

Environmental Permit No. EP-388/2010

Development of a Bathing Beach at Lung Mei, Tai Po

Independent Environmental Checker Verification

Reference Document/Plan

Document/ Plan to be Certified / Verified:	Baseline Monitoring Report (Air Quality and Noise)
Date of Report:	7 August 2017
Date received by IEC:	7 August 2017

Reference EP Condition

Environmental Permit Condition:	4.2
Samples, measurements and necessary remedial actions shall be taken in accordance with the requirements of the EM&A Manual by:	
(a) conducting baseline environmental monitoring	

Environmental Permit Condition:	4.3
Three hard copies and one electronic copy of the Baseline Monitoring Report shall be submitted to the Director at least 2 weeks before the commencement of construction of the Project. The submission shall be certified by the ET Leader and verified by the IEC. Additional copies of the submission shall be made available to the Director upon his request.	

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-388/2010

Mr Jovy Tam

Date: 7 August 2017

Independent Environmental Checker





JOB No.: TCS00874/16

CEDD CONTRACT NO. CV/2012/05
DEVELOPMENT OF A BATHING BEACH AT LUNG MEI,
TAI PO

BASELINE MONITORING REPORT
(AIR QUALITY & NOISE)

PREPARED FOR
WELCOME CONSTRUCTION CO., LTD

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1	29 June 2017	First Submission
2	20 July 2017	Amended according to the IEC's comment on 18 July 2017
3	7 August 2017	Amended according to the IEC's comment on 31 July 2017

EXECUTIVE SUMMARY

- ES.01 Civil Engineering and Development Department (hereafter referred as “CEDD”) is the Project Proponent and the Permit Holder of *Agreement No. CE 59/2005 (EP) Development of a Bathing Beach at Lung Mei, Tai Po* (hereinafter referred as “the Project”), which is a Designated Project to be implemented under Environmental Permit number EP-388/2010 (hereinafter referred as “the EP-388/2010” or “the EP”).
- ES.02 Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned as the Environmental Team for the Project (hereinafter referred as “the ET”) to perform relevant Environmental Monitoring and Audit (EM&A) programme, including baseline and impact environmental monitoring in accordance with the EM&A Manual approved under the Environmental Impact Assessment Ordinance (EIAO).
- ES.03 According to the Approved Environmental Monitoring and Audit (EM&A) Manual [November 2007] (hereinafter referred as ‘the EM&A Manual’), air quality, construction noise and water quality monitoring should be required to be monitored during the construction phase of the Project. Moreover, baseline environmental monitoring for air quality and water quality is required to be conducted prior to commencement of the construction works/activities under the Project.
- ES.04 A total of 14 consecutive day baseline monitoring of air quality have been undertaken at the proposed monitoring locations from **7 June 2017** to **20 June 2017**. For baseline monitoring of noise, it has been undertaken from **7 June 2017** to **23 June 2017**. During the baseline monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed by ET.
- ES.05 This report summarizes the key findings and presents the process and rationale behind determining a set of Action and Limit Levels (A/L Levels) of air quality based on the baseline data. These A/L Levels will serve as the yardsticks for assessing the acceptability of the environmental impact during construction phase of the Project Works impact monitoring. They are statistical in nature and derived according to the criteria set out in the EM&A Manual.
- ES.06 Results of the derived Action and Limit Levels for the air quality and noise are given in **Tables ES-1, ES-2** and **ES-2** as follows.

Table ES-1 Action and Limit Levels of Air Quality Monitoring

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
A4	275	142	500	260
A7	274	141	500	260

Remark: Upon received IEC verify and EPD endorse, alternative locations A7 will replace A6 respectively and to performed the baseline and impact monitoring of EM&A program.

Table ES-2 Action and Limit Levels of Construction Noise Monitoring

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
N1	When one or more documented complaints are received	75 dB(A)
N2a		
N3a		
N4		

- ES.07 In cases where exceedance of these criteria occurs, actions should be carried out in accordance with the Event Action Plan as shown the EM&A Manual.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department (hereafter referred as “CEDD”) is the Project Proponent and the Permit Holder of *Agreement No. CE 59/2005 (EP) Development of a Bathing Beach at Lung Mei, Tai Po* (hereinafter referred as “the Project”), which is a Designated Project to be implemented under Environmental Permit number EP-388/2010 (hereinafter referred as “the EP-388/2010” or “the EP”).

1.1.2 The major construction activities of the Project comprise construction 200-metre long bathing beach with a groyne at each end, a shark prevention net; a public car park; retaining walls; and the associated roadworks, drainage and sewerage works. Layout plan of the Project is shown in *Appendix A*.

1.1.3 Furthermore, the project works is under Environmental Permit (EP) No. EP-388/2010 as a Designated Project and the designated works include:

- (i) Construction of a 200m long beach with a groyne at each end of the beach which includes dredging and sandfilling works;
- (ii) Construction of one culvert at the eastern side of the beach and another small section of culvert and open drainage channel with gabion embankments at the western end, both to collect and divert surface runoff from upstream locations; and
- (iii) Construction of a beach building with associated beach building facilities, kiosk and a carpark and associated road improvement works adjoining the facility.

1.1.4 Action-United Environmental Services & Consulting (hereinafter referred as “AUES”) has been commissioned as an Independent Environmental Team (hereinafter referred as “the ET”) to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Therefore, baseline monitoring of air quality was undertaken on **7 June 2017** to **20 June 2017** and for noise was carried out on **7 June 2017** to **23 June 2017** before construction work commencement. With regard to the baseline water quality monitoring, it will be carried out prior to the commencement of dredging and sandfilling activities and the relevant baseline monitoring report will be provided stand-alone.

1.1.5 During the baseline monitoring period for air quality and noise, there were no construction activities of this project or other external influencing factors of significant concern observed by the ET.

1.1.6 This Baseline Monitoring Report presents the details of the baseline study including project background, monitoring methodology, monitoring results, summary of findings, and Action/Limit (A/L) Levels established for subsequent use in the Project construction phase EM&A program.

1.2 REPORT STRUCTURE

1.2.1 The Baseline Monitoring Report is structured into the following sections:-

- Section 1** Introduction
- Section 2** Summaries of Baseline Monitoring Requirement.
- Section 3** Baseline Monitoring Methodology
- Section 4** Baseline Monitoring Results
- Section 5** Conclusion and Recommendation

2 SUMMARY OF BASELINE MONITORING REQUIREMENT

2.1 GENERAL

2.1.1 The Environmental Monitoring and Audit requirements are set out in the EM&A manual. Environmental issues such as air quality and construction noise were identified as the key issues during the construction phase of the Project. A summary of the baseline EM&A requirements for air and noise monitoring are presented in the sub-sections below.

2.2 MONITORING PARAMETERS

2.1.2 According to the EM&A Manual, baseline monitoring shall only cover air quality. However, in order to obtain the baseline noise condition before commencement of the Project, as agreed by the Contractor, baseline noise monitoring shall be included in baseline monitoring programme.

2.2.1 A summary of the monitoring parameters is presented in *Table 2-1* below.

Table 2-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> • 1-hour TSP • 24-hour TSP
Noise (#)	<ul style="list-style-type: none"> • Leq (30min) in six consecutive Leq(5 min) between 07:00-19:00 on normal weekdays • 3 sets of consecutive Leq (5min) on restricted hours i.e. public holiday or Sunday • Statistical result such as L10 and L90 for supplementary information

Remark (#) Since there are no requirements for baseline noise monitoring in the EM&A Manual, the monitoring parameters are based on the general practice of the EM&A programme.

2.3 MONITORING LOCATIONS

Air Quality

2.3.1 Two designated air quality monitoring locations are recommended in Section 3.1 of the EM&A Manual and they are listed in *Table 2-2* below and illustrated in *Appendix B*.

Table 2-2 Designated Air Quality Monitoring Station according to the EM&A Manual

ASR	Location
A4	No. 101 Lung Mei Tsuen
A6	No. 79 Lo Tsz Tin Tsuen

2.3.2 During liaison with the landlord of A6, he refused to provide access and location for installation of HVAS. Therefore, alternative location (A7) was proposed by ET in accordance with Section 3.4 of the EM&A Manual. The proposed alternative locations are considered capable of effectively representing the baseline conditions at the impact monitoring locations. The proposal (*ref no.: TCS00874/16/300/L0016b*) for alternative monitoring locations was verified IEC and it has been submitted to EPD for approval on 2 May 2017.

2.3.3 The baseline air quality monitoring locations are in *Table 2-3* and illustrated in *Appendix B*.

Table 2-3 Summary of Baseline Air Quality Monitoring Stations

Station ID	Location	Justification
A4	No. 101 Lung Mei Tsuen	No changes.
A7	Hong Kong Eco-Farm	It is one of the representative ASR identified in the EIA which located at north-east of the site. Granted with the area and power provision for HVS.

Construction Noise

2.3.4 According to Section 4.1 of the EM&A Manual, four designated noise sensitive receivers (NSR) were recommended and they are listed in **Table 2-4** and illustrated in **Appendix B**.

Table 2-4 Designated Noise Monitoring Station according to the EM&A Manual

NSR	Location
N1	Village house - No. 165A Lung Mei
N2*	Village house - No. 103 Lung Mei
N3	Village house - No. 70 Lo Tsz Tin
N4	Village house - No. 79 Lo Tsz Tin

Remarks: (*)Noise monitoring should be conducted at N2a (i.e House No. 101 Lung Mei) if it is changed to residential use during construction phase.

2.3.5 As confirmed on the first day of baseline monitoring, N2a (House no. 101 Lung Mei) has been changed to residential use. Therefore, the baseline noise monitoring is conducted at N2a and to replace N2. Moreover, due to the lack of accessibility of noise monitoring at NSR N3 (Village house – No. 70 Lo Tsz Tin), alternative location was proposed to replace N3 to carry out the baseline noise monitoring. Having reviewed the surrounding condition, NSR N3a (Village house – No. 66C Lo Tsz Tin) was proposed with the rationales summarized in below.

- 1) The distance between N3 and N3a is about 18 meter apart and N3a locates at close proximity of the project site and major site activities which are likely to have noise impacts;
- 2) N3a is a village type residential house and it is a noise sensitive receiver (NSR);
- 3) Accessibility for noise monitoring work at N3a is available; and
- 4) Minimal disturbance would be only caused to the proposed monitoring location N3a.

2.3.6 The proposed location N3a was accepted by IEC and the NSRs for the baseline noise monitoring are listed in **Table 2-5** and illustrated in **Appendix B**.

Table 2-5 Summary of Baseline Noise Monitoring Stations

Station ID	Description
N1	Village house - No. 165A Lung Mei
N2a	Village house - No. 101 Lung Mei
N3a	Village house - No. 66C Lo Tsz Tin
N4	Village house - No. 79 Lo Tsz Tin

2.4 MONITORING FREQUENCY AND PERIOD

2.4.1 The baseline monitoring will be conducted immediately prior to commencement of the construction work under the Project. No construction activities are allowed to be undertaken during the baseline monitoring period.

Air Quality Monitoring

2.4.2 Monitoring frequency for air quality baseline monitoring is as follows:

- Frequency:
- Daily for 24-hour TSP
 - Three times a day for 1-hour TSP while the highest dust impact is expected.
- Duration: 14 consecutive days

Noise Monitoring

- Frequency:
- Leq (30min) in 6 consecutive Leq(5min) between 07:00-19:00 on normal weekdays
 - 3 sets of consecutive Leq(5min) on restricted hours i.e. public holiday or Sunday
 - L10 and L90 for reference
- Duration: Two weeks

2.5 MONITORING EQUIPMENT

Air Quality Monitoring

2.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable results to the HVS. The instrument should be calibrated regularly, and the 1-hour sampling shall be determined on yearly basis by the HVS to check the validity and accuracy of the results measured by direct reading method. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

Noise Monitoring

2.5.2 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms^{-1} .

Wind Data Monitoring Equipment

2.5.3 Meteorological information, including wind direction, wind speed, humidity, rainfall, air pressure and temperature etc., which in general is required for evaluating the air quality impact will be extracted from the Hong Kong Observatory including *Tai Po* Station (Air Temperature/Pressure and Relative Humidity) and *Tai Mei Tuk* Station (wind speed and direction).

2.5.4 Two obvious advantages of using the HKO meteorological information are:

- (i) Installation of a wind sensor of 10 metres aboveground, according to the EM&A Manual, involves construction of the foundation for the reasonably strong 10 meter metal pole, which, according to the ET's past experience, may provoke fierce opposition of the ASR owners, and is therefore hardly to be practicable under limited time and resources; and
- (ii) HKO meteorological information is widely accepted to be used in many environmental reports within HKSAR due to its professional quality and precision, in addition to its readily availability and accessibility via the HKO website.

2.6 DERIVATION OF ACTION/LIMIT (A/L) LEVELS

2.6.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. A summary of derivation of Action/Limit (A/L) Levels for air quality and construction noise are shown in **Table 2-6** and **2-7** respectively.

