site location plan of Ngong Ping STW and its monitoring stations are shown as appendix 2. Sampling at these locations using olfactometry and an H₂S analyser should be carried out simultaneously. The purpose is to establish the correlations between odour level (OUm⁻³) and H₂S concentration for each measurement position. As the first set of odour sampling/monitoring is fundamentally to establish the correlation between OUm⁻³ and

H₂S, the timing of this event should be selected during the summer period, as far as possible, to capture the highest odour concentrations. Once the correlation between H₂S concentrations and odour units is established, H₂S monitoring should be continued during the subsequent odour monitoring and H₂S concentrations measured should be converted to equivalent odour units.

However, both H₂S concentration and odour units at the designated locations were considered to be at trace level during baseline odour monitoring and hence it was found difficult to determine their correlation. According to the recommendation from EPD, there was no objection to correlate H₂S concentration with odour unit by the odour threshold in principle i.e. a H₂S concentration 0.00047ppm or 0.00066mg/m³ is equivalent to 1 odour unit. Therefore, only H₂S measurements were required to be carried out during baseline odour monitoring. As a result, the Action and Limit Levels of odour level were determined by calculation through the correlation of H₂S concentration and odour unit. Following the criteria set out in the EM&A Manual, the Action and Limit Levels for Operational Phase Odour Monitoring was derived and illustrated in Table 1:

Table 1 Action and Limit Levels for Operational Phase Odour Monitoring

| Location of Monitoring | Parameters | Action Level | Limit Level |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| At the site boundary and at ASR's. | Odour level (expressed as equivalent H ₂ S concentration) | Action Level (AL) = 2.5 OUm ⁻³ at the site boundary and at the ASR's | Limit level (LL) = odour criteria of 5 OUm ⁻³ at the site boundary and at ASR's |
| At the exhaust of the centralised deodorisation unit | H ₂ S concentration in ppb/ppm, flowrate of exhaust in m ³ /s and temperature of exhaust (°C) | AL = LL/2 = 25 µg/s of H ₂ S. | LL = 50 µg/s of H ₂ S. |

Should a non-compliance of the odour criteria occur, the relevant parties should undertake the relevant actions in accordance with the Event/Action Plan in Table 2.

Table 2 Event/Action Plan for Odour Monitoring

| Event | Action | | |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | ET | IEC | Operator |
| Exceedance of Action Level for one or more samples at site boundary or ASRs or exhaust of centralised deodourisation unit | <ul style="list-style-type: none"> Identify source/ reason of exceedance; Inform IEC and Operator; Repeat measurement to confirm finding. | <ul style="list-style-type: none"> Check with Contractor and Operator on the operating activities and implementation of odour mitigation measures; Discuss with ET and Operator on the possible remedial actions; Advise the Operator on the effectiveness of the proposed remedial measures; Supervise implementation of remedial measures. | <ul style="list-style-type: none"> Carry out investigation to identify the source/reason of exceedance or complaints. Investigation shall be completed within 1 week; Rectify any unacceptable practice; Amend working methods as required; Inform ET and EPD if the cause of exceedance is considered to be caused by the project; Implement amended working methods. |
| Exceedance of Limit Level for one or more samples at site boundary or ASRs or exhaust of centralised deodourisation unit | <ul style="list-style-type: none"> Notify IEC, Operator and EPD; Identify source of odour; Increase monitoring frequency; Carry out analysis of the operating activities and implementation of odour mitigation measures to determine possible mitigation to be implemented Arrange meeting with IEC and Operator to discuss the remedial actions to be taken; Assess effectiveness of the remedial actions and keep IEC, EPD and Operator informed of the results; Carry out H₂S Monitoring after implementation of remedial measures to confirm their effectiveness. | <ul style="list-style-type: none"> Discuss amongst ET, Operator and the Operator on the potential remedial actions; Review the proposed remedial actions whenever necessary to assure their effectiveness and advise the Operator accordingly; Supervise implementation of remedial measures. | <ul style="list-style-type: none"> Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 1 week; Rectify any unacceptable practice; Amend working methods as required; Inform ET and EPD; Formulate remedial actions; Ensure amended working methods and remedial actions properly implemented; If exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated. |

With reference to the baseline odour monitoring report (ref: ENA50302), only H₂S measurements were taken at the seven designated monitoring stations locating at the site boundary, at selected ASR's and at the exhaust of the centralised deodorisation units during the first odour impact monitoring.

Apart from odour impact monitoring, regular odour patrolling in the vicinity of the STW would also be conducted in a monthly interval during the operational phase.

4. Implementation Status

All the major odour sources within Ngong Ping STW, namely the inlet work, the sequencing batch reactors, the sludge thickeners, and the emergency storage tank, are all building-contained facilities thus minimising direct emission of odour to the atmosphere. All odour emissions from these facilities mentioned above ventilated to centralised deodorisation units. A backup deodorisation unit was installed to provide buffer for maintenance or breakdown of the main deodorisation unit.

All the sludge generated from the STW will be dewatered onsite to more than 30% dry solids content before transporting to the designated landfill site for disposal and will be stored in covered container along the transporting route to avoid the possible odour impact on nearby sensitive receivers. The transportation of the sludge by sea to the disposal location is recommended, as far as practicable, in order to reduce potential air quality impacts from road transportation. Since the volume of influent into the STW has been low, significant amount of sludge has yet to be produced for transport to landfill.

The STW was designed for a daily flow of 2000 m³. An average daily inflow of 432 m³ was recorded for the month of May 2007.

