

JOB NO.: TCS00757/15

DSD CONTRACT NO. DC/2013/09 – Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road

4th Monthly Environmental Monitoring and Audit (EM&A) Report – January 2016

PREPARED FOR TSUN YIP WATERWORKS CONSTRUCTION CO LTD

Date	Reference No.	Prepared By	Certified By
15 February 2016	TCS00757/15/600/R0023	Att	An

Martin Li Tam Tak Wing (Environmental Consultant) (Environmental Team Leader)

Version	Date	Remarks
1	5 February 2016	First Submission
2	15 February 2016	Amended against the IEC's comments on 15 February 2016



Drainage Services Department 44/F., Revenue Tower 5 Gloucester Road Wan Chai Hong Kong Your reference:

Date:

Our reference: HKDSD201/50/103428

16 February 2016

Attention: Mr Michael Leung

BY EMAIL & POST (email: hkleung@dsd.gov.hk)

Agreement No.: SP 01/2015 Environmental Monitoring and Audit for Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A Monthly EM&A Report for January 2016

We refer to emails of 5, 15 and 16 February 2016 attaching a Monthly EM&A Report for January 2016 for the captioned project prepared by the Environmental Team (ET) of the captioned project.

We have no further comment and hereby verify the Monthly EM&A Report in accordance with Clause 3.3 of the Environmental Permit no. FEP-01/474/2013.

Please do not hesitate to contact the undersigned or our Mr Garret Lam at 2618 2836 should you have any queries.

Yours faithfully ANEWR CONSULTING LIMITED

Independent Environmental Checker

LYMA/LCYG/csym

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EXECUTIVE SUMMARY

ES.01 This is the 4th Monthly Environmental Monitoring and Audit Report covering the period from 1 to 31 January 2016 (the Reporting Period).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02 Environmental monitoring activities under the EM&A program in this Reporting Period are summarized in the following table.

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	36
All Quality	24-hour TSP	10
Construction Noise	L _{Aeq(30min)} Daytime	10
Inspection / Audit	ET Regular Environmental Site Inspection	4
Inspection / Audit	IEC Monthly Environmental Site Audit	1

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.03 No exceedance of air quality and construction noise monitoring were recorded in this Reporting Period. No Notification of Exceedance (NOE) was, therefore, issued. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental	Monitoring	Action	ction Limit –		Event & Action		
Issues	Parameters	Level	Level	NOE Issued	Investigation	Corrective Actions	
A in Quality	1-hour TSP	0	0	0	-	-	
Air Quality	24-hour TSP	0	0	0	-	-	
Construction Noise	L _{Aeq(30min)}	0	0	0	-	-	

Note: NOE – Notification of Exceedance

ENVIRONMENTAL COMPLAINT

ES.04 No environmental complaint was recorded or received in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

Departing Deried	Environmental Complaint Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 to 31 January 2016	0	0	NA	

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.05 No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables.

Departing Devied	Environmental Summons Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 to 31 January 2016	0	0	NA	

Departing Devied	Environmental Prosecution Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 to 31 January 2016	0	0	NA	

REPORTING CHANGE

ES.06 There were no reporting changes in the Reporting Period.

SITE INSPECTION BY EXTERNAL PARTIES

ES.07 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor was carried out on 5, 12, 19 and 27 January 2016. Furthermore, IEC attend site inspection was on 27 January 2016. No non-compliance was noted.



FUTURE KEY ISSUES

- ES.08 Bringing outbreaks of heavy rain, the Observatory recorded total rainfall of 266.9mm in this reporting period, which is more than ten times the January normal. To consider exceptional weather situation may be ongoing in coming month; mitigation measures to avoid ingress of surface runoff into nearby water bodies from the construction site should be properly implemented.
- ES.09 Furthermore, air quality mitigation measures should be paid attention to provide for suppression of construction dust including wheel wash facilities, watering of haul roads and covering of dusty materials with tarpaulin sheet, etc. Moreover, the contractor should be to prevent mosquito breeding on site.