Table 2-6 Derivation of Action and Limit Levels for Air Quality

Parameter	Action Level	Limit Level
24-hour TSP	For baseline level $\leq 200 \mu\text{g}/\text{m}^3$: Action level = $(\text{Baseline} \times 1.3 + \text{Limit level})/2$	260 $\mu\text{g}/\text{m}^3$
	For baseline level $> 200 \mu\text{g}/\text{m}^3$: Action level = Limit level	
1-hour TSP	For baseline level $\leq 384 \mu\text{g}/\text{m}^3$: Action level = $(\text{Baseline} \times 1.3 + \text{Limit level})/2$	500 $\mu\text{g}/\text{m}^3$
	For baseline level $> 384 \mu\text{g}/\text{m}^3$: Action level = Limit level	

Table 2-7 Derivation of Action and Limit Levels for Construction Noise

Time Period	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	75* dB(A)

Note: (*) Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

- 2.6.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix D*.

3 BASELINE MONITORING METHDOLOGY

3.1 GENERAL

3.1.1 The baseline monitoring program of air quality was conducted on 7 June 2017 to 20 June 2017; and noise was conducted from 7 June 2017 to 23 June 2017. During the baseline monitoring period, there were no construction activities of this project or other external influencing factors of significant concern observed by the ET.

3.2 LOCATION OF BASELINE MONITORING

3.2.1 Baseline air quality and noise monitoring have been undertaken at the all monitoring stations from **7 June 2017 to 20 June 2017** and **7 June 2017 to 23 June 2017** respectively. The detailed information of monitoring stations to be referred to **Tables 2-4** and **2-5**, and the photographic record of the monitoring locations are shown in **Appendix C**.

3.3 MONITORING EQUIPMENT AT BASELINE MONITORING

3.3.1 All equipment to be used for baseline air quality monitoring is listed in **Table 3-1**.

Table 3-1 Air Quality Monitoring Equipment

Equipment	Model
24-Hour TSP	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Calibration Kit Mode TE-5025A
1-Hour TSP	
Portable Dust Meter	Sibata LD-3B Laser Dust Meter

3.3.2 Noise monitoring equipment to be used for baseline monitoring is listed in **Table 3-2**.

Table 3-2 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-31 or Rion NL-52
Calibrator	B&K Type 4231 or Rion NC-74
Portable Wind Speed Indicator	Anemometer AZ Instrument 8908

3.4 MONITORING PROCEDURES

3.4.1 The procedures to conduct air quality and noise monitoring are summarized in following sub-sections.

Air Quality

1-hour TSP

3.4.2 Operation of the 1-hour TSP meter will follow manufacturer's Operation and Service Manual.

3.4.3 The 1-hour TSP monitor, brand named "Sibata LD-3B Laser Dust Meter" is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:

- a. A pump to draw sample aerosol through the optic chamber where TSP is measured;
- b. A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
- c. A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

3.4.4 The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument will be checked before and after each

monitoring event. Annually calibration with the High Volume Sampler (HVS) in same condition would be undertaken by the Laboratory.

24-hour TSP

3.4.5 The equipment used for 24-hour TSP measurement is the High Volume Sampler (hereinafter the "HVS") brand named TISCH, Model TE-5170 TSP High Volume Air Sampler, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The HVS consists of the following:

- a. An anodized aluminum shelter;
- b. A 8"x10" stainless steel filter holder;
- c. A blower motor assembly;
- d. A continuous flow/pressure recorder;
- e. A motor speed-voltage control/elapsed time indicator;
- f. A 7-day mechanical timer, and
- g. A power supply of 220v/50 hz

3.4.6 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground or the roof of building. The flow rate of the HVS between 0.6m³/min and 1.7m³/min will be properly set in accordance with the manufacturer's instruction to within the range recommended in *EPA Code of Federal Regulation, Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-

- A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
- A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
- Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
- The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
- After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.

3.4.7 All the sampled 24-hour TSP filters will be collected and put into the filter envelope provided by the laboratory. The sample will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C and delivery to the office within 48 hours and sent to laboratory for analysis. The sampled filter will be kept in the laboratory for six months prior to disposal.

3.4.8 The HVS used for 24-hour TSP monitoring will be calibrated before the commencement for sampling, and after in two months interval for 1 point checking of maintenance and six months interval for five points calibrate in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m³/min. Motor brushes of HVS will be regularly replaced of about five hundred hours per time.

Construction Noise

- 3.4.9 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804:1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.
- 3.4.10 All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30 \text{ min})}$ in six consecutive $L_{eq(5 \text{ min})}$ measurements will be used as the monitoring parameter for the time period between 07:00-19:00 hours on weekdays and 3 sets of consecutive $L_{eq(5 \text{ min})}$ on restricted hours i.e. public holiday or Sunday throughout the baseline period.
- 3.4.11 The sound level meter will be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield will be fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.
- 3.4.12 Immediately prior to and following each noise measurement the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 3.4.13 Noise measurements will not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed will be checked with a portable wind speed meter capable of measuring the wind speed in m/s.
- 3.4.14 The calibration certificates of monitoring equipment of air quality and noise and the HOKLAS-Accreditation certificate of the testing laboratory is shown in **Appendices E and F**.

Meteorological Information

- 3.4.15 The meteorological information including wind direction, wind speed, humidity, rainfall, air pressure and temperature etc. during baseline monitoring is extracted from the closest Hong Kong Observatory Station. To obtain the most appropriate meteorological information where available, Air Temperature/Pressure and Relative Humidity will be extracted from Tai Po Station and wind speed and direction will be extracted from Tai Mei Tuk Station.

3.5 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.5.1 The baseline monitoring data were handled by the ET's in-house data recording and management system.
- 3.5.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory results were input directly into the computerized database and checked by personnel other than those who input the data.
- 3.5.3 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

4 BASELINE MONITORING RESULTS

4.1 GENERAL

4.1.1 The baseline monitoring schedules are presented in *Appendix G* and the monitoring results are detailed in the following sub-sections.

4.2 RESULTS OF AIR QUALITY MONITORING

4.2.1 Baseline air quality monitoring was carried out from **7 June 2017** to **20 June 2017**. The results for 24-hour and 1-hour TSP are summarized in *Tables 4-1 to 4-2*. The 24-hour TSP data are shown in *Appendix I* and the laboratory report record are shown in *Appendix J*.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – A4

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st Measurement	2 nd Measurement	3 rd Measurement
7-Jun-17	17	7-Jun-17	9:40	26	21	18
8-Jun-17	14	8-Jun-17	13:11	34	36	34
9-Jun-17	14	9-Jun-17	13:16	33	32	32
10-Jun-17	13	10-Jun-17	13:15	40	40	36
11-Jun-17	16	11-Jun-17	13:18	34	40	37
12-Jun-17	15	12-Jun-17	10:37	33	39	38
13-Jun-17	22	13-Jun-17	14:32	30	31	29
14-Jun-17	29	14-Jun-17	13:21	28	27	29
15-Jun-17	22	15-Jun-17	13:31	35	31	37
16-Jun-17	22	16-Jun-17	13:02	69	57	63
17-Jun-17	17	17-Jun-17	14:16	40	40	41
18-Jun-17	22	18-Jun-17	9:14	49	48	41
19-Jun-17	11	19-Jun-17	13:39	42	46	38
20-Jun-17	22	20-Jun-17	13:37	37	41	47
Average (Range)	18 (11-29)	Average (Range)		38 (18-69)		

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – A7

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st Measurement	2 nd Measurement	3 rd Measurement
7-Jun-17	7	7-Jun-17	9:55	25	29	22
8-Jun-17	11	8-Jun-17	13:07	33	26	27
9-Jun-17	15	9-Jun-17	13:12	29	45	31
10-Jun-17	12	10-Jun-17	13:11	36	37	38
11-Jun-17	16	11-Jun-17	13:21	36	35	36
12-Jun-17	18	12-Jun-17	10:33	29	33	31
13-Jun-17	21	13-Jun-17	14:29	32	36	32
14-Jun-17	28	14-Jun-17	13:17	30	30	40
15-Jun-17	24	15-Jun-17	13:18	34	40	42
16-Jun-17	21	16-Jun-17	13:17	53	63	52
17-Jun-17	19	17-Jun-17	14:10	40	39	40
18-Jun-17	24	18-Jun-17	9:03	50	48	42
19-Jun-17	16	19-Jun-17	13:28	46	41	43
20-Jun-17	15	20-Jun-17	13:20	32	28	38
Average (Range)	17 (7-28)	Average (Range)		37 (22-63)		

4.2.2 The meteorological data during the baseline monitoring period are summarized in *Appendix H*.

Action/Limit Levels for Air Quality

4.2.3 Following the criteria shown in **Table 2-6** of this report, the proposed Action and Limit Levels for 24-hour and 1-hour TSP are listed in **Table 4-3**.

Table 4-3 Action and Limit Levels for Air Quality Monitoring for all Stations

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
A4	275	142	500	260
A7	274	141	500	260

Note: 1-hour & 24-hour TSP Action Level = (Baseline \times 1.3 + Limit level)/2

4.3 RESULTS OF NOISE MONITORING

4.3.1 The baseline noise monitoring at noise monitoring locations N1, N2a, N3a and N4 was undertaken on **7 June 2017 to 23 June 2017**. Since there was continuous rain during daytime on 17 June 2017, the scheduled noise monitoring on 17 June 2017 at all stations were cancelled and baseline period would be extended one day. Furthermore, in view of the unstable weather condition on 12 & 13 June 2017, two additional days of baseline monitoring were conducted in order to collect a comprehensive background noise level data. Hence, the whole baseline noise monitoring was carried out from 7 June 2017 to 16 June 2017 and 18 June 2017 to 23 June 2017. The measurement data are shown in **Appendix I** and summarized in **Table 4-4**.

Table 4-4 Summaries of Noise Monitoring Results

Monitoring Station	Normal day (Monday to Saturday): Daytime 0700-1900, Leq(30min)			Public Holiday or Sunday: Daytime 0700-1900, Leq(15min)		
	Mean	Min	Max	Mean	Min	Max
N1	63	58	70	63	60	66
N2a	58	55	62	57	57	57
N3a	57	54	64	58	57	59
N4	59	57	64	63	61	64

Note:

- (1) Sound level meter set at N1 and N3a are made free-field measurement, façade correction (+3dB(A)) has added according to acoustical principles and EPD guidelines.
- (2) Figures refer to the measurement recorded at the designated station during the entire baseline period for general reference.

4.3.2 The collected baseline noise monitoring data can represent the background condition of monitoring locations without the impact arising from construction of the project. It therefore served as reference data to compare with the impact monitoring data in order to facilitate the investigation when Limit Level exceedance is triggered during the construction phase of the project.

Action/Limit Levels for Noise

4.3.3 The Action and Limit Levels for construction noise are shown in **Table 4-5**.

Table 4-5 Action and Limit Levels of Construction Noise Monitoring

Time Period	Action Level	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	75 dB(A)

4.4 DISCUSSION AND RECOMMENDATIONS

Air Quality

Possible Influence of Seasonal Changes

- 4.4.1 The baseline monitoring was conducted between **7 June 2017** and **23 June 2017** during typical Hong Kong wet seasons. The baseline data so collected therefore represent the baseline air quality of the wet season immediately prior to commencement of the Project. They may not reflect the air quality conditions of dry seasons in Hong Kong, which are normally significantly different.
- 4.4.2 It is therefore recommended that the interpretation of the air quality monitoring data should take into account the influence of the seasonal changes, and the baseline conditions should be regularly reviewed, in particular during seasonal changes.

5 CONCLUSIONS AND RECOMMENTATIONS

5.1 CONCLUSIONS

5.1.1 The baseline monitoring program was carried out during the period between **7 June 2017** and **23 June 2017** at the proposed monitoring locations by the ET according to the approved EM&A Manual. During the baseline monitoring, there were no construction activities undertaken under this Project.