5. Monitoring Results

H₂S concentration (in parts per billion or in parts per million) were measured at seven designated stations as follows:

| Monitoring station | Level of monitoring | Location description |
|--------------------|---------------------|-------------------------------------------|
| D1 | 1.0 m | STW site entrance |
| D2 | 1.0 m | Exhaust point of deodorisation room no. 2 |
| D3 | 1.0 m | Sludge thickeners |
| D4 | 1.0 m | Deodorisation room no. 1 side facing east |
| D5 | 1.0 m | Cable car terminal |
| D6 | 1.0 m | Public transport interchange |
| D7 | 1.0 m | Exhaust point of deodorisation room no. 1 |

As stipulated by the EM&A Manual, H₂S measurements were taken outside the premises of the identified ASR's (cable car terminal and public transport interchange) and these locations would not be influenced by other nearby odour sources. H₂S measurements were also undertaken at the site boundary downwind of the exhaust points of the deodorisation units and the covered odour sources.

A 15-minute measurement was taken every 3 hours for over a duration of 24 hours at each of the monitoring stations. The laboratory ALS Technichem (HK) Pty Ltd. undertook the measurement on 17-18 May 2007. Meteorological conditions including temperature, wind speed, wind direction and relative humidity were also measured at the time of the monitoring.

Concentrations of H₂S were measured using a Jerome H₂S Analyzers that utilises a gold film sensor for the detection of hydrogen sulfide. The instrument is capable of measuring H₂S concentrations in the range 1 ppb (1.4µg m⁻³) to 50 ppm (70 mg m⁻³) to an accuracy of ±6%.

The laboratory report (including all data, map of monitoring stations, meteorological conditions) is attached as appendix 3. The odour impact monitoring results for May 2007 are summarized below:

| Monitoring station | Average H ₂ S concentration (ppm) |
|--------------------|----------------------------------------------|
| D1 | <0.001 |
| D2 | <0.001 |
| D3 | <0.001 |
| D4 | <0.001 |
| D5 | <0.001 |
| D6 | <0.001 |
| D7 | <0.001 |

According to the results, odour levels at the site boundary and at ASR's were below the Action Level. H₂S levels at the exhaust of the two centralised deodorisation units were also below the Action Level.

Odour patrols carried out on 29 March, 25 April and 30 May 2007 around the vicinity of Ngong Ping STW revealed no significant H₂S levels.

6. Summary of Complaints and Remedial Actions

No non-compliance and complaints were received.

7. Conclusions and Comments

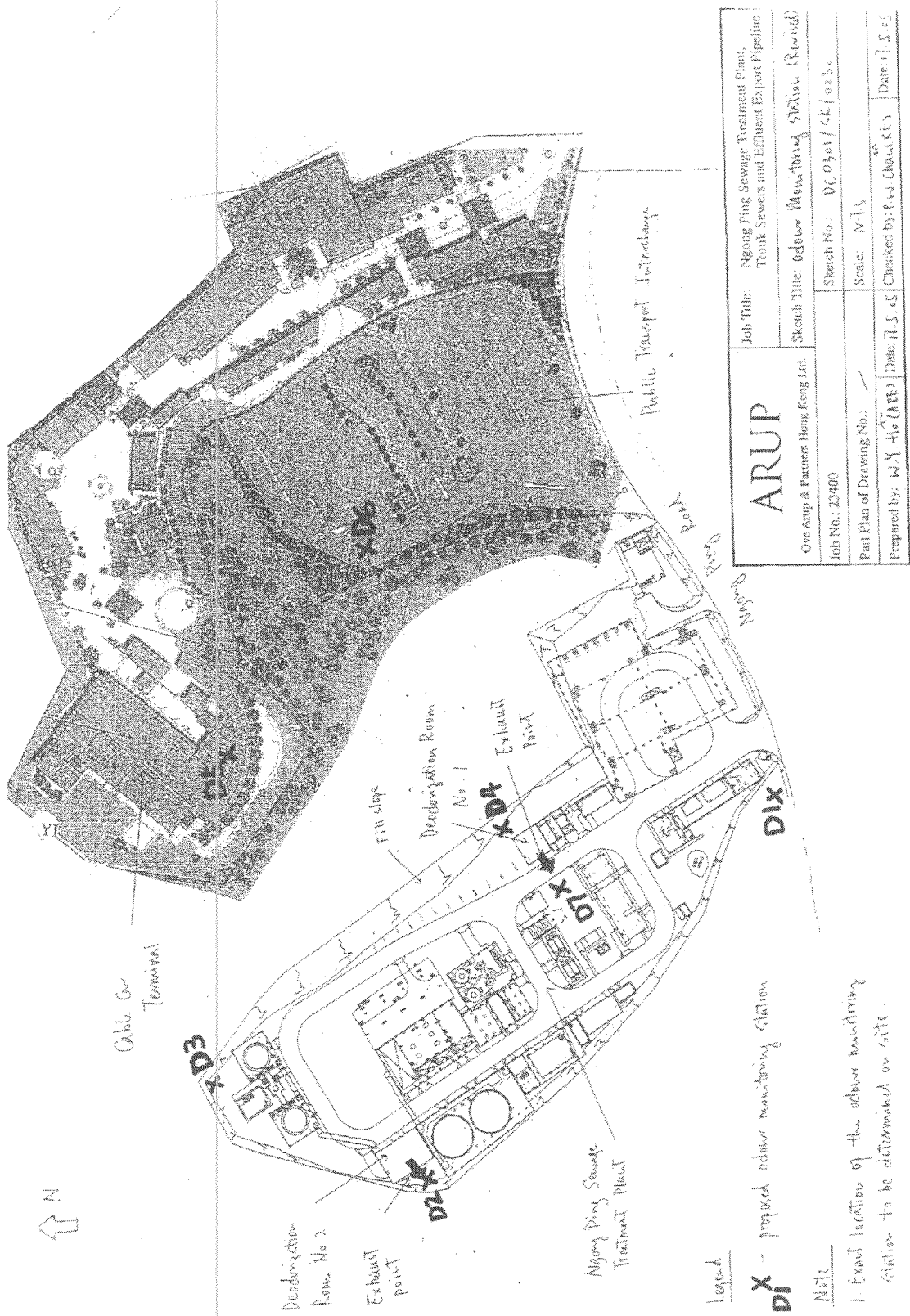
The required environmental protection work has been conducted. No remedial actions

were needed.