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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 The existing Shek Wu Hui Sewage Treatment Works (hereafter referred as "SWHSTW") with secondary level treatment to sewage collected from Sheung Shui, Fanling and adjacent areas is operated and maintained by Drainage Services Department (hereafter referred as "DSD"). Based on the preliminary design of the Project, the scope of works for the Project comprises the following major components:
 - (a) Demolition of the existing Inlet Works and construction of the new Inlet Works, including inlet pumping station, screening and degritting facilities;
 - (b) Demolition of 4 existing circular Primary Sedimentation Tanks (PSTs) and construction of new rectangular PSTs;
 - (c) Construction of new pre-membrane screens;
 - (d) Modification of existing Bioreactor (BR) 1 and 2 to suit the proposed membrane bioreactor (MBR) process;
 - (e) Construction of a new standby Bioreactor;
 - (f) Demolition of 4 existing circular Final Sedimentation Tanks (FSTs) and construction of new Membrane Tanks and Membrane Facility Building;
 - (g) Reconstruction of sludge treatment facilities, including thickening, anaerobic digestion, biogas handling, sludge holding and dewatering facilities; and
 - (h) Other ancillary works.
- 1.1.2 According to the Project implementation programme, the construction of most of the above proposed works (hereinafter referred to as "Main Works") will be commencement in 2016 and completion in 2022. Furthermore, Advance Works as part of the above proposed works will carry out before Main Works commencement. The Advance Works will be commencement in third quarter of 2015 and comprise the following major components:
 - (a) Modification of BR1, through upgrading of electrical and mechanical (E&M) equipment and minor civil works, to suit the proposed MBR process;
 - (b) Demolition of FSTs 1 and 2 and construction of Membrane Tanks and the first phase of Membrane Facility Building; and
 - (c) Tree felling and transplanting, to facilitate timely construction of the new Inlet Works during the implementation of Main Works (under review).
- 1.1.3 The general layout of Advance Works and Main Works of SWHSTW Further Expansion Phase 1A show in *Appendix A*. Subsequent to Further Expansion Phase 1A, the SWHSTW will be further expanded under separate projects (namely Further Expansion Phase 1B and Phase 2).
- 1.1.4 In July 2015, Tsun Yip Waterworks Construction Co Ltd (hereinafter referred as "Tsun Yip" or "the Contractor") has awarded the DSD Contract No. DC/2013/09 Advance Works for Shek Wu Hui Sewage Treatment Works Further Expansion Phase 1A and Sewerage Works at Ping Che Road (hereinafter referred as "the Contract"). The Contract is the Advance Works for Shek Wu Hui Sewage Treatment Works as part of SWHSTW Further Expansion which is a Designated Project under Environmental Permit number FEP-01/474/2013 (hereinafter referred as "the FEP-01/474/2013" or "the EP").
- 1.1.5 The works under the Contract at Shek Wu Hui Sewage Treatment Works will be included the conversion of one existing bioreactor and two existing final sedimentation tanks into one membrane bioreactor. Moreover, construction of about 1.5 kilometres length of sewers at Ping Che Road and other ancillary works will be undertaken. The works of Contract are scheduled to be conduct about 25 months. Layout plan of the Contract is shown in *Appendix B*.
- 1.1.6 Action-United Environmental Services & Consulting (hereinafter referred as "AUES") was appointed by the Contractor as an Environmental Team (hereinafter referred as "the ET") to

implement the relevant EM&A program in accordance with the Updated EM&A Manual, as well as the associated duties.

- 1.1.7 As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Hence baseline monitoring including air quality and noise were carried out between 28 August 2015 and 12 September 2015 at the proposed locations before construction work commencement. The "Baseline Monitoring Report (TCS00757/15/600/R0014 Version 2)" had submitted to EPD by the DSD before commencement of major construction works and approved by the IEC on 24 September 2015. Further to Tsun Yip's instructions, the EM&A program was commenced on 1 October 2015 and the monitoring schedule had been issued to relevant parties on 29 September 2015.
- 1.1.8 This is the 4th Monthly EM&A Report presenting the monitoring results and inspection findings for the reporting period from 1 to 31 January 2016.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1	INTRODUCTION
SECTION 2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
SECTION 3	SUMMARY OF MONITORING REQUIREMENTS
SECTION 4	IMPACT MONITORING RESULTS
SECTION 5	WASTE MANAGEMENT
SECTION 6	SITE INSPECTIONS
Section 7	ENVIRONMENTAL COMPLAINTS AND NON-COMPLIANCE
SECTION 8	IMPLEMENTATION STATUES OF MITIGATION MEASURES
Section 9	Impact Forecast
Section 10	CONCLUSIONS AND RECOMMENDATION

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.1.1 Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in *Appendix C*.

2.2 CONSTRUCTION PROGRESS

- 2.1.2 Master Construction Program of the Contract is enclosed in *Appendix D* and the major construction activities undertaken in this Reporting Month are illustrated in *Appendix B* and listed below:-
 - Inspection Pit Works
 - Demolition of Final Sedimentation Tank No.1
 - Excavation of trench and pipe laying for DN1400 BR2 Effluent Pipe
 - Temporary backfilling of void after demolition of Final Sedimentation Tank
 - Pipe Laying (DN150 Realigned SAS Pipe)
 - Installation of Sheet Piles for final sedimentation tank
 - Drilling for Ground Investigation

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.1.3 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this Reporting Period is presented in *Table 2-1*.