5.1.2 Based on the baseline monitoring results, the recommended environmental performance criteria for air quality and construction noise are summarized as follows:

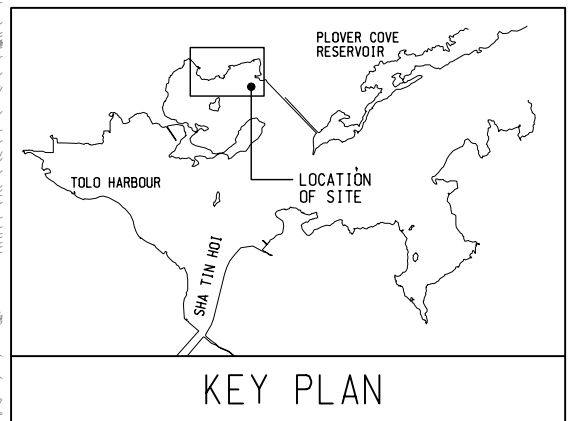
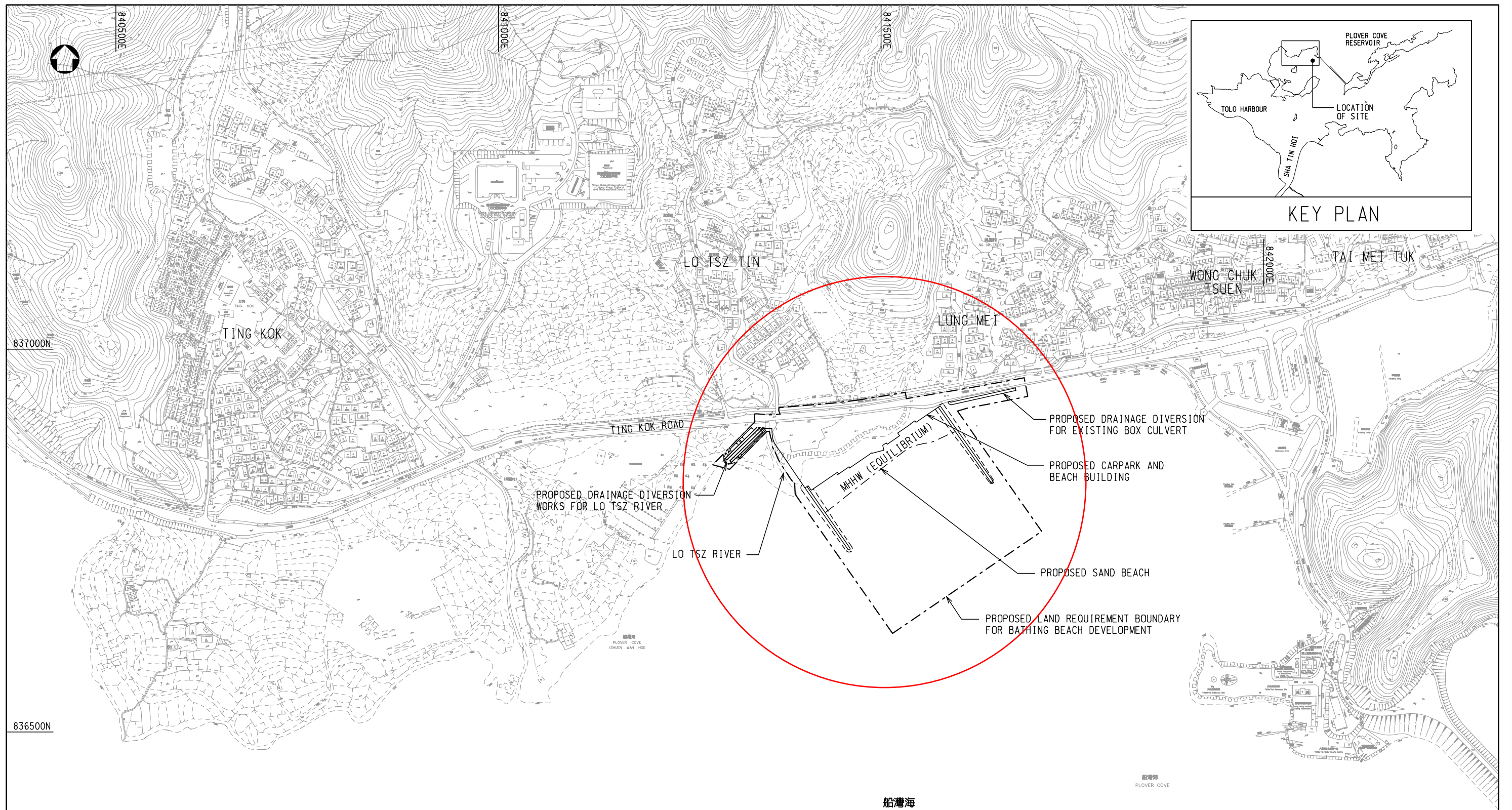
Recommended Action & Limit Levels of Air Quality				
Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
A4	275	142	500	260
A7	274	141	500	260

Recommended Action & Limit Levels of Construction Noise		
Monitoring Location	Action Level	Limit Level
	0700-1900 hours on normal weekdays	
N1, N2a, N3a & N4	When one or more documented complaints are received	75 dB(A)

5.2 RECOMMENDATIONS

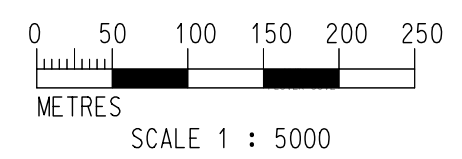
5.2.1 The baseline monitoring of air quality and noise was conducted during typical wet season (April to October) in Hong Kong. It is important to note that influence of seasonal changes should be taken into account when interpreting monitoring data obtained during dry season. Review of the baseline conditions may need to be conducted regularly, in particular during seasonal changes. If the changes in baseline conditions are evident, the environmental performance criteria should be re-established by agreement of the ER and IEC and submitted for EPD endorsement.

Appendix A
Layout plan of the Project



船灣海
PLOVER COVE
(SHUEN WAN HOI)

LEGEND :
 - - - - - PROPOSED LAND REQUIREMENT BOUNDARY FOR BATHING BEACH DEVELOPMENT



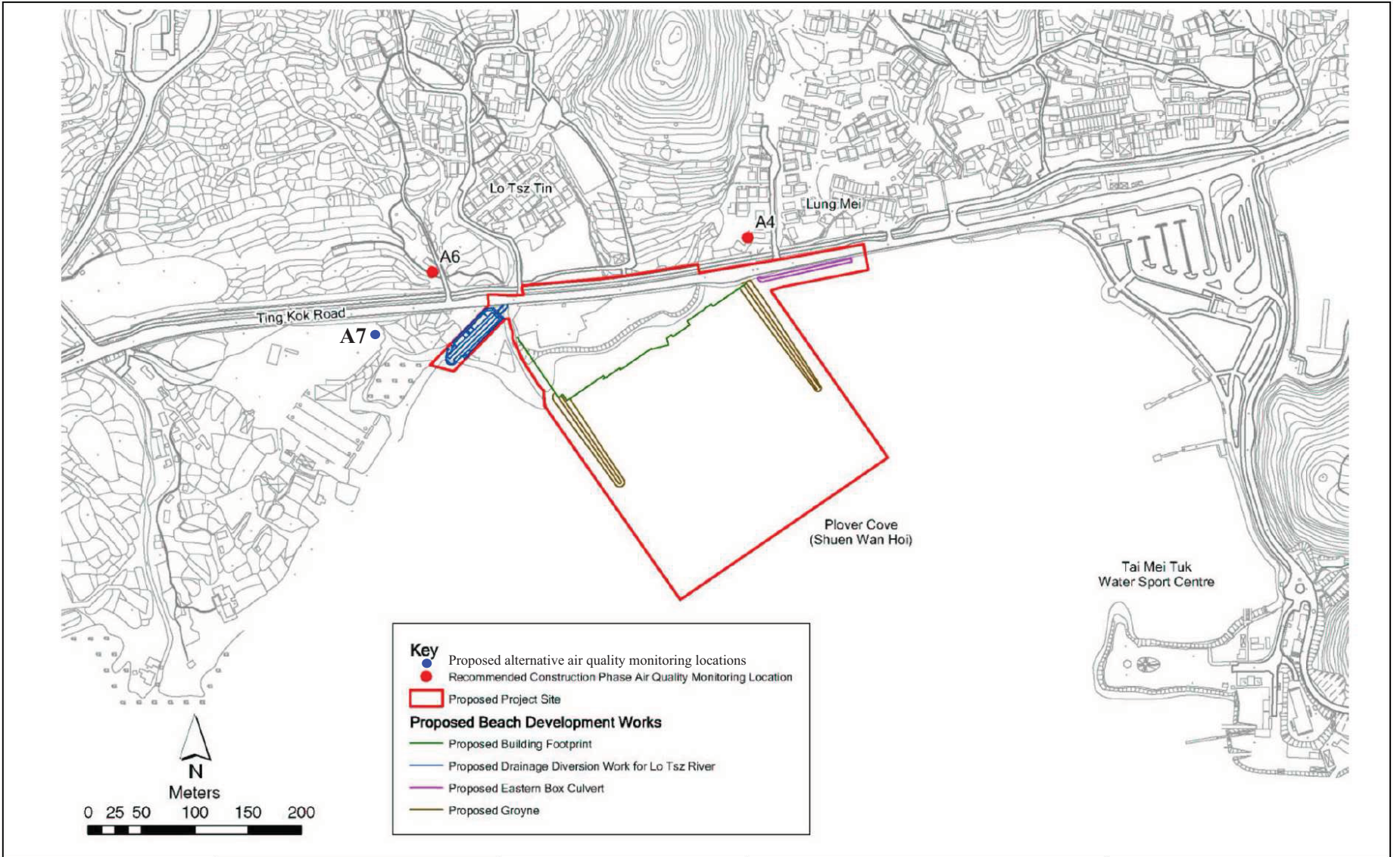
	Consulting Engineer 		Agreement No. : CE 59/2005 (EP)	ENVIRONMENTAL IMPACT ASSESSMENT REPORT	FIGURE 1.1		
			Project Title: DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO	Figure Title: SITE LOCATION PLAN AND GENERAL LAYOUT	Checked PS Designed YC	Scale 1:5000 @ A3 Drawn PF	Rev. 2 Date 14/03/2007




Appendix B

Designated Monitoring Locations

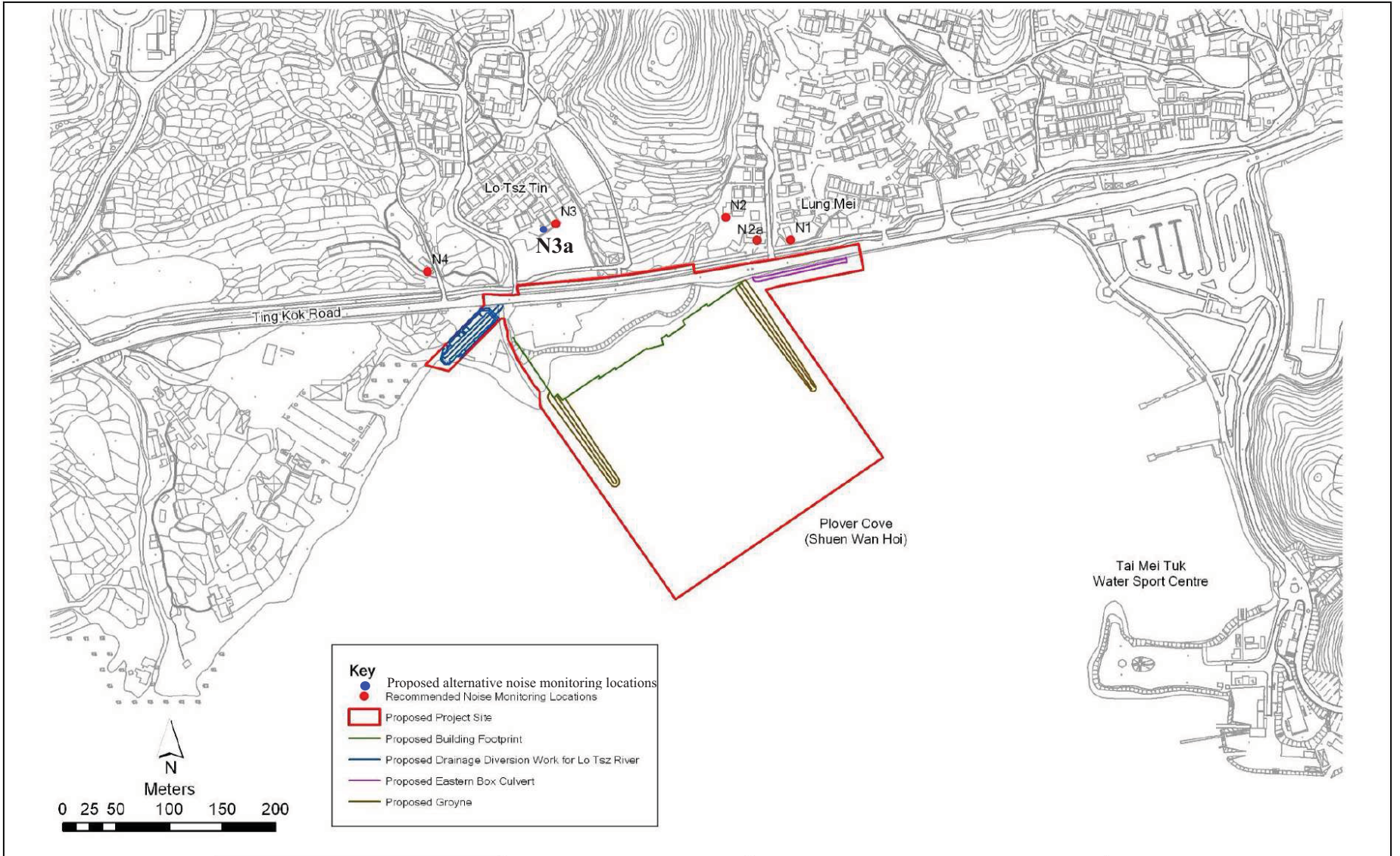
- (i) Air Monitoring**
- (ii) Noise Monitoring**

Air Monitoring Location






Client  CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Consulting Engineer  Halcrow China Ltd.	 Environmental Resources Management as sub-consultant	Agreement No.: CE 59/2005(EP)	ENVIRONMENTAL MONITORING AND AUDIT MANUAL	FIGURE 3.1		
			Project Title: DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO	Figure Title: CONSTRUCTION PHASE AIR QUALITY MONITORING LOCATIONS	Checked TF	Scale AS SHOWN	Rev. 2
					Designed -	Drawn KK	Date 23/03/2007

Noise Monitoring Location



Key	
●	Proposed alternative noise monitoring locations
●	Recommended Noise Monitoring Locations
	Proposed Project Site
	Proposed Building Footprint
	Proposed Drainage Diversion Work for Lo Tsz River
	Proposed Eastern Box Culvert
	Proposed Groyne