Appendix 1 – Contact Information For Key Environmental Personnel

| Name | Title | Telephone | Fax |
|--------------------------------------------------|--------------------------------------|-----------|-----------|
| Mr. K.H. YEE (ST2 Division, DSD) | Operator | 3472 6103 | 2984 8804 |
| Mr. M. K. LAU (ST2 Division, DSD) | ET Leader | 2195 3338 | 2991 4233 |
| Mr. Derek SAM (ST2 Division, DSD) | ET Leader Assistant | 2195 3453 | 2991 4233 |
| Mr. Zenith CHAN (ST2 Division, DSD) | ET Leader Assistant | 2195 3458 | 2991 4233 |
| Mr. Billy YU (CH2M HILL Hong Kong Limited) | Independent Environmental Checker | 2872 2934 | 2507 2293 |
| Mr. Ivan LEUNG (ALS Techichem (HK) Pty Ltd | Laboratory representative | 2401 5026 | 2610 2021 |

Appendix 2 – Site location plan of Ngong Ping



Appendix 3 – Laboratory report

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

ALS TECHNICHEM (HK) Pty Ltd
Environmental Division



CERTIFICATE OF ANALYSIS

| | | | |
|------------|-----------------------------------------------------------------------------------------|-----------------|------------|
| CONTACT: | MR ZENITH CHAN (CHEMIST/ST2/1) | Batch: | HK0707597 |
| CLIENT: | DRAINAGE SERVICES DEPARTMENT | LABORATORY: | HONG KONG |
| ADDRESS: | STONECUTTER ISLAND SEWAGE TREATMENT WORKS NGONG SHUNG RD NGONG SHUEN CHAU KOWLOON | DATE RECEIVED: | 18/05/2007 |
| ORDER No.: | | DATE OF ISSUE: | 04/06/2007 |
| PROJECT: | NGONG PING | SAMPLE TYPE: | AIR |
| | | No. of SAMPLES: | 7 |

COMMENTS

Determination of hydrogen sulfide was measured on site by ALS Technichem (HK) staff. The model for Hydrogen sulfide meter is Jerone X631-0003 Goldfilm hydrogen sulfide analyser (Serial No. 2210) to monitor the hydrogen sulfide on site.

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address
ALS Technichem (HK) Pty Ltd
11/F
Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsenviro.com

Mr Leung Sai Ho Ivan
Environmental Team Leader

Other ALS Environmental Laboratories

AUSTRALIA
Brisbane
Melbourne
Sydney
Newcastle

AMERICAS
Vancouver
Santiago
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Lima

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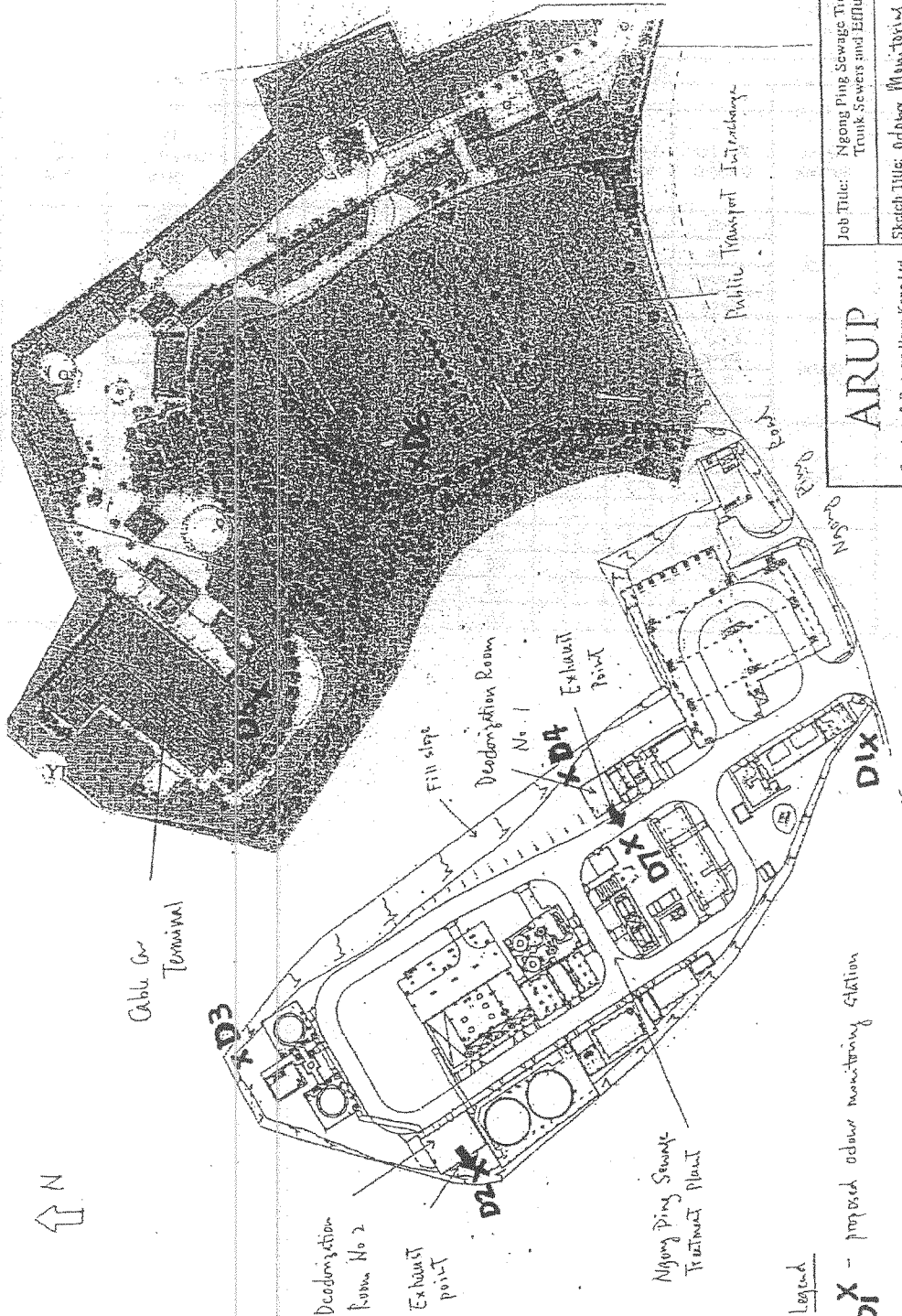
ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group
11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., H.K.
Phone: 852-2610 1044 Fax: 852-2610 2021 www.alsenviro.com
A Campbell Brothers Limited Company