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Notified EPD on 30 July 2015
2	Chemical waste Producer Registration	Application date: 19/08/2015
	(WPN: 5213-624-T3148-04)	Date approved: 18/9/2015
3	Water Pollution Control Ordinance	Application date: 19/08/2015
	(Discharge License: WT00022503-2015)	Date approved: 18/9/2015
4	Billing Account for Disposal of Construction Waste	Granted on 02/09/2015
	(Account Number: 7022898)	

Table 2-1 Status of Environmental Licenses and Permits

- 2.1.4 In accordance with the Further EP No. FEP-01/474/2013 Condition 2.3, an Updated Environmental Monitoring and Audit (EM&A) Manual (TCS00757/15/600/R0012v3) which certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC), has submitted to DSD and EPD endorsement.
- 2.1.5 Baseline Monitoring Report (TCS00757/15/600/R0014v2) as certified by the ETL and verified by the IEC was submitted to the EPD on 24 September 2015 for endorsement.

3 SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

- 3.1.1 The Environmental Monitoring and Audit requirements are set out in the Updated EM&A manual. Environmental issues such as air quality and construction noise were identified as the key issues during the construction phase of Advance Works of the Project.
- 3.1.2 A summary of EM&A programme of construction phase are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

- 3.2.1 The EM&A programme of construction phase shall cover the following environmental issues:Air quality; and
 - Construction noise
- 3.2.2 A summary of the monitoring parameters is presented in *Table 3-1* below

Environmental Issue	Parameters		
Air Quality	 1-hour TSP by Real-Time Portable Dust Meter; and 24-hour TSP by High Volume Air Sampler. 		
Construction Noise	 Leq_(30min) during normal working hours; and Leq_(15min) for the construction works undertaken in Restricted Hours, if necessary. 		

Table 3-1Summary of EM&A Requirements

3.3 MONITORING LOCATIONS

3.3.1 According to the *Updated EM&A Manual of* Advance Works which submitted to EPD on **25** *August 2015*, three air quality sensitive receivers and two construction noise sensitive receivers are proposed to monitor the environmental performance of the Contract. The proposed monitoring locations are summarized in *Table 3-2* and shown in *Appendix E*.

 Table 3-2
 Proposed Air Quality and Construction Noise Monitoring Locations

Aspect	Station ID	Location	Parameter
	AM1	No. 31 Wai Loi Tsuen	1- hour and 24- hour TSP
Air Quality	AM2	Fu Tei Au	1- hour
	AM2a	RE's Site Office	24- hour TSP
Noise	NM1	No. 31 Wai Loi Tsuen	L _{eq(30min)}
INDISC	NM2	Fu Tei Au	L _{eq(30min)}

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 The requirements of baseline monitoring are stipulated in *Sections 2.1.7 and 3.2.5* of the Updated *EM&A Manual* and presented as follows.

Air Quality Monitoring

- 3.4.2 Monitoring frequency for air quality baseline monitoring is as follows:
 - 1-Hour TSP 3 sets of 1-hour TSP monitoring shall be carried out once in every six days.
 - 24-Hour TSP 24-hour shall be carried out once in every six days.

Noise Monitoring

3.4.3 Construction noise monitoring should be carried out at the designated monitoring station when there are Project-related construction activities being undertaken within a radius of 300m from the monitoring stations. The monitoring frequency should depend on the scale of the construction activities. An initial guide on the monitoring is to obtain one set of 30-minute



measurement at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.

3.4.4 If construction works are extended to include works during the hours of 1900 - 0700, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under NCO shall be obtained by the Contractor.

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

- 3.5.1 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 approve.
- 3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.
- 3.5.3 All equipment as used air quality monitoring is listed in *Table 3-3*.

Tuble 0 0 Ann Quanty Fromtoring Equipment						
Equipment	Model					
24-Hr TSP						
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170					
Calibration Kit TISCH Model TE-5028A						
	1-Hour TSP					
Portable Dust Meter	Sibata LD-3 Laser Dust monitor Particle Mass Profiler &					
Foltable Dust Meter	Counter					

Table 3-3Air Quality Monitoring Equipment

Wind Data Monitoring Equipment

3.5.4 According to the Updated EM&A Manual Sections 2.1.3.8, alternative methods to obtain representative wind data was proposed by the ET. Meteorological information as extracted from "the Hong Kong Observatory Ta Kwu Ling Station" is alternative method to obtain representative wind data. For Ta Kwu Ling Station, it is located nearby the Project site. Moreover, this station is situated the sea level above 15mPD. The station's wind data monitoring equipment is set above the existing ground ten meters in compliance with the general setting up requirement. Furthermore, this station can also provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In Hong Kong of a lot development projects, weather information extracted from Hong Kong Observatory is a common alternative method if installation of weather station is not allowed.

<u>Noise Monitoring</u>

3.5.5 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 m s⁻¹.