Client  CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Consulting Engineer  Halcrow China Ltd.	 Environmental Resources Management as sub-consultant	Agreement No.: CE 59/2005(EP)	ENVIRONMENTAL MONITORING AND AUDIT MANUAL	FIGURE 4.1		
			Project Title: DEVELOPMENT OF A BATHING BEACH AT LUNG MEI, TAI PO	Figure Title: CONSTRUCTION PHASE NOISE QUALITY MONITORING LOCATIONS	Checked: TF	Scale: AS SHOWN	Rev.: 2
					Designed: -	Drawn: KK	Date: 29/08/2007

Appendix C

Monitoring Location Photographic Record

Air Quality Monitoring (24-Hour TSP & 1-Hour TSP)



A4



A7

Noise Monitoring



N1



N2a

Noise Monitoring



N3a



N4

Appendix D

Event and Action Plan

Event and Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level Exceedance for One Sample	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the IEC and the ER; 3. Repeat measurement to confirm findings; 4. Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method 	<ol style="list-style-type: none"> 1. Notify Contractor 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate
Action Level Exceedance for Two or More Consecutive Samples	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the IEC and ER; 3. Repeat measurement to confirm findings; 4. Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily 5. Discuss with IEC and Contractor on remedial action required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervisor implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate
Limit Level Exceedance for One Sample	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the EPD and the ER; 3. Repeat measurement to confirm findings; 4. Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if

EVENT	ACTION			
	ET	IEC	ER	Contractor
	5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of results	remedial measures; 5. Supervise implementation of remedial measures		appropriate
Limit Level Exceedance for Two or More Consecutive Samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source(s) of impact; 3. Repeat measurement to confirm findings; 4. Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial action and keep IEC, EPD and ER informed of the result; 8. If exceedance stop, cease additional monitoring	1. Discuss amongst ER, ET and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Construction Noise

EXCEEDANCE	ACTION			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor; 2. Identify source; 3. Carry out investigation; 4. Report the results of investigation to the IEC and Contractor; 5. Discuss with the Contractor and formulate remedial measures; 6. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals

Appendix E

Valid Calibration Certificate of Monitoring Equipment

MONITORING EQUIPMENT CALIBRATION CERTIFICATES

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1	Air	TSP Sampler Calibration Spreadsheet for A4	7 Jun 17	7 Aug 17
2		TSP Sampler Calibration Spreadsheet for A7	7 Jun 17	7 Aug 17
3		Calibration Kit TISCH Model TE-5025A Orifice ID 1941 and Rootmeter S/N 0438320	28 Feb 17	28 Feb 18
4		Laser Dust Monitor, Model LD-3B (Serial No. 2X6145) – EQ0105	11 Jan 17	11 Jan 18
5		Laser Dust Monitor, Model LD-3B (Serial No. 3Y6501) – EQ111	20 Mar 17	20 Mar 18
6		Laser Dust Monitor, Model LD-3B (Serial No. 456660) – EQ117	20 Mar 17	20 Mar 18
7	Noise	B&K Integrating Sound Level Meter (Serial No. 2285722) – EQ008	29 Jul 16	29 Jul 17
8		NL-52 Rion Sound Level Meter (Serial No. 01121362) – EQ011	24 May 17	24 May 18
9		NL-52 Rion Sound Level Meter (Serial No. 00921191) – EQ013	5 Jul 16	5 Jul 17
10		NL-31 Rion Sound Level Meter (Serial No. 00410221) – EQ067	2 May 17	2 May 18
11		B&K Acoustical Calibrator (Serial No. 2713428) – EQ082	2 May 17	2 May 18
12		Rion Sound Level Calibrtor NC-74 (Serial No.: 24657231) - EQ087	28 Jul 16	28 Jul 17

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : No. 101 Lung Mei Tsuen	Date of Calibration: 7-Jun-17
Location ID : A4	Next Calibration Date: 7-Aug-17
Name and Model: TISCH HVS Model TE-5170	Technician: Ip Ka Hing

CONDITIONS

Sea Level Pressure (hPa)	1010	Corrected Pressure (mm Hg)	757.5
Temperature (°C)	30.0	Temperature (K)	303

CALIBRATION ORIFICE

Make-> TISCH		Qstd Slope ->	2.11965
Model-> 5025A		Qstd Intercept ->	-0.02696
Serial # -> 1941			

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.90	5.90	11.8	1.617	42	41.24	Slope = 31.2744 Intercept = -8.4631 Corr. coeff. = 0.9959
13	4.75	4.75	9.5	1.452	39	38.29	
10	3.70	3.70	7.4	1.283	32	31.42	
7	2.35	2.35	4.7	1.025	24	23.57	
5	1.95	1.95	3.9	0.935	21	20.62	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

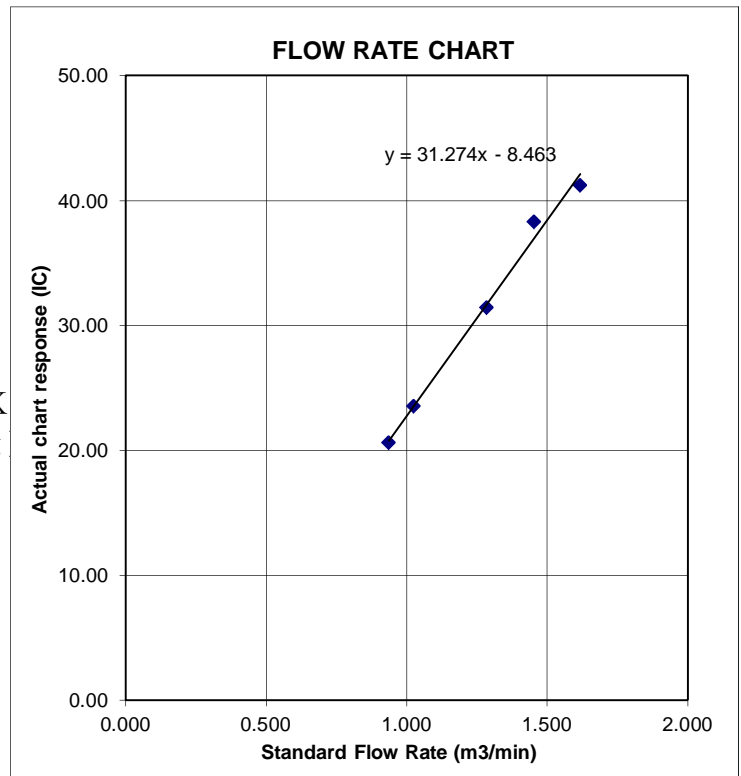
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Hong Kong Eco-Farm	Date of Calibration: 7-Jun-17
Location ID : A7	Next Calibration Date: 7-Aug-17
Name and Model: TISCH HVS Model TE-5170	Technician: Ip Ka Hing

CONDITIONS

Sea Level Pressure (hPa)	1010	Corrected Pressure (mm Hg)	757.5
Temperature (°C)	30.0	Temperature (K)	303

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.11965
Model-> 5025A	Qstd Intercept -> -0.02696
Serial # -> 1941	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.50	5.50	11.0	1.562	42	41.24	Slope = 26.7981 Intercept = -1.8709 Corr. coeff. = 0.9925
13	4.45	4.45	8.9	1.406	35	34.37	
10	3.45	3.45	6.9	1.240	32	31.42	
7	2.25	2.25	4.5	1.004	25	24.55	
5	1.35	1.35	2.7	0.780	20	19.64	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

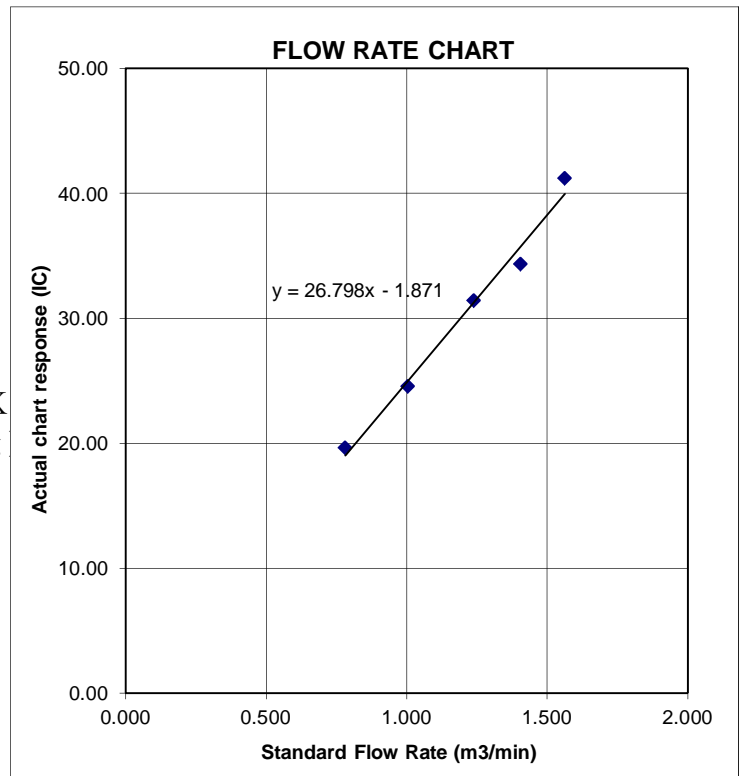
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart responses
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure





TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELAND, OH
 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 1941 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORIFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4600	3.2	2.00
2	NA	NA	1.00	1.0410	6.4	4.00
3	NA	NA	1.00	0.9280	7.9	5.00
4	NA	NA	1.00	0.8840	8.7	5.50
5	NA	NA	1.00	0.7290	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9967	0.6827	1.4149	0.9957	0.6820	0.8851
0.9925	0.9534	2.0010	0.9915	0.9524	1.2517
0.9904	1.0672	2.2372	0.9894	1.0661	1.3995
0.9894	1.1192	2.3464	0.9884	1.1181	1.4678
0.9840	1.3499	2.8299	0.9830	1.3485	1.7702
Qstd slope (m) = 2.11965			Qa slope (m) = 1.32729		
intercept (b) = -0.02696			intercept (b) = -0.01686		
coefficient (r) = 0.99991			coefficient (r) = 0.99991		
y axis = SQRT[H2O(Pa/760)(298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

$$Qstd = 1/m \{ [\text{SQRT} (H2O (Pa/760) (298/Ta))] - b \}$$

$$Qa = 1/m \{ [\text{SQRT} H2O (Ta/Pa)] - b \}$$



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1716583
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 20-APR-2017
		DATE OF ISSUE	: 25-APR-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position
Richard Fung 	General Manager

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.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

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Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1716583
SUB-BATCH : 1
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1716583-001	S/N: 456660	AIR	20-APR-2017	S/N: 456660

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: Sibata LD-3B
 Serial No. 456660
 Equipment Ref: EQ117
 Job Order HK1716583

Standard Equipment:

Standard Equipment: Higher Volume Sampler
 Location & Location ID: AUES office (calibration room)
 Equipment Ref: HVS 018
 Last Calibration Date: 23 February 2017

Equipment Verification Results:

Calibration Date: 16 March 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr02min	09:58 ~ 12:00	17.8	1016.4	0.037	2059	16.9
2hr07min	12:05 ~ 14:12	17.8	1016.4	0.031	1589	12.5
2hr02min	14:20 ~ 16:22	17.8	1016.4	0.026	1197	9.8

Sensitivity Adjustment Scale Setting (Before Calibration) 610 (CPM)

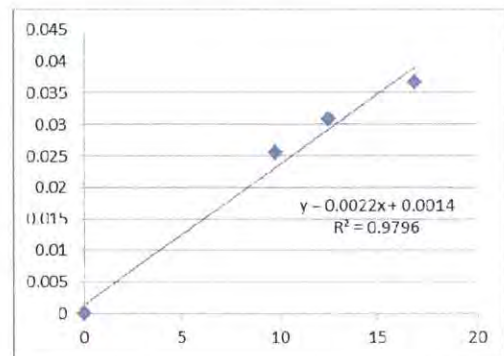
Sensitivity Adjustment Scale Setting (After Calibration) 610 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9897

Date of Issue 20 March 2017



Remarks:

- Strong** Correlation ($R > 0.8$)
 - Factor 0.0022 should be apply for TSP monitoring
- *If $R < 0.5$, repair or re-verification is required for the equipment

Operator : Martin Li Signature : [Signature] Date : 20 March 2017

QC Reviewer : Ben Tam Signature : [Signature] Date : 20 March 2017

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 23-Feb-17
 Location ID : Calibration Room Next Calibration Date: 23-May-17

CONDITIONS

Sea Level Pressure (hPa)	1017.4	Corrected Pressure (mm Hg)	763.05
Temperature (°C)	17.9	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00411
Model->	5025A	Qstd Intercept ->	-0.03059
Calibration Date->	14-Mar-16	Expiry Date->	14-Mar-17

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.2	6.2	12.4	1.797	56	56.79	Slope = 36.1509 Intercept = -8.0555 Corr. coeff. = 0.9984		
13	5	5	10.0	1.616	49	49.69			
10	3.8	3.8	7.6	1.410	43	43.61			
8	2.4	2.4	4.8	1.124	33	33.47			
5	1.4	1.4	2.8	0.862	22	22.31			

Calculations :

$$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)}] - b]$$

$$IC = I[\sqrt{P_a/P_{std})(T_{std}/T_a)}$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\sqrt{298/T_{av})(P_{av}/760)}] - b)$$

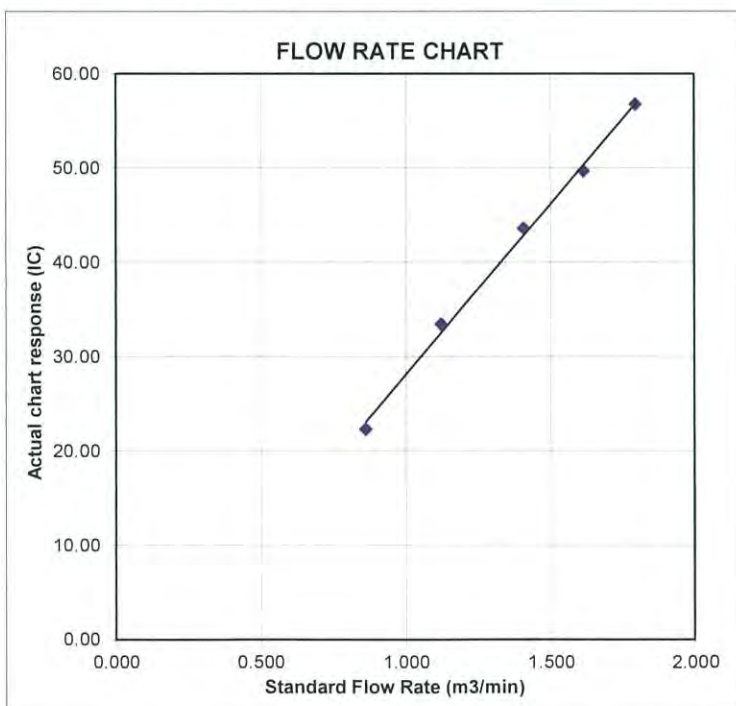
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1716579
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 20-APR-2017
		DATE OF ISSUE	: 25-APR-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories

Position

Richard Fung

General Manager

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.