CERTIFICATE OF ANALYSIS



Batch: HK0707597
 Date of Issue: 04/06/2007
 Client: DRAINAGE SERVICES DEPARTMENT
 Client Reference: NGONG PING

| Impact Odour Monitoring Results | | | | | | | | | | |
|---------------------------------|------------------|-------------------|------------|------------------|----------------|-----------------------|---------------|-------------|--------------------------------------|----------------------------------------------|
| Monitoring Station | Date of Sampling | Weather Condition | Temp. (oC) | Wind Speed (m/s) | Wind Direction | Relative Humidity (%) | Start (hh:mm) | End (hh:mm) | H ₂ S Concentration (ppm) | Average H ₂ S Concentration (ppm) |
| D1 | 17/5/07 | Sunny | 29.6 | 1.3 | NW | 64.3 | 9:10 | 9:25 | <0.001 | <0.001 |
| | | Sunny | 32.9 | 3.1 | SW | 58 | 12:10 | 12:25 | 0.002 | |
| | | Sunny | 29.6 | 1.1 | E | 61.3 | 15:10 | 15:25 | 0.001 | |
| | | Fine | 27.6 | 1.3 | W | 63.5 | 18:10 | 18:25 | 0.001 | |
| | 18/5/07 | Fine | 27.0 | 2.1 | W | 57.9 | 21:10 | 21:25 | <0.001 | |
| | | Fine | 25.7 | 1.0 | SW | 58.5 | 0:10 | 0:25 | <0.001 | |
| | | Fine | 27.0 | 0.0 | - | 53.7 | 3:10 | 3:25 | <0.001 | |
| | | Sunny | 27.2 | 0.8 | NW | 55.8 | 6:10 | 6:25 | <0.001 | |
| D2 | 17/5/07 | Sunny | 28.3 | 3.5 | W | 61.3 | 10:16 | 10:33 | 0.001 | <0.001 |
| | | Sunny | 32.3 | 4.3 | W | 58.1 | 13:16 | 13:33 | 0.001 | |
| | | Sunny | 29.9 | 3.1 | NW | 60 | 16:16 | 16:33 | <0.001 | |
| | | Fine | 28.5 | 2.9 | NW | 62.4 | 19:16 | 19:33 | 0.002 | |
| | 18/5/07 | Fine | 28.0 | 1.3 | NW | 62.9 | 22:16 | 22:33 | <0.001 | |
| | | Fine | 28.2 | 2.2 | W | 59.7 | 1:16 | 1:33 | <0.001 | |
| | | Fine | 27.6 | 0.8 | W | 54.6 | 4:16 | 4:33 | <0.001 | |
| | | Sunny | 27.3 | 1.1 | NW | 55 | 7:16 | 7:33 | <0.001 | |
| D3 | 17/5/07 | Sunny | 29.9 | 1.7 | W | 65 | 10:01 | 10:16 | <0.001 | <0.001 |
| | | Sunny | 32.7 | 2.4 | SW | 60.1 | 13:01 | 13:16 | <0.001 | |
| | | Sunny | 30.1 | 1.3 | W | 61.1 | 16:01 | 16:16 | 0.001 | |
| | | Fine | 27.9 | 1.1 | W | 63.4 | 19:01 | 19:16 | <0.001 | |
| | 18/5/07 | Fine | 28.2 | 1.9 | W | 60.2 | 22:01 | 22:16 | <0.001 | |
| | | Fine | 28.0 | 4.3 | NW | 57.8 | 1:01 | 1:16 | 0.001 | |
| | | Fine | 27.9 | 4.1 | NW | 55.3 | 4:01 | 4:16 | 0.001 | |
| | | Sunny | 27.6 | 2.0 | SW | 55.9 | 7:01 | 7:16 | <0.001 | |
| D4 | 17/5/07 | Sunny | 29.7 | 0.0 | - | 64.7 | 9:44 | 9:59 | <0.001 | <0.001 |
| | | Sunny | 32.8 | 1.9 | SW | 59.6 | 12:44 | 12:59 | <0.001 | |
| | | Sunny | 28.1 | 2.8 | W | 66.3 | 15:44 | 15:59 | <0.001 | |
| | | Fine | 27.8 | 2.9 | SW | 60.9 | 18:44 | 18:59 | <0.001 | |
| | 18/5/07 | Fine | 27.6 | 3.5 | W | 61.8 | 21:44 | 21:59 | <0.001 | |
| | | Fine | 27.1 | 1.3 | W | 57.5 | 0:44 | 0:59 | 0.001 | |
| | | Fine | 26.5 | 2.4 | W | 55.9 | 3:44 | 3:59 | 0.001 | |
| | | Sunny | 26.3 | 1.8 | SW | 56.6 | 6:44 | 6:59 | <0.001 | |