3.5.6 Noise monitoring equipment to be used for baseline monitoring is listed in *Table 3-4*.

Table 3-4Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-14
Calibrator	Rion NC-73 / B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

3.5.7 Sound level meters listed above comply with the International Electrotechnical Commission



Publications 651: 1979 (Type 1) and *804: 1985 (Type 1)* specifications, as recommended in TM issued under the NCO. The acoustic calibrator and sound level meter to be used in the baseline monitoring will be calibrated yearly.

3.6 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.6.1 According to the baseline monitoring results and the Updating Environmental Monitoring and Audit Manual stipulation, the air quality and construction noise criteria were set up, namely Action and Limit levels are listed in *Tables 3-5 & 3-6* as below.

Table 3-5Action and Limit Levels for 24-Hr TSP and 1-Hr TSP Air Quality, µg m-3

Monitoring Stations	Action Le	evel (µg/m ³)	Limit Level (µg/m ³)		
Monitoring Stations	1-hour	24-hour	1-hour	24-hour	
AM1	286	147	500	260	
AM2	276	NA	500	NA	
AM2a	NA	155	NA	260	

Table 3-6Action and Limit Levels for Construction Noise

Monitoring Stations	Action Level	Limit Level in dB(A)				
Time Period: 0700-1900 hours on normal weekdays						
NM1 and NM2	> 75* dB(A)					

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

3.7 EVENT ACTION PLAN

3.7.1 If non-compliance or exceedance of the Action/Limit Levels is occurred, actions shall be taken in accordance with the Event Action Plan in *Appendix F*.

4 MONITORING METHDOLOGY

4.1 **AIR QUALITY MONITORING**

Monitoring Location

4.1.1 The detailed information of air quality monitoring stations referred to *Table 3-2* and the graphical plot of monitoring locations shown in *Appendix E* in this report.

Monitoring Equipment

4.1.2 All the monitoring equipment to be used in the EM&A program as listed in *Table 3-3* has been agreed with the IEC.

Monitoring Procedures

<u>1-hour TSP</u>

- 4.1.3 The 1-hour TSP monitor, a Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter was used for baseline monitoring, which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90⁰ light scattering. The 1-hour TSP monitor consisted 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.
- 4.1.4 The 1-hour TSP meter used is within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter was follow manufacturer's Operation and Service Manual. A valid calibration certificate is attached in *Appendix G*.

24-hour TSP

- 4.1.5 The equipment used for 24-hour TSP measurement is a Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with EPA Code of Federal Regulation, Appendix B to Part 50. The High Volume Air Sampler (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
- 4.1.6 Prior of 24-hour TSP monitoring, the HVS was calibrated in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5028A). The 24-hour TSP Monitoring using the HVS was also processed in accordance with the manufacturer's Operations Manual. A valid calibration certificate of the calibration kit with the certificate of HVS calibrated is attached in *Appendix G*.
- 4.1.7 24-hour TSP was collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keeps all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.

4.2 CONSTRUCTION NOISE MONITORING

Monitoring Location



4.2.1 The detailed information of construction noise monitoring stations referred to *Table 3-2* and the graphical plot of monitoring locations shown in *Appendix E* in this report.

Monitoring Equipment

- 4.2.2 All the monitoring equipment to be used in the EM&A program as listed in *Table 3-3* has been agreed with the IEC.
- 4.2.3 Sound level meter listed in *Table 3-4* is complied with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as recommended in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO). A valid of calibration certificates including sound level meter and an acoustic were shown in *Appendix G*.

Monitoring Procedures

- 4.2.4 The noise measurement was performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq(30min) in six consecutive Leq(5 min) measurements were used as the monitoring parameter throughout the baseline monitoring period.
- 4.2.5 During the monitoring, the sound level meter was mounted on a tripod at a height of about 1.2 m and placed at the monitoring locations and oriented such that the microphone was pointed to the site with the microphone facing perpendicular to the line of sight. The windshield was fitted for the measurement. For construction noise monitoring, all monitoring stations were conducted 1 m from the exterior of the building façade.
- 4.2.6 Prior noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The calibration level from before and after the noise measurement agrees to within 1.0dB.
- 4.2.7 During the noise measurement, a portable wind speed meter was used to check wind speed (m/s). For baseline noise monitoring, no wind speed was exceeding 5m/s or gusts exceeding 10m/s. Also, noise measurement in time was no fog and rain.

4.3 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 4.3.1 The monitoring data were handled by the ET's in-house data recording and management system.
- 4.3.2 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.
- 4.3.3 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.



5 IMPACT MONITORING RESULTS

5.1 GENERAL

5.1.1 Air quality and construction noise monitoring scheduled in the Reporting Period is enclosed in *Appendix H* and the monitoring results are shown in the following sub-sections.

5.2 **RESULTS OF AIR QUALITY MONITORING**

5.2.1 The results for 24-hour and 1-hour TSP are summarized in *Tables 5-1 to 5-2*. The 24-hour TSP data are shown in *Appendix I* and graph plots including 1-hour TSP and 24-hour TSP are shown in *Appendix J*.