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. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1716579
SUB-BATCH : 1
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1716579-001	S/N: 3Y6501	AIR	20-APR-2017	S/N: 3Y6501

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: Sibata LD-3B
 Serial No. 3Y6501
 Equipment Ref: EQ111
 Job Order HK1716579

Standard Equipment:

Standard Equipment: Higher Volume Sampler
 Location & Location ID: AUES office (calibration room)
 Equipment Ref: HVS 018
 Last Calibration Date: 23 February 2017

Equipment Verification Results:

Calibration Date: 16 March 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr02min	09:58 ~ 12:00	17.8	1016.4	0.037	2011	16.5
2hr07min	12:05 ~ 14:12	17.8	1016.4	0.031	1793	14.1
2hr02min	14:20 ~ 16:22	17.8	1016.4	0.026	1251	10.2

Sensitivity Adjustment Scale Setting (Before Calibration) 657 (CPM)

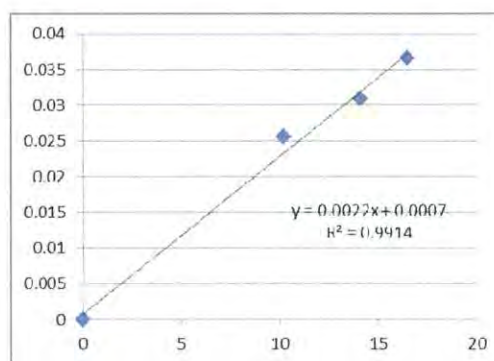
Sensitivity Adjustment Scale Setting (After Calibration) 657 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9957

Date of Issue 20 March 2017



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : [Signature] Date : 20 March 2017

QC Reviewer : Ben Tam Signature : [Signature] Date : 20 March 2017

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 23-Feb-17
 Location ID : Calibration Room Next Calibration Date: 23-May-17

CONDITIONS

Sea Level Pressure (hPa)	1017.4	Corrected Pressure (mm Hg)	763.05
Temperature (°C)	17.9	Temperature (K)	291

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00411
Model->	5025A	Qstd Intercept ->	-0.03059
Calibration Date->	14-Mar-16	Expiry Date->	14-Mar-17

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.2	6.2	12.4	1.797	56	56.79	Slope =	36.1509	
13	5	5	10.0	1.616	49	49.69	Intercept =	-8.0555	
10	3.8	3.8	7.6	1.410	43	43.61	Corr. coeff. =	0.9984	
8	2.4	2.4	4.8	1.124	33	33.47			
5	1.4	1.4	2.8	0.862	22	22.31			

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

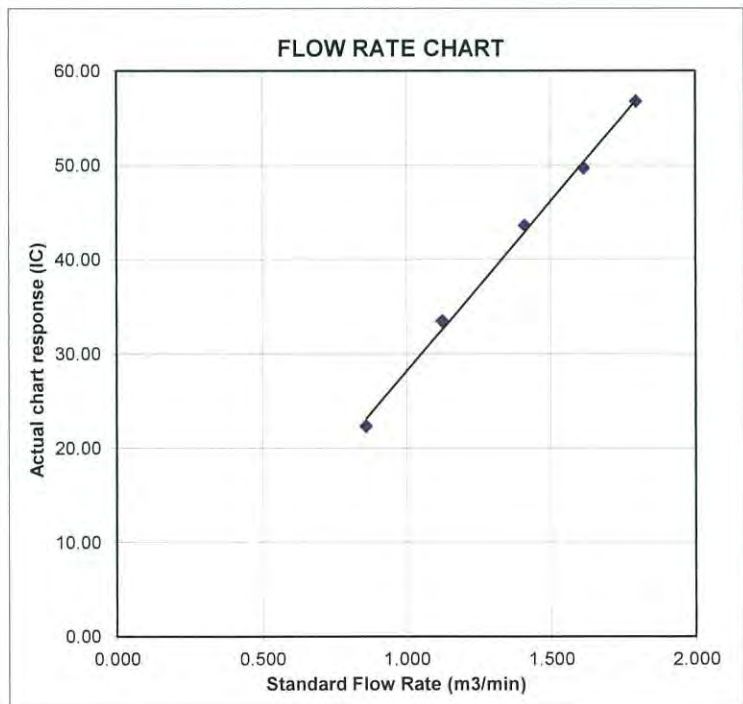
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1703462
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 19-JAN-2017
		DATE OF ISSUE	: 23-JAN-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position
Richard Fung 	General Manager

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.

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. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1703462
SUB-BATCH : 1
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1703462-001	S/N: 2X6145	AIR	19-JAN-2017	S/N: 2X6145

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: Sibata LD-3B
 Serial No. 2X6145
 Equipment Ref: EQ105
 Job Order HK1703462

Standard Equipment:

Standard Equipment: Higher Volume Sampler
 Location & Location ID: AUES office (calibration room)
 Equipment Ref: HVS 018
 Last Calibration Date: 25 November 2016

Equipment Verification Results:

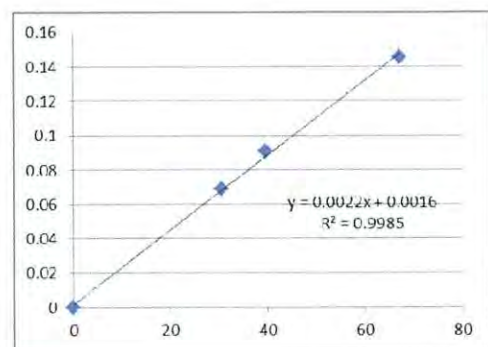
Testing Date: 9 January 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
3hr14min	09:10 ~ 12:24	20.6	1016.3	0.145	13025	67.2
1hr57min	12:30 ~ 14:27	20.6	1016.3	0.069	3586	30.6
1hr58min	14:35 ~ 16:33	20.6	1016.3	0.091	4709	39.6

Sensitivity Adjustment Scale Setting (Before Calibration) 581 (CPM)
 Sensitivity Adjustment Scale Setting (After Calibration) 580 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022
 Correlation Coefficient 0.9992
 Date of Issue 11 January 2017



Remarks:

- Strong** Correlation ($R > 0.8$)
 - Factor 0.0022 should be apply for TSP monitoring
- *If $R < 0.5$, repair or re-verification is required for the equipment

Operator : Martin Li Signature : [Signature] Date : 11 January 2017

QC Reviewer : Ben Tam Signature : [Signature] Date : 11 January 2017

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 25-Nov-16
Location ID :	Calibration Room	Next Calibration Date: 25-Feb-17

CONDITIONS

Sea Level Pressure (hPa)	1016.4	Corrected Pressure (mm Hg)	762.3
Temperature (°C)	20.0	Temperature (K)	293

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00411
Model->	5025A	Qstd Intercept ->	-0.03059
Calibration Date->	14-Mar-16	Expiry Date->	14-Mar-17

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.1	6.1	12.2	1.776	56	56.56	Slope =	35.6871	
13	4.7	4.7	9.4	1.560	49	49.49	Intercept =	-6.1123	
10	3.6	3.6	7.2	1.368	43	43.43	Corr. coeff. =	0.9967	
8	2.3	2.3	4.6	1.096	34	34.34			
5	1.4	1.4	2.8	0.859	23	23.23			

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I) [\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

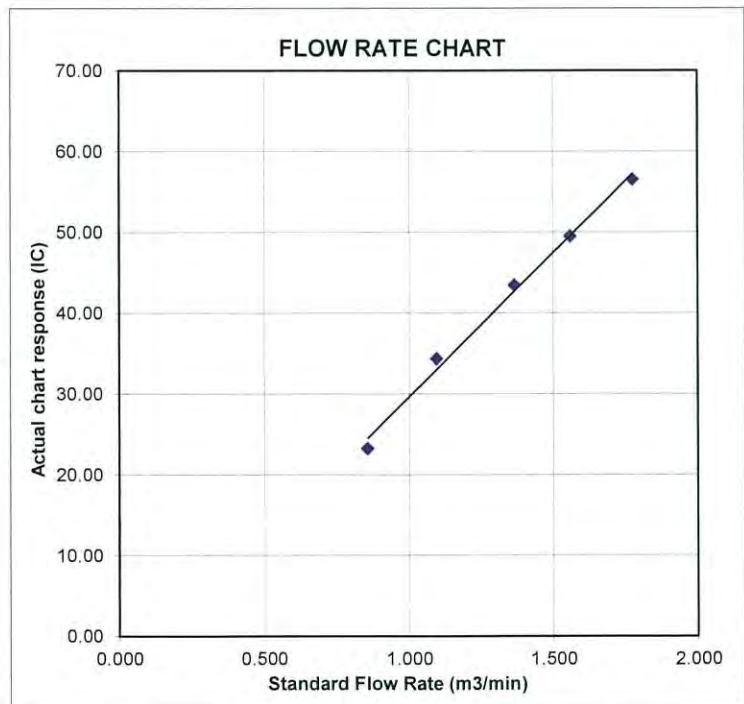
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C172286
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0924)

Date of Receipt / 收件日期 : 24 April 2017

Description / 儀器名稱 : Sound Level Meter (EQ067)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410221
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 April 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試

H T Wong
Technical Officer

Certified By
核證

K C Lee
Project Engineer

Date of Issue
簽發日期

2 May 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Certificate of Calibration

校正證書

Certificate No. : C172286
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	93.1	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L _A	A	Fast	94.00	1	93.1 (Ref.)
				104.00		103.1
				114.00		113.2

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	93.1	Ref.
			Slow			93.1	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C172286
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _A	A	Fast	94.00	63 Hz	66.8	-26.2 ± 1.5
					125 Hz	76.9	-16.1 ± 1.5
					250 Hz	84.4	-8.6 ± 1.4
					500 Hz	89.8	-3.2 ± 1.4
					1 kHz	93.1	Ref.
					2 kHz	94.4	+1.2 ± 1.6
					4 kHz	94.2	+1.0 ± 1.6
					8 kHz	92.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.2	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _C	C	Fast	94.00	63 Hz	92.2	-0.8 ± 1.5
					125 Hz	92.9	-0.2 ± 1.5
					250 Hz	93.1	0.0 ± 1.4
					500 Hz	93.1	0.0 ± 1.4
					1 kHz	93.1	Ref.
					2 kHz	93.0	-0.2 ± 1.6
					4 kHz	92.4	-0.8 ± 1.6
					8 kHz	90.2	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.3	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



Certificate of Calibration

校正證書

Certificate No. : C172286
證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 319734

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB
250 Hz - 500 Hz : ± 0.30 dB
1 kHz : ± 0.20 dB
2 kHz - 4 kHz : ± 0.35 dB
8 kHz : ± 0.45 dB
12.5 kHz : ± 0.70 dB
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C163602
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0843) Date of Receipt / 收件日期 : 23 June 2016
Description / 儀器名稱 : Sound Level Meter (EQ013)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00921191
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 4 July 2016


TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Project Engineer

Date of Issue : 5 July 2016
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C163602

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	* 95.6	± 1.1

* Out of IEC 61672 Class 1 Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C163602
證書編號

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	94.0	Ref.
			Slow				

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

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Certificate of Calibration 校正證書

Certificate No. : C163602
證書編號

- Remarks : - UUT Microphone Model No. : UC-59 & S/N : 10042
- Mfr's Spec. : IEC 61672 Class 1
- Uncertainties of Applied Value :
- | | | |
|--------|-----------------|--------------------------|
| 94 dB | 63 Hz - 125 Hz | : ± 0.35 dB |
| | 250 Hz - 500 Hz | : ± 0.30 dB |
| | 1 kHz | : ± 0.20 dB |
| | 2 kHz - 4 kHz | : ± 0.35 dB |
| | 8 kHz | : ± 0.45 dB |
| | 12.5 kHz | : ± 0.70 dB |
| 104 dB | 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
| 114 dB | 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration 校正證書