| D5 | 17/5/07 | Sunny | 29.4 | 1.6 | W | 64.9 | 8:50 | 9:05 | <0.001 | <0.001 |
| | | Sunny | 32.2 | 0.0 | - | 61.1 | 11:50 | 12:05 | 0.001 | |
| | | Sunny | 29.8 | 1.7 | SW | 60.9 | 14:50 | 15:05 | <0.001 | |
| | | Fine | 27.4 | 2.9 | SW | 59.8 | 17:50 | 18:05 | <0.001 | |
| | 18/5/07 | Fine | 27.0 | 4.1 | SW | 61.6 | 20:50 | 21:05 | 0.001 | |
| | | Fine | 27.3 | 2.8 | NW | 63.4 | 23:50 | 0:05 | 0.001 | |
| | | Fine | 26.5 | 1.3 | NW | 56.8 | 2:50 | 3:05 | 0.001 | |
| | | Sunny | 26.1 | 0.5 | W | 58.4 | 5:50 | 6:05 | <0.001 | |
| D5 | 17/5/07 | Sunny | 27.1 | 0.0 | - | 64.1 | 8:30 | 8:45 | <0.001 | <0.001 |
| | | Sunny | 27.8 | 1.0 | SW | 60.3 | 11:30 | 11:45 | <0.001 | |
| | | Sunny | 28.3 | 3.3 | NE | 61.7 | 14:30 | 14:45 | <0.001 | |
| | | Fine | 28.1 | 3.9 | NE | 63.6 | 17:30 | 17:45 | <0.001 | |
| | 18/5/07 | Fine | 27.6 | 4.6 | W | 60.5 | 20:30 | 20:45 | <0.001 | |
| | | Fine | 27.4 | 2.5 | SW | 57.9 | 23:30 | 23:45 | 0.001 | |
| | | Fine | 27.0 | 1.0 | SW | 58.9 | 2:30 | 2:45 | 0.001 | |
| | | Sunny | 26.9 | 0.5 | W | 55.8 | 5:30 | 5:45 | <0.001 | |
| D7 | 17/5/07 | Sunny | 29.4 | 1.1 | W | 63.9 | 9:28 | 9:43 | <0.001 | <0.001 |
| | | Sunny | 32.6 | 1.4 | SW | 59.3 | 12:28 | 12:43 | 0.001 | |
| | | Sunny | 29.3 | 1.7 | E | 61.6 | 15:28 | 15:43 | <0.001 | |
| | | Fine | 28.3 | 1.1 | NE | 57.3 | 18:28 | 18:43 | <0.001 | |
| | 18/5/07 | Fine | 27.9 | 1.1 | NE | 58.2 | 21:28 | 21:43 | 0.001 | |
| | | Fine | 27.6 | 0.8 | W | 59.6 | 0:28 | 0:43 | 0.001 | |
| | | Fine | 27.0 | 1.6 | NW | 56.1 | 3:28 | 3:43 | <0.001 | |
| | | Sunny | 26.5 | 2.9 | NW | 55.9 | 6:28 | 6:43 | <0.001 | |



| | |
|------------------------------------|-----------------------------------------------------------------------------------------|
| ARUP | Job Title: Ngong Ping Sewage Treatment Plant, Trunk Sewers and Effluent Export Pipeline |
| | Sketch Title: Odour Monitoring Station (ROWING) |
| One Arup & Partners Hong Kong Ltd. | Sketch No.: DC 0301/42/023. |
| Job No.: 23400 | Scale: N.T.S. |
| Part Plan of Drawing No.: / | Date: 17.5.05 |
| Prepared by: M.Y. Ho (A/E) | Checked by: P.W. Chan (S/E) |
| | Date: 17.5.05 |

Legend

DX - proposed odour monitoring station

Note

1. Exact location of the odour monitoring station to be determined on site.



Certificate of Instrument Calibration

1912 W. 4th Street • Tempe, AZ 85281 • (602) 470-1414 • (800) 528-7411 • Fax (480) 804-0656 • www.aizic.com

Arizona Instrument LLC

Manufacturers of Computrac® Moisture Analyzers and Jerome® Toxic Gas Analyzers

Company Guyline (Asia) Ltd
Address Rm 1611 Eastern Harbour Ctr. 28
Hoi Chak Street
Quarry Bay Hon Hong Kong

This is to certify that the JEROME X631-0003 Gold Film Hydrogen Sulfide Analyzer, 220 VAC Serial Number 2210 with Sensor Number 04-9-8-W2C, was calibrated with standard units traceable to NIST