	AM1			AM2				
DATE	Start Time	1 st Meas.	2 nd Meas.	3 rd Meas.	Start Time	1 st Meas.	2 nd Meas.	3 rd Meas.
2-Jan-16	9:40	63	70	77	9:23	81	79	69
7-Jan-16	13:19	52	62	74	10:01	60	66	81
13-Jan-16	9:18	87	102	117	13:22	137	121	108
19-Jan-16	10:01	88	106	86	9:57	71	86	77
25-Jan-16	9:40	35	37	43	13:36	42	59	51
30-Jan-16	9:57	119	95	89	10:03	111	87	81
Average (Range)	78 (35 - 119)				-	32 137)		

Table 5-1Summary of 1-Hour TSP Monitoring Results, $\mu g/m^3$

Table 5-2Summary of 24-hour TSP Monitoring Results, $\mu g/m^3$

Date	AM1	AM2a
5-Jan-16	32 *	25
11-Jan-16	14	28
16-Jan-16	17	51
22-Jan-16	12	24
28-Jan-16	30	51
Average	18	36
(Range)	(14 – 30)	(24 – 51)

Remarks: (*) Due to electricity supply failure incident, 24-Hour TSP sampling was only run 16.61 hours

- 5.2.2 As shown in *Tables 5-1* and *5-2*, the 24-hour and 1-hour TSP monitoring results were below the Action/ Limit Level. No Notification of Exceedances (NOE) of air quality criteria or corrective action was therefore required.
- 5.2.3 The meteorological data during the Reporting Month is summarized in *Appendix K*.
- 5.2.4 Construction dust assessment for short term impact was undertaken in the EIA study. In view of the current contract, monitoring locations AM1 and AM2a are not an ASR during the EIA study and therefore no prediction was made. For 1-hour TSP monitoring location AM2, it is very near the assessment point FLN-E13 in the EIA. According to the EIA prediction, the predicted result for Tier 2 in assessment year 2018 is 91.0µg/m³ for 1-hour TSP and the cumulative 1-hour concentrations would comply with the respective criteria and adverse short-term construction dust impact is not anticipated. It is concluded that the overall 1-hour TSP monitoring result in the Reporting Period is comparable to the EIA prediction.

5.3 **RESULTS OF CONSTRUCTION NOISE MONITORING**

5.3.1 In the Reporting Period, a total of **10** event noise measurements were carried out at the two designated locations. During construction noise monitoring, the sound level meter was set in 1m from the exterior of the building façade. Therefore, no façade correction (+3dB(A)) is



added according to acoustical principles and EPD guidelines. The construction noise monitoring results at the designated locations are summarized in *Table 5-3*. The detailed noise monitoring data are presented in *Appendix I* and the relevant graphical plots are shown in *Appendix J*.

	NM1		NM2	
Date	Time of Measurement	(L _{eq30min})	Time of Measurement	(L _{eq30min})
7-Jan-16	13:28	55	10:39	51
13-Jan-16	9:45	57	13:29	52
19-Jan-16	10:45	51	11:25	50
25-Jan-16	9:46	53	13:43	52
30-Jan-16	10:13	54	11:04	51
Limit Level	75 dB(A)			

Table 5-3Summary of Construction Noise Monitoring Results, dB(A)

5.3.2 As shown in *Table 5-3*, the noise level measured at the designated monitoring locations are well below 75dB(A). Furthermore, there was no noise complaints (Action Level exceedance) received by the RE, Contractors or DSD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.



6 WASTE MANAGEMENT

6.1 GENERAL WASTE MANAGEMENT

6.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

6.2 **RECORDS OF WASTE QUANTITIES**

- 6.2.1 All types of waste arising from the construction work are classified into the following:
 - Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil.
- 6.2.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 6-1* and *6-2* and the Monthly Summary Waste Flow Table is shown in *Appendix L*. Whenever possible, materials were reused on-site as far as practicable.

 Table 6-1
 Summary of Quantities of Inert C&D Materials for the Project

		Disposal			
Type of Waste	Prior	Reporting	Cumulated	Location	
	Months	Month	Cumulated	Location	
C&D Materials (Inert) (in '000m ³)	2.454	0.335	2.789		
Reused in this Project (Inert) (in '000 m ³)	0.002	0.060	0.062		
Reused in other Projects (Inert) (in '000 m ³)	0	0	0		
Disposal as Public Fill (Inert) (in '000 m ³)	1.417	0.164	1.581	Tuen Mun 38	