Certificate No. : C172793
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0924) Date of Receipt / 收件日期 : 16 May 2017
Description / 儀器名稱 : Sound Level Meter (EQ011)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 01121362
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

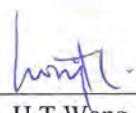
DATE OF TEST / 測試日期 : 23 May 2017

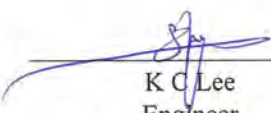
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Engineer

Date of Issue : 24 May 2017
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準，局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C172793

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.2	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.2 (Ref.)
				104.00		103.2
				114.00		113.2

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.2	Ref.
			Slow			93.2	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C172793
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	66.9	-26.2 ± 1.5
					125 Hz	76.9	-16.1 ± 1.5
					250 Hz	84.5	-8.6 ± 1.4
					500 Hz	89.9	-3.2 ± 1.4
					1 kHz	93.2	Ref.
					2 kHz	94.4	+1.2 ± 1.6
					4 kHz	94.2	+1.0 ± 1.6
					8 kHz	92.1	-1.1 (+2.1 ; -3.1)
					12.5 kHz	88.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	92.3	-0.8 ± 1.5
					125 Hz	93.0	-0.2 ± 1.5
					250 Hz	93.2	0.0 ± 1.4
					500 Hz	93.2	0.0 ± 1.4
					1 kHz	93.2	Ref.
					2 kHz	93.0	-0.2 ± 1.6
					4 kHz	92.4	-0.8 ± 1.6
					8 kHz	90.2	-3.0 (+2.1 ; -3.1)
					12.5 kHz	86.8	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration 校正證書

Certificate No. : C172793
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 07549

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C164113
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0843) Date of Receipt / 收件日期 : 15 July 2016
Description / 儀器名稱 : Integrating Sound Level Meter (EQ009)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285722
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

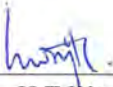
DATE OF TEST / 測試日期 : 28 July 2016


TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Project Engineer

Date of Issue : 29 July 2016
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C164113
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C160077
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

- 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.1

- 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.1	± 0.7

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C164113
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.1	Ref.
	L _{ASP}		S			94.2	± 0.1
	L _{AIP}		I			94.2	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L _{ASP}	S	Continuous		106.0	Ref.	
	L _{ASMax}		500 ms		102.0	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.6	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C164113
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.0	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
								90	89.7	± 0.5
								80	79.2	± 1.0
								70	69.1	± 1.0
			60 sec.			1/10 ²				
			5 min.			1/10 ³				
						1/10 ⁴				

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812707

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	31.5 Hz - 125 Hz	± 0.35 dB
	250 Hz - 500 Hz	± 0.30 dB
	1 kHz	± 0.20 dB
	2 kHz - 4 kHz	± 0.35 dB
	8 kHz	± 0.45 dB
	12.5 kHz	± 0.70 dB
104 dB	1 kHz	± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	± 0.10 dB (Ref. 94 dB)
	Burst equivalent level	± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration 校正證書

Certificate No. : C164099
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0843) Date of Receipt / 收件日期 : 15 July 2016

Description / 儀器名稱 : Sound Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34657231
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 27 July 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Project Engineer

Date of Issue : 28 July 2016
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C164099
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C163709
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.1	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.001	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.



Certificate of Calibration 校正證書

Certificate No. : C172284
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0924) Date of Receipt / 收件日期 : 24 April 2017
Description / 儀器名稱 : Acoustical Calibrator (EQ082)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2713428
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 April 2017

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : _____
H T Wong
Technical Officer

Certified By : 
核證 : _____
K C Lee
Project Engineer

Date of Issue : 2 May 2017
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C172284

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C163709
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.1		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Appendix F

HOKLAS-accreditation Certificate of the Testing Laboratory



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as listed in the HOKLAS Directory of Accredited Laboratories within the test category of
此實驗所符合ISO / IEC 17025 : 2005 – 《測試及校正實驗所能力的通用規定》所訂的要求，獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定
測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作
(見國際認可論壇·國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : **HOKLAS 066**
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日



Appendix G

Baseline Monitoring Schedules

Baseline Air and Noise Monitoring Schedule

Date		Noise Monitoring	Air Quality	
			1-hour TSP Monitoring	24-hour TSP Monitoring
7-Jun-17	Wed	N1, N2a, N3a & N4	A4 & A7	A4 & A7
8-Jun-17	Thu	N1, N2a, N3a & N4	A4 & A7	A4 & A7
9-Jun-17	Fri	N1, N2a, N3a & N4	A4 & A7	A4 & A7
10-Jun-17	Sat	N1, N2a, N3a & N4	A4 & A7	A4 & A7
11-Jun-17	Sun	N1, N2a, N3a & N4	A4 & A7	A4 & A7
12-Jun-17	Mon	N1, N2a, N3a & N4	A4 & A7	A4 & A7
13-Jun-17	Tue	N1, N2a, N3a & N4	A4 & A7	A4 & A7
14-Jun-17	Wed	N1, N2a, N3a & N4	A4 & A7	A4 & A7
15-Jun-17	Thu	N1, N2a, N3a & N4	A4 & A7	A4 & A7
16-Jun-17	Fri	N1, N2a, N3a & N4	A4 & A7	A4 & A7
17-Jun-17	Sat	Cancelled	A4 & A7	A4 & A7
18-Jun-17	Sun	N1, N2a, N3a & N4	A4 & A7	A4 & A7
19-Jun-17	Mon	N1, N2a, N3a & N4	A4 & A7	A4 & A7
20-Jun-17	Tue	N1, N2a, N3a & N4	A4 & A7	A4 & A7
21-Jun-17	Wed	N1, N2a, N3a & N4	NA	NA
22-Jun-17	Thu	N1, N2a, N3a & N4	NA	NA
23-Jun-17	Fri	N1, N2a, N3a & N4	NA	NA

Appendix H

Meteorological Data during Baseline Monitoring (Tai Po Station / Tai Mei Tuk Station)

**CEDD Contract No. CV/2012/05 - Bathing Beach at Lung Mei, Tai Po
Baseline Monitoring Report (Air Quality & Noise)**

Date		Weather	Total Rainfall (mm)	Tai Po Station	Tai Mei Tuk Station		
				Mean Relative Humidity (%)	Mean Air Temp. (°C)	Wind Speed (km/h)	Wind Direction
7-Jun-17	Wed	Moderate southwesterly winds.	15.5	85	28.9	7.8	140
8-Jun-17	Thu	Hot during the day.	0	84	29.5	9.2	50
9-Jun-17	Fri	Sunny periods and isolated showers. Hot during the day.	0.5	80	28.8	12.8	100
10-Jun-17	Sat	Sunny periods and isolated showers. Hot during the day.	0	83	29.6	8.6	150
11-Jun-17	Sun	Moderate southwesterly winds.	0	82	30.1	6.5	150
12-Jun-17	Mon	Hot during the day.	40	92	27.2	33.3	50
13-Jun-17	Tue	Sunny periods and isolated showers. Hot during the day.	176.5	99	25.3	14	260
14-Jun-17	Wed	Sunny periods and isolated showers. Hot during the day.	32.5	96	26.4	6.2	280
15-Jun-17	Thu	Moderate southwesterly winds.	22	91	27.9	14.4	240
16-Jun-17	Fri	Hot during the day.	80	93	27.4	10.8	280
17-Jun-17	Sat	Sunny periods and isolated showers.	130	100	24.9	5	260
18-Jun-17	Sun	Hot during the day.	35.5	97	25.6	5.7	50
19-Jun-17	Mon	Moderate southwesterly winds.	23	98	25.8	6.3	230
20-Jun-17	Tue	Hot during the day.	51.5	98	25.7	7.1	270
21-Jun-17	Wed	Sunny periods and isolated showers. Hot during the day.	62	98	26.2	8.9	260
22-Jun-17	Thu	Sunny periods and isolated showers. Hot during the day.	0.5	82	28.6	13.3	250
23-Jun-17	Fri	Moderate southwesterly winds.	11	88	28.1	4.5	150

Appendix I

Monitoring Results Data

- **Air Quality (24-hour & 1-hour TSP); and**
- **Noise**

Air Quality (24-hour TSP)

24-hour TSP Monitoring Data for A4															
DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m ³ /min)	AIR VOLUME (std m ³)	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m ³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
7-Jun-17	21150	11909.82	11933.94	1447.20	34	36	35.0	27.2	1006.6	1.38	2000	2.8409	2.8750	0.0341	17
8-Jun-17	21151	11933.94	11958.10	1449.60	36	38	37.0	27.1	1006.6	1.45	2096	2.8301	2.8588	0.0287	14
9-Jun-17	21153	11958.10	11982.29	1451.40	37	38	37.5	27.1	1006.7	1.46	2121	2.8257	2.8555	0.0298	14
10-Jun-17	21168	11982.29	12006.48	1451.40	34	35	34.5	27.3	1006.8	1.37	1983	2.8453	2.8702	0.0249	13
11-Jun-17	21028	12006.48	12030.11	1417.80	35	36	35.5	27.4	1006.8	1.40	1981	2.7810	2.8127	0.0317	16
12-Jun-17	21029	12030.11	12053.85	1424.40	36	38	37.0	27.6	1006.7	1.44	2058	2.7867	2.8175	0.0308	15
13-Jun-17	21169	12053.85	12077.42	1414.20	34	38	36.0	27.8	1006.5	1.41	1998	2.8411	2.8841	0.0430	22
14-Jun-17	21172	12077.42	12101.57	1449.00	37	39	38.0	27.9	1006.3	1.48	2138	2.8420	2.9042	0.0622	29
15-Jun-17	21157	12101.57	12125.21	1418.40	37	38	37.5	29	1005.1	1.46	2066	2.8428	2.8873	0.0445	22
16-Jun-17	21219	12125.21	12149.10	1433.40	35	38	36.5	28	1005.8	1.43	2046	2.8386	2.8841	0.0455	22
17-Jun-17	21174	12149.10	12173.25	1449.00	37	38	37.5	28.1	1005.7	1.46	2114	2.8245	2.8597	0.0352	17
18-Jun-17	21176	12173.25	12197.17	1435.20	38	39	38.5	27.8	1005.8	1.49	2140	2.8343	2.8816	0.0473	22
19-Jun-17	21159	12197.17	12220.67	1410.00	42	43	42.5	23.7	1011.1	1.63	2300	2.8551	2.8807	0.0256	11
20-Jun-17	21233	12220.67	12244.22	1413.00	35	35	35.0	23.9	1008.7	1.39	1963	2.8442	2.8876	0.0434	22

24-hour TSP Monitoring Data for A7															
DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m ³ /min)	AIR VOLUME (std m ³)	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-Hr TSP (µg/m ³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
7-Jun-17	21152	9264.31	9287.95	1418.40	36	38	37.0	27.2	1006.6	1.44	2044	2.8371	2.8504	0.0133	7
8-Jun-17	21149	9287.95	9311.80	1431.00	34	36	35.0	27.1	1006.6	1.37	1956	2.8408	2.8628	0.0220	11
9-Jun-17	21026	9311.80	9335.34	1412.40	38	39	38.5	27.1	1006.7	1.50	2114	2.7702	2.8016	0.0314	15
10-Jun-17	21167	9335.34	9358.96	1417.20	36	38	37.0	27.3	1006.8	1.44	2042	2.8550	2.8796	0.0246	12
11-Jun-17	21027	9358.96	9382.47	1410.60	34	38	36.0	27.4	1006.8	1.40	1980	2.7717	2.8024	0.0307	16
12-Jun-17	21037	9382.47	9406.55	1444.80	35	37	36.0	27.6	1006.7	1.40	2027	2.7744	2.8109	0.0365	18
13-Jun-17	21170	9406.55	9430.75	1452.00	36	38	37.0	27.8	1006.5	1.44	2090	2.8381	2.8817	0.0436	21
14-Jun-17	21171	9430.75	9454.73	1438.80	35	37	36.0	27.9	1006.3	1.40	2017	2.8323	2.8878	0.0555	28
15-Jun-17	21156	9454.13	9478.57	1466.40	35	39	37.0	29	1005.1	1.44	2105	2.8553	2.9048	0.0495	24
16-Jun-17	21218	9478.58	9502.87	1457.40	32	34	33.0	28	1005.8	1.29	1881	2.8226	2.8620	0.0394	21
17-Jun-17	21173	9502.87	9526.75	1432.80	34	35	34.5	28.1	1005.7	1.35	1928	2.8326	2.8693	0.0367	19
18-Jun-17	21175	9526.75	9550.70	1437.00	33	36	34.5	27.8	1005.8	1.35	1935	2.8260	2.8720	0.0460	24
19-Jun-17	21226	9550.70	9574.43	1423.80	35	36	35.5	23.7	1011	1.40	1987	2.8600	2.8918	0.0318	16
20-Jun-17	21233	9574.43	9598.15	1423.20	38	39	38.5	24.6	1008.7	1.50	2141	2.8474	2.8793	0.0319	15