Calibration Status as Received: Out of Calibration

Incoming:

| | Actual | Calibration Gas | Tolerance Specification |
|---------|--------|-----------------|-------------------------|
| Level 1 | .2368 | 0.517 ppm H2S | 0.491-0.543 (+/-5%) |
| RSD | 10.79 | | <3% |

Outgoing:

| | Mean @ Saturation | Calibration Gas | Relative Standard Deviation |
|--|-------------------|-----------------|-----------------------------|
| | .541 | 0.517 ppm H2S | 1.77 |

Calibration Status as Left: In Calibration

Estimated Uncertainty of Calibration: 3.5%

Ambient conditions during calibration:

Temperature degrees F: 69.8 % Relative Humidity: 42.6

Calibration Date: 6/19/2006 Re-Calibration Date: 6/18/2007

Approved By: Marlene Young Date: 6/19/2006

Name/Title: Marlene Young - Tech Support/Quality Control

Equipment Used

| | | |
|-----------------------------|---------------------------------|----------------------------------------|
| Permeation Tube | S/N: 56-22959 | NIST: D3609-96 |
| Calibration Date: 4/7/2006 | Calibration Date Due: 4/7/2007 | |
| DynaCalibrator | S/N: MU-568 | NIST: 255085,95,NBS Buret #81 and #K10 |
| Calibration Date: 8/25/2005 | Calibration Date Due: 8/26/2006 | |
| Digital Multimeter | S/N: 3915086 | NIST: 1323-8001013 |
| Calibration Date: 9/6/2005 | Calibration Date Due: 9/6/2006 | |
| Flowmeter | S/N: US04126034 | NIST: Teledyne 1760, 1766, 1769 |
| Calibration Date: 9/26/2005 | Calibration Date Due: 9/27/2006 | |

Calibration Procedure Used: 3309-0006

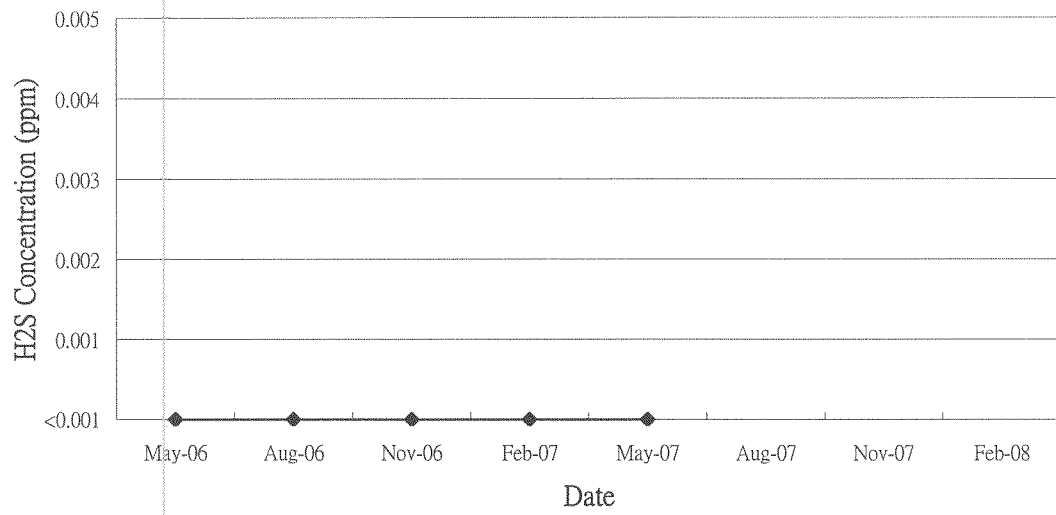
Arizona Instrument certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy is traceable to the NATIONAL INSTITUTE OF STANDARDS TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques. Arizona Instrument has reviewed MIL STD 45662A and believes to comply.

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

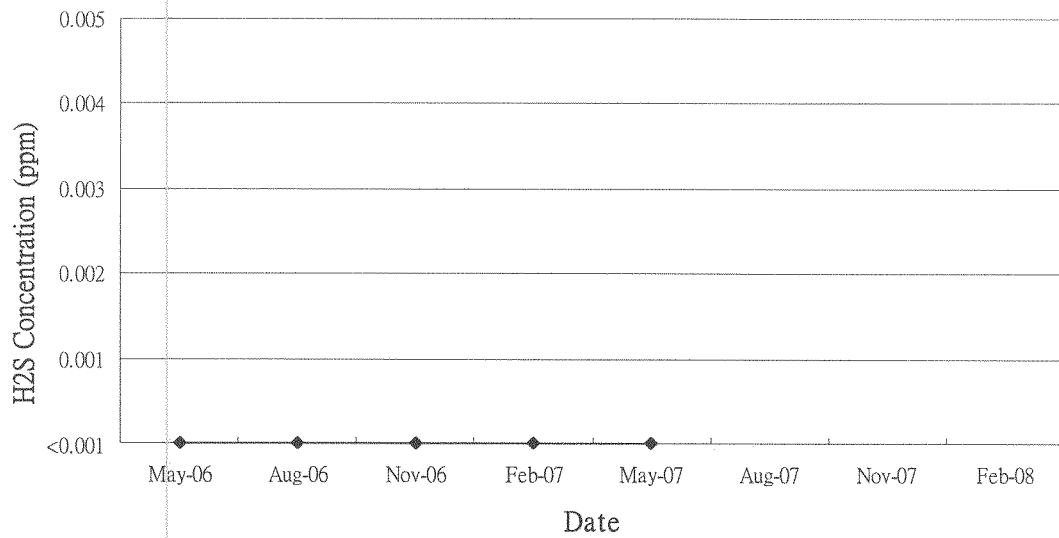
As long as a functional test is within range according to the procedure outlined in the Operator's Manual, the instrument is performing correctly.