Table 6-2 Summary of Quantities of C&D Wastes for the Project

		Disposal		
Type of Waste	Prior Months	Reporting Month	Cumulated	Disposal Location
Metals ('000kg)	113.51	0	113.51	Licensed collector
Paper / Cardboard Packing ('000kg)	0	0	0	
Plastics ('000kg)	0	0	0	
Chemical Wastes ('000kg)	0	0	0	
General Refuses ('000m ³)	0.04	0	0.04	NENT

7 SITE INSPECTION

7.1 **REQUIREMENTS**

7.1.1 According to the Updated EM&A Manual, the environmental site inspection shall be formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

7.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

- 7.2.1 In the Reporting Period, joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor has been carried out on **5**, **12**, **19 and 27 January 2016**. Furthermore, IEC attend site inspection was on **27 January 2016**. No non-compliance was noted.
- 7.2.2 Observations for the site inspections and monthly audit within this Reporting Month are summarized in *Table 7-1*.

Date	Findings / Deficiencies	Follow-Up Status
28 Dec 2015 (last Reporting Period)	• Dark smoke was observed from the excavator, the Contractor should conduct regular checking and maintenance to prevent air quality impact.	• Dark smoke from the excavator was not observed during site inspection on 5 January 2016.
5 Jan 2016	• The Contractor should provide a stopper for the drip tray under the generator to prevent land contamination.	• Stopper was provided for the drip tray under the generator.
12 Jan 2016	• Stagnant water was observed at drip tray under the generator. The Contractor should clear the stagnant water for mosiquito breeding prevention.	• Stagnant water was removed at drip tray under the generator.
19 Jan 2016	• The contractor was reminded to have maintenance on the mobile crane to avoid oil leakage.	• Not required for reminder.
27 Jan 2016	• The Contractor was reminded to remove the stagnant water on site after rainy days.	• Not required for reminder.

Table 7-1Site Observations

7.2.3 In the Reporting Period, the overall environmental performance was considered satisfactory.

8 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

8.1 Environmental Complaint, Summons and Prosecution

8.1.1 No environmental complaint, summons and prosecution was received in this reporting period. The statistical summary table of environmental complaint is presented in *Tables 8-1*, *8-2* and *8-3*.

Table 8-1 Statistical Summary of Environmental Complaints

Donouting Douiod	Environmental Complaint Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 to 31 January 2016	0	0	NA	

Table 8-2 Statistical Summary of Environmental Summons

Dementing Devied	Enviro	onmental Summons S	tatistics
Reporting Period	Frequency	Cumulative	Complaint Nature
1 to 31 January 2016	0	0	NA

Table 8-3 Statistical Summary of Environmental Prosecution

Departing David	Enviro	nmental Prosecution S	tatistics
Reporting Period	Frequency	Cumulative	Complaint Nature
1 to 31 January 2016	0	0	NA

9 IMPLEMENTATION STATUS OF MITIGATION MEASURES

9.1 GENERAL REQUIREMENTS

- 9.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the Updated EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in *Appendix M*.
- 9.1.2 The Contract under the Project shall be implementing the required environmental mitigation measures according to the Updated EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by the Contract in this Reporting Period are summarized in *Table 9-1*.

Issues	Environmental Mitigation Measures
Water	• Wastewater to be treated by the filtration systems i.e. sedimentation tank
Quality	before to discharge.
Air Quality	Maintain wet surface on access road
	All vehicles must be used wheel washing facility before off site
	Spray water during breaking works
	• A cleaning truck was regularly performed on the public road to prevent
	fugitive dust emission
Noise	• Restrain operation time of plants from 07:00 to 19:00 on any working day
	except for Public Holiday and Sunday.
	Keep good maintenance of plants
	• Shut down the plants when not in used.
Waste and	On-site sorting prior to disposal
Chemical	 Follow requirements and procedures of the "Trip-ticket System"
Management	Predict required quantity of concrete accurately
_	• Collect the unused fresh concrete at designated locations in the sites for
	subsequent disposal
General	The site was generally kept tidy and clean.

 Table 9-1
 Environmental Mitigation Measures

9.1.3 Based on monitoring results including air quality and construction noise, it is considered that the environmental mitigation measures implemented by the Contractor in this Reporting Period are effective.

9.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 9.2.1 Construction activities listed below will be undertaken in in the coming month for the Contract of the Project.
 - Inspection Pit Works
 - Pipe Laying (BR2 Effluent Pipe)
 - Pipe Laying (DN150 Realigned SAS Pipe)
 - Installation of Sheet Piles for final sedimentation tank
 - Installation of Shoring System of membrane facilities building
 - Concrete filling of common channel of bioreactor No.1
 - Piling works

9.3 KEY ISSUES FOR THE COMING MONTH

- 9.3.1 Key issues to be considered in the coming month for the Contract include:
 - Implementation of dust suppression measures at all times;
 - Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
 - Ensure dust suppression measures are implemented properly;
 - Implementation of construction noise preventative control measures
 - Management of chemical wastes;
 - Follow-up of improvement on general waste management issues; and