Noise

Noise Measurement Results (dB) of N1																						
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	L _{eq30}	(#) Corrected L _{eq30min}	(#) Corrected L _{eq15min}
7-Jun-17	11:12	58.2	61.5	45.1	54.3	57.1	43.2	57.4	61.3	46.1	56.0	60.1	45.0	55.8	59.3	43.2	55.0	59.8	43.0	56.3	59.3	NA
8-Jun-17	13:51	54.8	58.0	49.0	60.1	61.0	50.0	57.7	61.0	50.5	55.7	58.5	50.5	55.4	58.0	48.5	56.4	59.0	49.5	57.1	60.1	NA
9-Jun-17	15:20	56.5	59.0	48.5	54.0	57.5	48.0	55.0	58.5	47.5	53.2	57.0	47.5	55.7	59.5	47.5	54.6	58.0	46.0	55.0	58.0	NA
10-Jun-17	14:00	57.6	60.0	50.0	56.3	59.0	48.5	55.0	58.0	47.0	54.9	57.0	48.0	53.7	57.0	47.5	56.4	60.0	49.0	55.8	58.8	NA
11-Jun-17*	10:28	58.9	61.0	49.5	57.3	60.0	49.0	55.4	58.5	47.5										NA	NA	60.4
12-Jun-17	10:33	54.5	57.5	46.0	54.1	57.5	45.0	54.6	57.5	46.0	61.9	67.5	49.0	66.9	67.5	59.5	59.7	62.0	52.0	61.4	64.4	NA
13-Jun-17	16:18	57.0	54.5	46.0	55.6	59.0	48.0	69.2	71.5	56.0	70.6	71.0	69.5	67.3	69.5	55.0	57.0	59.0	53.5	66.5	69.5	NA
14-Jun-17	13:22	57.5	60.0	48.5	55.8	58.5	48.0	55.6	59.5	47.5	56.2	60.0	48.5	55.6	59.5	46.5	53.9	57.0	47.0	55.9	58.9	NA
15-Jun-17	13:11	57.1	59.7	49.1	58.4	60.4	48.6	60.2	63.1	50.2	56.2	59.1	50.1	57.4	59.8	47.2	55.1	58.1	46.9	57.7	60.7	NA
16-Jun-17	11:12	58.2	61.5	45.1	54.3	57.1	43.2	57.4	61.3	46.1	56.0	60.1	45.0	55.8	59.3	43.2	55.0	59.8	43.0	61.1	64.1	NA
17-Jun-17		Cancelled																				
18-Jun-17*	10:21	65.8	68.8	48.9	60.8	68.3	47.6	56.1	58.5	47.5										NA	NA	65.6
19-Jun-17	13:06	60.7	62.5	56.0	66.0	67.1	62.5	63.4	65.5	55.0	54.2	57.0	50.0	52.6	55.0	49.0	54.2	58.5	47.5	61.3	64.3	NA
20-Jun-17	14:23	56.1	59.0	50.0	62.6	64.0	45.4	58.4	59.8	46.2	55.8	59.6	48.0	52.6	55.8	47.1	54.6	58.2	49.3	58.0	61.0	NA
21-Jun-17	15:13	61.8	59.8	46.0	56.3	59.2	47.4	58.0	60.9	50.6	55.0	58.5	47.9	56.7	59.4	48.8	55.7	59.9	47.0	57.9	60.9	NA
22-Jun-17	13:50	66.7	68.9	54.8	68.4	72.4	54.1	67.8	69.2	51.8	65.8	68.7	53.4	61.2	62.1	49.1	66.3	69.3	53.1	66.5	69.5	NA
23-Jun-17	15:38	64.6	67.5	50.5	61.6	62.7	51.1	63.6	66.5	50.8	61.3	64.3	50.5	62.1	64.7	48.6	63.4	67.3	50.2	62.9	65.9	NA

Remark:

(#) Sound level meter set at N1 is made free-field measurement, façade correction (+3dB(A)) has added according to acoustical principles and EPD guidelines;

(*) Public Holiday or Sunday; &

Baseline noise monitoring was cancelled on 17-Jun-17 due to the heavy rainstorm

Noise Measurement Results (dB) of N2a																					
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	L _{eq30}	L _{eq15min}
7-Jun-17	11:15	57.3	60.4	47.1	58.2	61.3	48.9	59.2	62.1	47.1	55.3	57.4	46.1	57.5	59.2	49.1	61.2	63.4	47.2	58.5	NA
8-Jun-17	13:18	62.1	63.5	49.0	57.6	61.0	49.5	55.7	58.5	48.5	57.1	60.5	47.5	59.7	62.5	49.5	59.0	63.0	48.5	59.0	NA
9-Jun-17	14:49	58.3	62.0	49.0	56.4	59.5	46.5	53.7	57.0	46.0	57.7	60.5	47.5	56.4	54.5	48.5	53.3	56.0	46.5	56.3	NA
10-Jun-17	13:27	57.5	60.5	50.0	59.0	62.0	49.5	62.0	64.0	50.0	58.8	62.5	51.0	57.6	61.0	50.0	60.1	64.0	48.5	59.5	NA
11-Jun-17*	10:11	57.7	61.5	49.0	56.5	60.0	48.5	57.7	61.5	48.5										NA	57.3
12-Jun-17	11:06	56.1	59.5	47.0	55.9	59.5	47.0	56.1	61.0	53.5	58.2	62.5	47.0	52.9	56.5	48.0	49.2	51.5	44.0	55.5	NA
13-Jun-17	15:47	56.2	59.0	49.0	58.2	60.0	48.0	56.2	59.0	47.0	56.7	60.0	46.5	53.8	57.0	46.5	53.1	56.0	47.0	56.0	NA
14-Jun-17	14:06	56.7	60.0	47.0	61.5	61.0	46.5	55.1	58.0	46.5	57.1	60.5	47.0	57.1	61.0	47.5	56.1	58.5	47.0	57.8	NA
15-Jun-17	13:50	59.1	62.4	48.2	57.6	59.5	49.9	58.4	60.1	48.6	56.0	58.2	47.1	57.5	59.9	48.6	58.0	60.1	45.1	57.9	NA
16-Jun-17	13:06	60.7	62.4	50.6	59.0	62.5	51.5	58.3	61.9	50.9	56.7	59.5	49.5	59.3	62.2	50.5	56.9	59.7	49.9	58.7	NA
17-Jun-17		Cancelled																			
18-Jun-17*	9:59	58.1	60.9	47.5	55.5	58.4	46.8	55.3	57.6	46.6										NA	56.5
19-Jun-17	13:41	57.0	60.7	47.7	55.1	58.2	45.2	52.4	55.7	48.7	56.2	59.2	46.9	55.1	53.2	47.2	52.0	54.7	45.2	55.0	NA
20-Jun-17	14:56	54.2	56.8	50.0	57.1	60.3	50.7	58.5	61.0	50.1	58.2	61.2	50.3	61.0	63.9	49.8	56.5	59.4	48.9	58.1	NA
21-Jun-17	14:40	56.7	60.6	48.1	56.5	59.0	48.2	56.6	60.2	48.6	57.3	61.0	48.2	57.3	61.2	48.1	57.5	59.9	46.9	57.0	NA
22-Jun-17	13:19	56.5	59.9	46.9	54.9	58.1	47.9	64.0	67.6	52.6	62.7	66.0	50.1	62.6	66.4	48.6	64.1	67.7	51.9	62.0	NA
23-Jun-17	15:07	59.8	63.4	48.8	58.3	61.4	46.5	59.8	63.3	46.1	60.5	63.6	49.7	61.4	64.9	49.2	59.0	62.3	48.5	59.9	NA

Remark:

(*) Public Holiday or Sunday; &

Baseline noise monitoring was cancelled on 17-Jun-17 due to the heavy rainstorm

Noise Measurement Results (dB) of N3a																						
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq ₃₀	(#) Corrected Leq _{30min}	(#) Corrected Leq _{15min}
7-Jun-17	13:00	50.9	52.4	46.8	52.8	57.8	47.1	51.5	53.0	49.6	52.4	52.4	47.5	50.9	53.7	46.1	50.4	53.8	44.4	51.6	54.6	NA
8-Jun-17	14:36	59.2	61.0	54.5	64.5	65.5	61.0	61.9	64.0	53.5	52.7	55.5	48.5	51.1	53.5	47.5	52.7	57.0	46.0	59.8	62.8	NA
9-Jun-17	14:10	50.6	53.5	43.0	49.7	52.5	45.0	53.1	58.0	44.0	49.6	52.0	43.0	53.3	57.0	45.5	49.6	52.5	44.0	51.3	54.3	NA
10-Jun-17	14:41	50.5	52.5	45.0	51.6	54.5	45.0	50.2	52.5	45.0	51.3	56.0	45.0	53.4	57.5	46.5	53.2	55.5	48.0	51.9	54.9	NA
11-Jun-17*	9:51	57.1	59.5	47.5	56.4	55.5	46.5	53.2	58.0	44.0										NA	NA	58.9
12-Jun-17	11:48	48.8	51.5	44.0	52.4	56.0	46.0	51.3	53.0	46.5	51.3	53.5	46.5	52.0	54.5	48.0	52.4	56.5	45.5	51.5	54.5	NA
13-Jun-17	15:11	50.8	53.5	46.5	49.6	52.0	45.0	54.4	57.0	47.0	49.7	52.5	45.0	53.0	56.0	48.0	50.7	53.0	47.0	51.7	54.7	NA
14-Jun-17	14:43	56.5	54.5	44.0	51.5	54.5	45.5	51.7	55.0	46.0	51.6	55.5	45.0	51.8	54.0	46.0	53.0	55.5	45.5	53.1	56.1	NA
15-Jun-17	14:01	55.4	58.2	47.2	57.9	59.4	48.6	58.6	60.2	48.4	54.2	56.8	49.4	56.1	57.5	47.1	59.2	61.3	51.2	57.3	60.3	NA
16-Jun-17	14:15	53.6	52.5	45.9	55.7	57.4	46.1	50.1	53.1	44.3	49.3	52.5	42.9	55.9	57.2	46.4	55.8	59.7	46.8	54.1	57.1	NA
17-Jun-17		Cancelled																				
18-Jun-17*	9:33	53.0	55.4	49.0	52.8	55.6	48.1	54.9	57.3	47.6										NA	NA	56.7
19-Jun-17	14:23	62.5	65.4	48.4	59.5	60.6	49.0	61.5	64.4	48.7	59.2	62.2	48.4	60.0	62.6	46.5	61.3	65.2	48.1	60.8	63.8	NA
20-Jun-17	15:31	53.7	56.6	47.3	55.5	57.7	52.1	50.1	52.3	46.2	53.3	55.4	47.8	50.2	52.8	45.6	51.2	53.7	47.8	52.8	55.8	NA
21-Jun-17	14:03	52.3	55.2	47.6	52.8	55.1	49.2	52.8	54.8	49.1	50.1	53.0	45.1	52.1	55.3	45.3	50.4	52.6	46.3	51.9	54.9	NA
22-Jun-17	12:43	53.5	57.1	47.4	52.1	55.1	46.9	57.8	60.5	51.2	53.3	56.0	47.4	52.6	55.8	47.6	53.7	56.2	47.4	54.3	57.3	NA
23-Jun-17	13:40	55.1	57.4	51.2	53.6	56.2	49.7	52.6	54.5	49.0	54.9	57.1	49.1	53.7	56.4	49.8	52.8	55.7	49.2	53.9	56.9	NA

Remark:

(#) Sound level meter set at N3a is made free-field measurement, façade correction (+3dB(A)) has added according to acoustical principles and EPD guidelines;

(*) Public Holiday or Sunday; &

Baseline noise monitoring was cancelled on 17-Jun-17 due to the heavy rainstorm

Noise Measurement Results (dB) of N4																					
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	L _{eq30}	L _{eq15min}
7-Jun-17	10:29	60.7	63.4	50.8	61.8	65.1	49.9	59.3	64.1	47.0	61.2	66.3	52.4	57.6	60.7	47.9	55.5	59.2	47.0	59.8	NA
8-Jun-17	15:11	56.0	59.5	46.5	57.8	62.0	47.0	64.6	66.0	46.5	55.2	59.0	46.0	55.4	58.5	47.0	57.9	59.5	46.5	59.4	NA
9-Jun-17	13:35	56.6	59.5	48.0	56.9	60.5	47.0	56.4	60.0	45.5	61.4	67.0	50.0	55.5	58.5	49.0	57.1	59.5	43.5	57.8	NA
10-Jun-17	15:14	56.9	60.0	48.0	55.8	59.0	47.0	59.5	62.0	48.5	58.7	63.0	49.5	57.8	61.0	50.0	59.2	61.5	54.0	58.2	NA
11-Jun-17*	9:33	66.7	67.5	64.5	62.7	64.0	60.0	58.8	61.0	55.5										NA	63.9
12-Jun-17	12:24	58.7	60.5	48.0	57.3	60.5	51.0	58.0	61.0	52.5	60.1	62.5	55.0	58.2	60.5	54.5	57.4	60.5	51.0	58.4	NA
13-Jun-17	14:39	58.9	63.0	50.0	57.2	61.0	50.0	57.0	60.0	50.0	58.3	61.0	49.5	57.7	61.5	48.5	56.0	60.0	48.0	57.6	NA
14-Jun-17	15:16	56.6	60.5	46.5	58.9	63.5	49.0	57.7	61.5	46.0	57.6	63.5	48.0	58.8	62.0	48.5	56.4	60.5	46.0	57.8	NA
15-Jun-17	14:42	56.2	59.4	50.4	60.3	62.4	51.4	58.6	62.4	51.9	57.1	59.9	51.9	56.8	59.4	49.9	57.8	60.4	50.9	58.0	NA
16-Jun-17	14:49	69.8	70.1	46.4	64.9	67.3	45.0	61.5	59.5	44.5	56.5	60.1	46.5	54.9	58.1	45.2	58.3	60.8	46.0	64.1	NA
17-Jun-17		Cancelled																			
18-Jun-17*	9:10	63.4	65.5	54.1	59.3	62.7	49.4	59.4	62.7	50.2										NA	61.2
19-Jun-17	15:01	58.7	62.3	47.7	57.2	60.3	45.4	58.7	62.2	45.0	59.4	62.5	48.6	60.3	63.8	48.1	57.9	61.2	47.4	58.8	NA
20-Jun-17	16:04	58.6	61.1	49.3	56.8	61.4	48.4	55.4	59.1	46.5	55.9	59.6	47.0	56.4	58.7	45.9	56.3	60.2	45.1	56.7	NA
21-Jun-17	13:28	61.4	62.6	59.6	61.8	63.0	60.4	61.8	63.0	59.9	61.1	62.8	58.7	61.7	63.2	56.7	62.4	65.8	54.0	61.7	NA
22-Jun-17	12:11	57.0	51.2	46.2	58.3	61.6	45.4	59.0	63.1	46.4	58.6	61.8	47.3	59.4	62.8	47.6	58.6	61.7	46.5	58.5	NA
23-Jun-17	14:14	58.6	61.9	47.0	57.7	61.5	48.3	58.6	62.4	48.4	57.4	50.4	46.3	58.6	61.8	47.3	58.9	61.5	48.6	58.3	NA