Appendix 4 – Graphical plots of odour impact monitoring

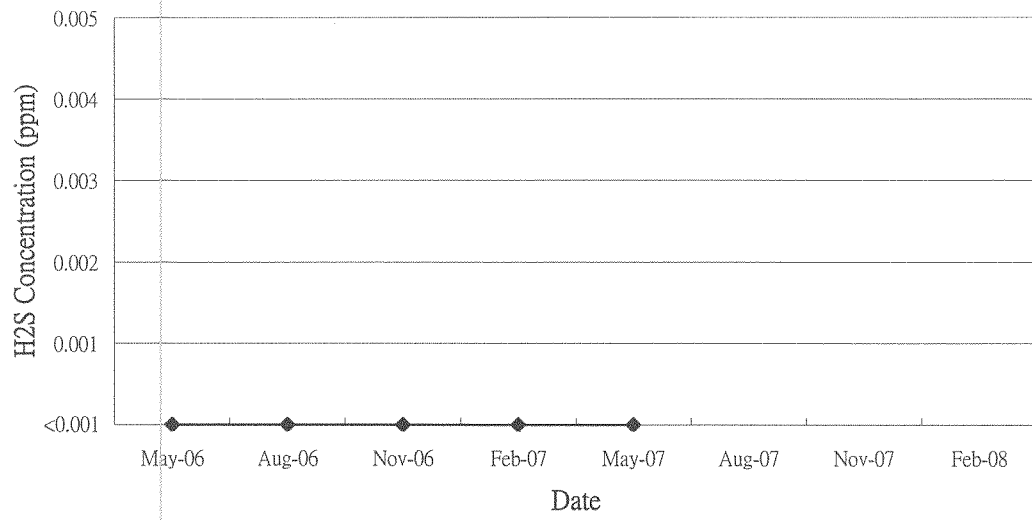
Monitoring Station D1



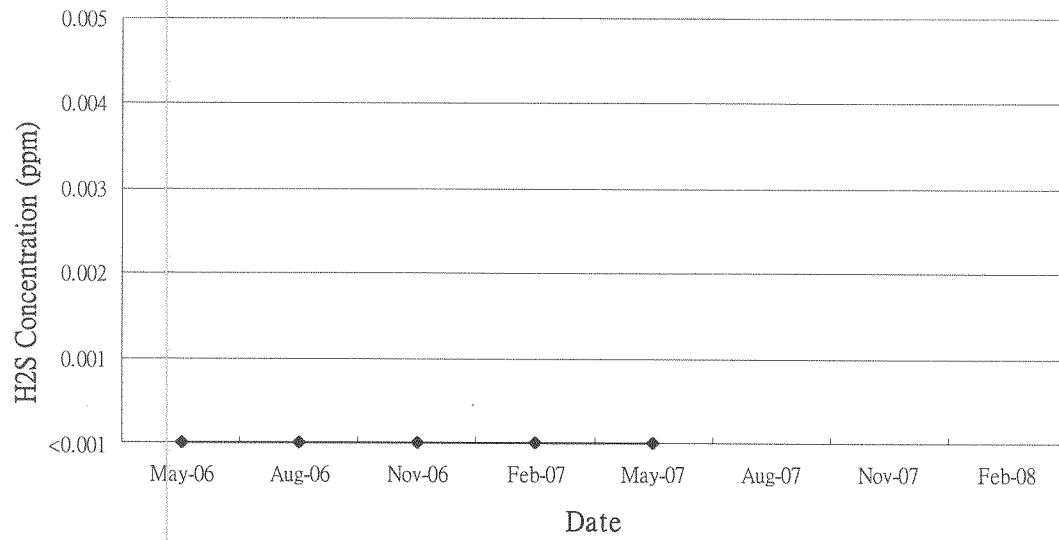
Monitoring Station D2



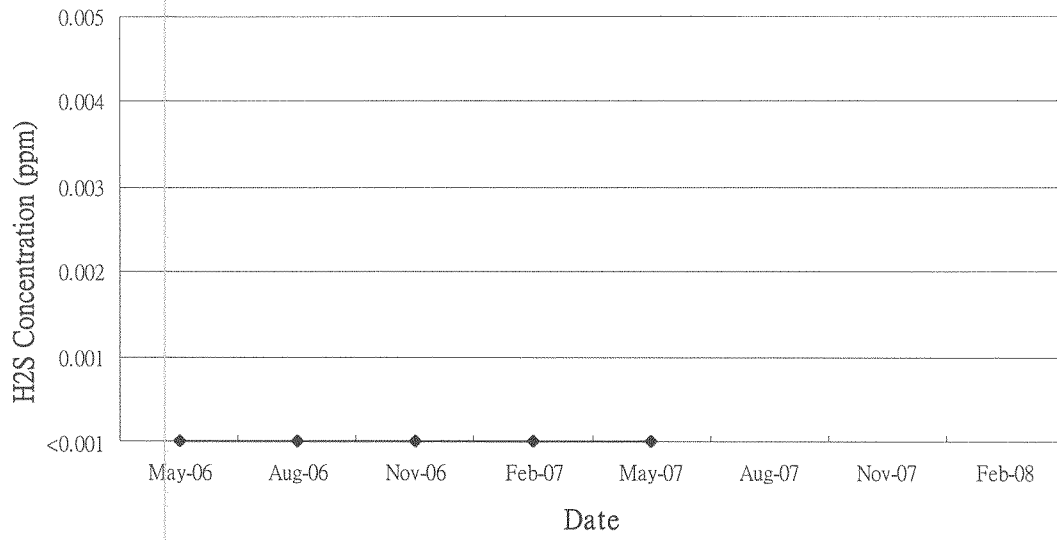
Monitoring Station D3



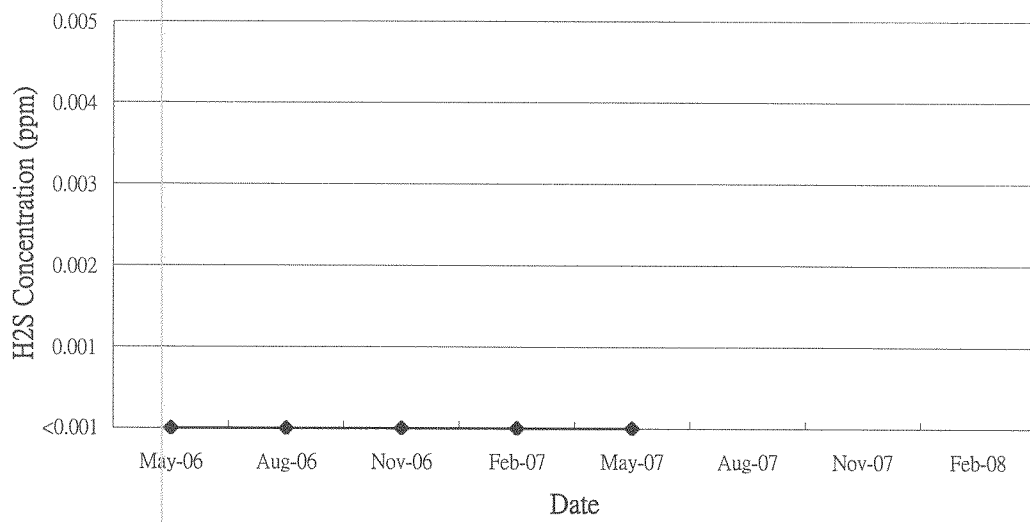
Monitoring Station D4



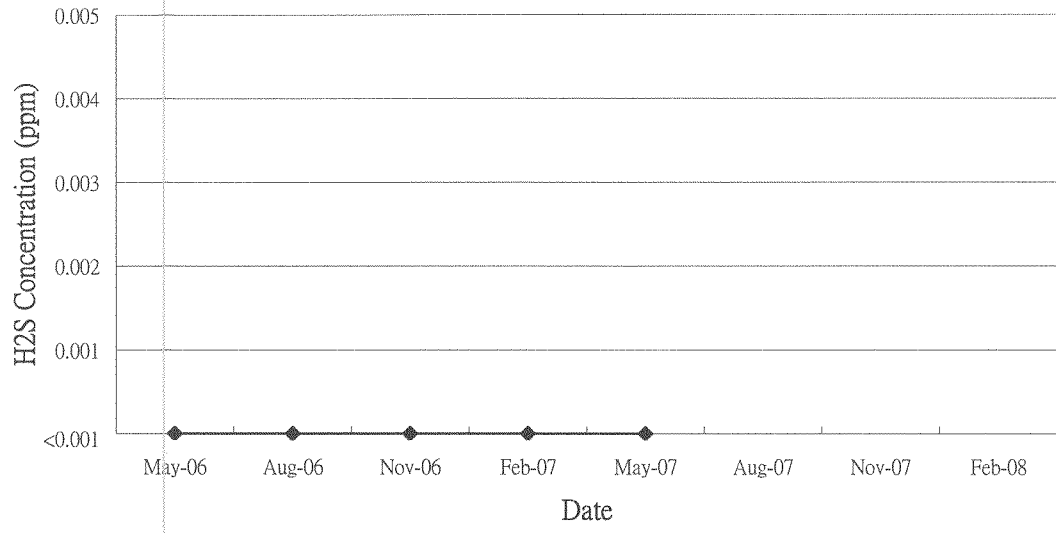
Monitoring Station D5



Monitoring Station D6



Monitoring Station D7



77

西圖香港有限公司
CH2M HILL Hong Kong Limited
Suite 1801, Harcourt House
39 Gloucester Road
Wanchai, Hong Kong
Tel (852) 2507-2203
Fax (852) 2507-2293



CH2MHILL

Our Ref.: DSDSTPOPEM0_0_0077

Date: 28 June 2007

Consultants Management Division
Drainage Services Department
42/F., Revenue Tower,
5 Gloucester Road, Wan Chai,
Hong Kong

By mail and by Fax (2827 8526)

FAXED

Attention : Mr. Mok Wing Cheong, Ringo

Dear Mr. Mok,

Re: **Environmental Permit 157/2003**
Contract No: DC/2003/01 Ngong Ping Sewage Treatment Plant, Truck Sewers and Effluent Export Pipeline
Quarterly EM&A Report of Odour Monitoring for May 2007

Reference is made to the Quarterly EM&A Report prepared by DSD for the captioned project. We are pleased to verify that the captioned report complied with the conditions 5.4 and 6.1 of the Environmental Permit.

Thank you very much for your attention and please feel free to contact the undersigned or our Eva Ho if you have any queries.

Yours sincerely,

Billy Yu
Independent Environmental Checker

c.c. Mr. Zenith Chan ST2 Division, DSD By Fax: 2991 4233
Mr. Yee Kim Hoo ST2 Division, DSD By Fax: 2984 8804