• Potential wastewater quality impact due to surface runoff



10 CONCLUSIONS AND RECOMMENTATIONS

10.1 CONCLUSIONS

- 10.1.1 This is the 4th Monthly EM&A report, covering the construction period from 1 to 31 January 2016.
- 10.1.2 No 24-hour or 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.
- 10.1.3 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in this Reporting Period. No NOEs or the associated corrective actions were therefore issued.
- 10.1.4 No documented complaint, notification of summons or successful prosecution was received.
- 10.1.5 Joint site inspection to evaluate the site environmental performance by the RE, ET and the Contractor were carried out on 5, 12, 19 and 27 January 2016. Furthermore, IEC attend site inspection was on 27 January 2016. No non-compliance was observed during the inspection.
- 10.1.6 No site inspection was undertaken by any external party in this Reporting Period.

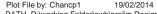
10.2 RECOMMENDATIONS

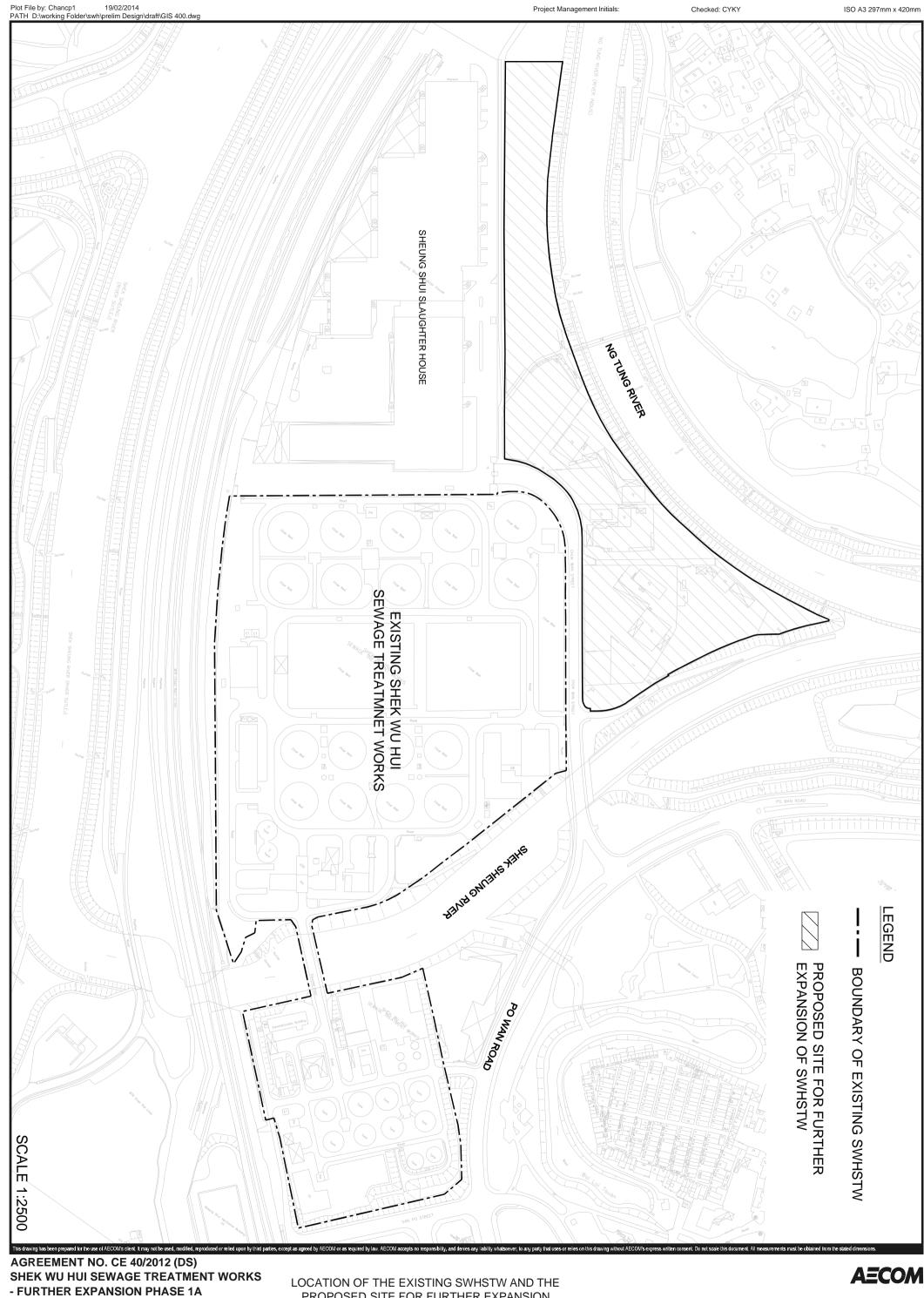
- 10.2.1 During dry season, special attention should be paid to provide air quality mitigation measures including wheel wash facilities, watering of haul roads and covering of dusty materials with tarpaulin sheet, etc.
- 10.2.2 Moreover, mitigation measures to avoid ingress of surface runoff into nearby water bodies from the construction site should be properly maintained.
- 10.2.3 To control the site performance on waste management, Tsun Yip shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. Tsun Yip is also reminded to implement the recommended environmental mitigation measures according to the Updating Environmental Monitoring and Audit Manual.