Remark:

(*) Public Holiday or Sunday; &

Baseline noise monitoring was cancelled on 17-Jun-17 due to the heavy rainstorm

Appendix J

Laboratory Data Report

- **Air Quality - 24-hour TSP**



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	<i>Laboratory</i>	: ALS Technichem (HK) Pty Ltd	<i>Page</i>	: 1 of 4
<i>Contact</i>	: MR BEN TAM	<i>Contact</i>	: Richard Fung	<i>Work Order</i>	: HK1724591
<i>Address</i>	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	<i>Amendment No.</i>	: 1
<i>E-mail</i>	: Bentam@fordbusiness.com	<i>E-mail</i>	: Richard.Fung@alsglobal.com	<i>Date received</i>	: 12-JUN-2017
<i>Telephone</i>	: +852 2959 6059	<i>Telephone</i>	: +852 2610 1044	<i>Date of issue</i>	: 04-AUG-2017
<i>Facsimile</i>	: +852 2959 6079	<i>Facsimile</i>	: +852 2610 2021	<i>No. of samples</i>	- Received : 22
<i>Project</i>	: ----	<i>Quote number</i>	: HK/5386/2016		- Analysed : 22
<i>Order number</i>	: ----				
<i>C-O-C number</i>	: ----				
<i>Site</i>	: ----				

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This document has been signed by those names that appear on this report and are the authorised signatories.

<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Fung Lim Chee, Richard	General Manager	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1724591_1 supersedes any previous reports with this reference. Testing period is from 12-JUN-2017 to 13-JUN-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1724591 :

- Sample(s) were picked up from client by ALS Technichem (HK) staff in ambient condition.
- Sample(s) analysed and reported on an as received basis.



Analytical Results

Sub-Matrix: FILTER (TSP/RSP)

			Compound	HK-TSP: Total Suspended Particulates	HK-TSP: Initial Weight	HK-TSP: Final Weight		
			LOR Unit	0.0010 g	0.0010 g	0.0010 g		
Client sample ID	Client sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties		
Not Relevant Information to the Project								
21150 874 A4	[07-JUN-2017]	HK1724591-016		0.0341	2.8409	2.8750		
21152 874 A7	[07-JUN-2017]	HK1724591-017		0.0133	2.8371	2.8504		
Not Relevant Information to the Project								



Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: AIR

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
Particulate Matters (QCLot: 4493853)											
HK-TSP: Total Suspended Particulates	----	0.0010	g	<0.0010	----	----	----	----	----	----	----
HK-TSP: Initial Weight	----	0.0010	g	2.7647	----	----	----	----	----	----	----
HK-TSP: Final Weight	----	0.0010	g	2.7646	----	----	----	----	----	----	----
Particulate Matters (QCLot: 4493854)											
HK-TSP: Total Suspended Particulates	----	0.0010	g	<0.0010	----	----	----	----	----	----	----
HK-TSP: Initial Weight	----	0.0010	g	2.7647	----	----	----	----	----	----	----
HK-TSP: Final Weight	----	0.0010	g	2.7646	----	----	----	----	----	----	----

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

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	<i>Laboratory</i>	: ALS Technichem (HK) Pty Ltd	<i>Page</i>	: 1 of 4
<i>Contact</i>	: MR BEN TAM	<i>Contact</i>	: Richard Fung	<i>Work Order</i>	: HK1725581
<i>Address</i>	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	<i>Amendment No.</i>	: 1
<i>E-mail</i>	: Bentam@fordbusiness.com	<i>E-mail</i>	: Richard.Fung@alsglobal.com	<i>Date received</i>	: 16-JUN-2017
<i>Telephone</i>	: +852 2959 6059	<i>Telephone</i>	: +852 2610 1044	<i>Date of issue</i>	: 04-AUG-2017
<i>Facsimile</i>	: +852 2959 6079	<i>Facsimile</i>	: +852 2610 2021	<i>No. of samples</i>	- Received : 14
<i>Project</i>	: TCS00874_17	<i>Quote number</i>	: HK/5386/2016		- Analysed : 14
<i>Order number</i>	: ----				
<i>C-O-C number</i>	: ----				
<i>Site</i>	: ----				

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<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Fung Lim Chee, Richard	General Manager	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1725581_1 supersedes any previous reports with this reference. Testing period is from 16-JUN-2017 to 19-JUN-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1725581 :

- Sample(s) were picked up from client by ALS Technichem (HK) staff in ambient condition.
- Sample(s) analysed and reported on an as received basis.



Analytical Results

Sub-Matrix: FILTER (TSP/RSP)

			<i>Compound</i>	HK-TSP: Total Suspended Particulates	HK-TSP: Initial Weight	HK-TSP: Final Weight		
			<i>LOR Unit</i>	0.0010 g	0.0010 g	0.0010 g		
<i>Client sample ID</i>	<i>Client sampling date / time</i>	<i>Laboratory sample ID</i>		EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties		
21151 874 A4	[08-JUN-2017]	HK1725581-001		0.0287	2.8301	2.8588		
21153 874 A4	[09-JUN-2017]	HK1725581-002		0.0298	2.8257	2.8555		
21168 874 A4	[10-JUN-2017]	HK1725581-003		0.0249	2.8453	2.8702		
21028 874 A4	[11-JUN-2017]	HK1725581-004		0.0317	2.7810	2.8127		
21029 874 A4	[12-JUN-2017]	HK1725581-005		0.0308	2.7867	2.8175		
21169 874 A4	[13-JUN-2017]	HK1725581-006		0.0430	2.8411	2.8841		
21149 874 A7	[08-JUN-2017]	HK1725581-007		0.0220	2.8408	2.8628		
21026 874 A7	[09-JUN-2017]	HK1725581-008		0.0314	2.7702	2.8016		
21167 874 A7	[10-JUN-2017]	HK1725581-009		0.0246	2.8550	2.8796		
21027 874 A7	[11-JUN-2017]	HK1725581-010		0.0307	2.7717	2.8024		
21037 874 A7	[12-JUN-2017]	HK1725581-011		0.0365	2.7744	2.8109		
21170 874 A7	[13-JUN-2017]	HK1725581-012		0.0436	2.8381	2.8817		
21172 874 A4	[14-JUN-2017]	HK1725581-013		0.0622	2.8420	2.9042		
21171 874 A7	[14-JUN-2017]	HK1725581-014		0.0555	2.8323	2.8878		



Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: AIR

Method: Compound		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
		CAS Number	LOR	Unit	Result	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						Concentration	LCS	DCS	Low	High	Value	Control Limit
Particulate Matters (QCLot: 4495694)												
HK-TSP: Total Suspended Particulates		----	0.0010	g	<0.0010	----	----	----	----	----	----	----
HK-TSP: Initial Weight		----	0.0010	g	2.7647	----	----	----	----	----	----	----
HK-TSP: Final Weight		----	0.0010	g	2.7644	----	----	----	----	----	----	----

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

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	<i>Laboratory</i>	: ALS Technichem (HK) Pty Ltd	<i>Page</i>	: 1 of 4
<i>Contact</i>	: MR BEN TAM	<i>Contact</i>	: Richard Fung	<i>Work Order</i>	: HK1726186
<i>Address</i>	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	<i>Amendment No.</i>	: 1
<i>E-mail</i>	: Bentam@fordbusiness.com	<i>E-mail</i>	: Richard.Fung@alsglobal.com	<i>Date received</i>	: 21-JUN-2017
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<i>Facsimile</i>	: +852 2959 6079	<i>Facsimile</i>	: +852 2610 2021	<i>No. of samples</i>	- Received : 8
<i>Project</i>	: TCS00874_17	<i>Quote number</i>	: HK/5386/2016		- Analysed : 8
<i>Order number</i>	: ----				
<i>C-O-C number</i>	: ----				
<i>Site</i>	: ----				

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<u>Signatory</u>	<u>Position</u>	<u>Authorised results for:</u>
Fung Lim Chee, Richard	General Manager	Inorganics



Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1726186_1 supersedes any previous reports with this reference. Testing period is from 21-JUN-2017 to 23-JUN-2017. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific Comments for Work Order HK1726186 :

- Sample(s) were picked up from client by ALS Technichem (HK) staff in ambient condition.
- Sample(s) analysed and reported on an as received basis.



Analytical Results

Sub-Matrix: FILTER (TSP/RSP)

			Compound	HK-TSP: Total Suspended Particulates	HK-TSP: Initial Weight	HK-TSP: Final Weight		
			LOR Unit	0.0010 g	0.0010 g	0.0010 g		
Client sample ID	Client sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties		
21157 874 A4	[15-JUN-2017]	HK1726186-001		0.0445	2.8428	2.8873		
21219 874 A4	[16-JUN-2017]	HK1726186-002		0.0455	2.8386	2.8841		
21174 874 A4	[17-JUN-2017]	HK1726186-003		0.0352	2.8245	2.8597		
21176 874 A4	[18-JUN-2017]	HK1726186-004		0.0473	2.8343	2.8816		
21156 874 A7	[15-JUN-2017]	HK1726186-005		0.0495	2.8553	2.9048		
21218 864 A7	[16-JUN-2017]	HK1726186-006		0.0394	2.8226	2.8620		
21173 874 A7	[17-JUN-2017]	HK1726186-007		0.0367	2.8326	2.8693		
21175 874 A7	[18-JUN-2017]	HK1726186-008		0.0460	2.8260	2.8720		



Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: AIR

		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limit
Particulate Matters (QCLot: 4497727)											
HK-TSP: Total Suspended Particulates	----	0.0010	g	<0.0010	----	----	----	----	----	----	----
HK-TSP: Initial Weight	----	0.0010	g	2.7642	----	----	----	----	----	----	----
HK-TSP: Final Weight	----	0.0010	g	2.7641	----	----	----	----	----	----	----

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

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 4
Contact	: MR BEN TAM	Contact	: Richard Fung	Work Order	: HK1726572
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	Amendment	: 1
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 23-JUN-2017
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044	Issue Date	: 07-AUG-2017
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TCS00874_17	Quote number	: HK/5386/2016	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

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This document has been signed by those names that appear on this report and are the authorised signatories.

<i>Signatories</i>	<i>Position</i>	<i>Authorised results for</i>
Fung Lim Chee, Richard	General Manager	Inorganics



General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Testing period is from 23-JUN-2017 to 26-JUN-2017.

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

Specific Comments for Work Order: HK1726572

Sample(s) were picked up from client by ALS Technichem (HK) staff in ambient condition.

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



Analytical Results

Sub-Matrix: FILTER (TSP/RSP)

				Client sample ID				
				21159 A4	21233 A4	21226 874 A7	21234 874 A7	
				[19-JUN-2017]	[20-JUN-2017]	[19-JUN-2017]	[20-JUN-2017]	
Client sampling date / time								
Compound	CAS Number	LOR	Unit	HK1726572-001	HK1726572-002	HK1726572-003	HK1726572-004	
EA/ED: Physical and Aggregate Properties								
HK-TSP: Total Suspended Particulates	----	0.0010	g	0.0256	0.0434	0.0318	0.0319	
HK-TSP: Initial Weight	----	0.0010	g	2.8551	2.8442	2.8600	2.8474	
HK-TSP: Final Weight	----	0.0010	g	2.8807	2.8876	2.8918	2.8793	



Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

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

Matrix: AIR		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
Method: Compound	CAS Number					LCS	DCS	Low	High	Value	Control Limit
Particulate Matters (QC Lot: 4498369)											
HK-TSP: Total Suspended Particulates	----	0.0010	g	<0.0010	----	----	----	----	----	----	----
HK-TSP: Initial Weight	----	0.0010	g	2.7645	----	----	----	----	----	----	----
HK-TSP: Final Weight	----	0.0010	g	2.7640	----	----	----	----	----	----	----

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

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.