Appendix A

GENERAL LAYOUT OF ADVANCE WORKS AND MAIN WORKS OF SWHSTW FURTHER EXPANSION PHASE 1A

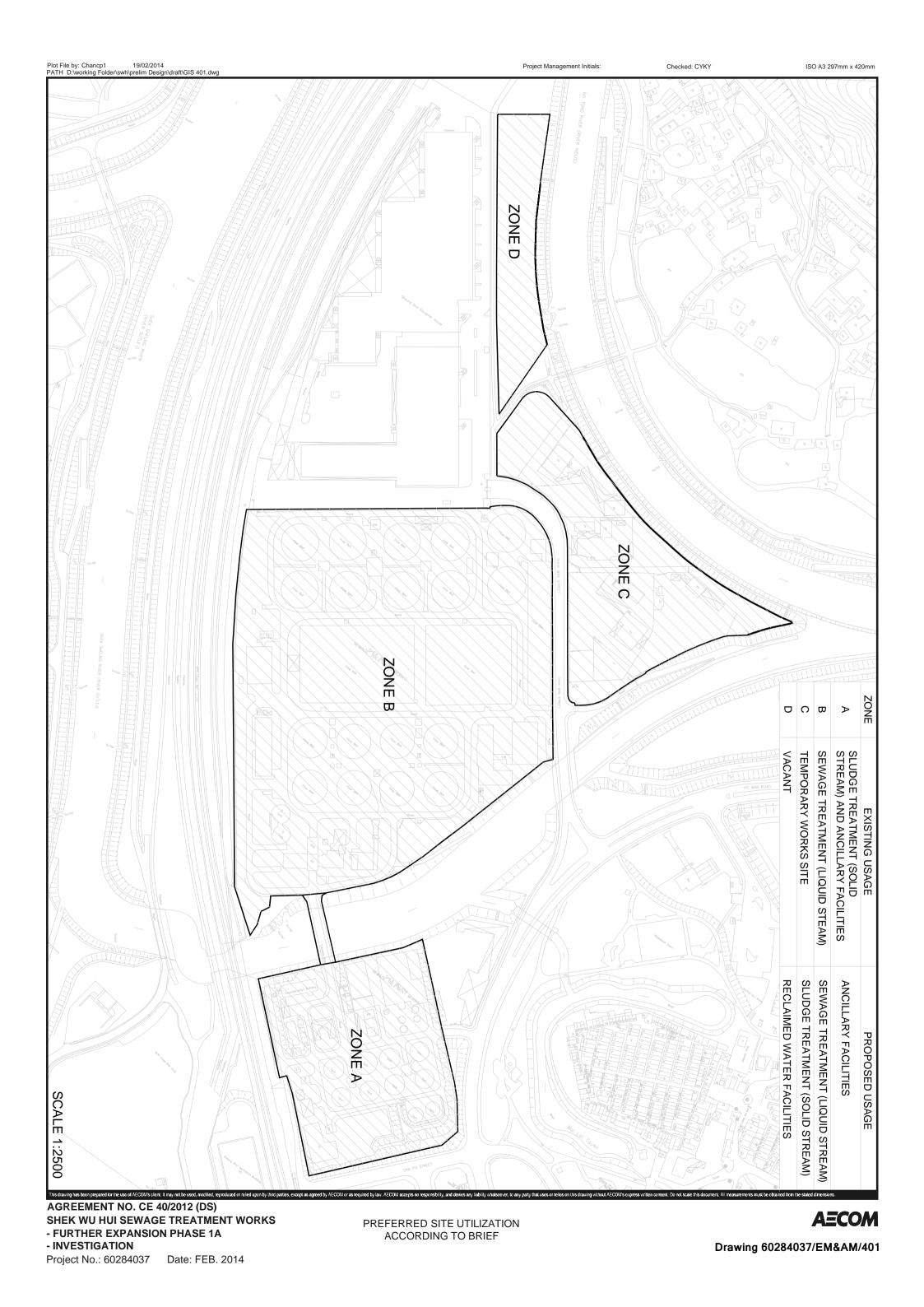




- INVESTIGATION

Project No.: 60284037 Date: FEB. 2014 PROPOSED SITE FOR FURTHER EXPANSION

Drawing 60284037/EM&AM/400

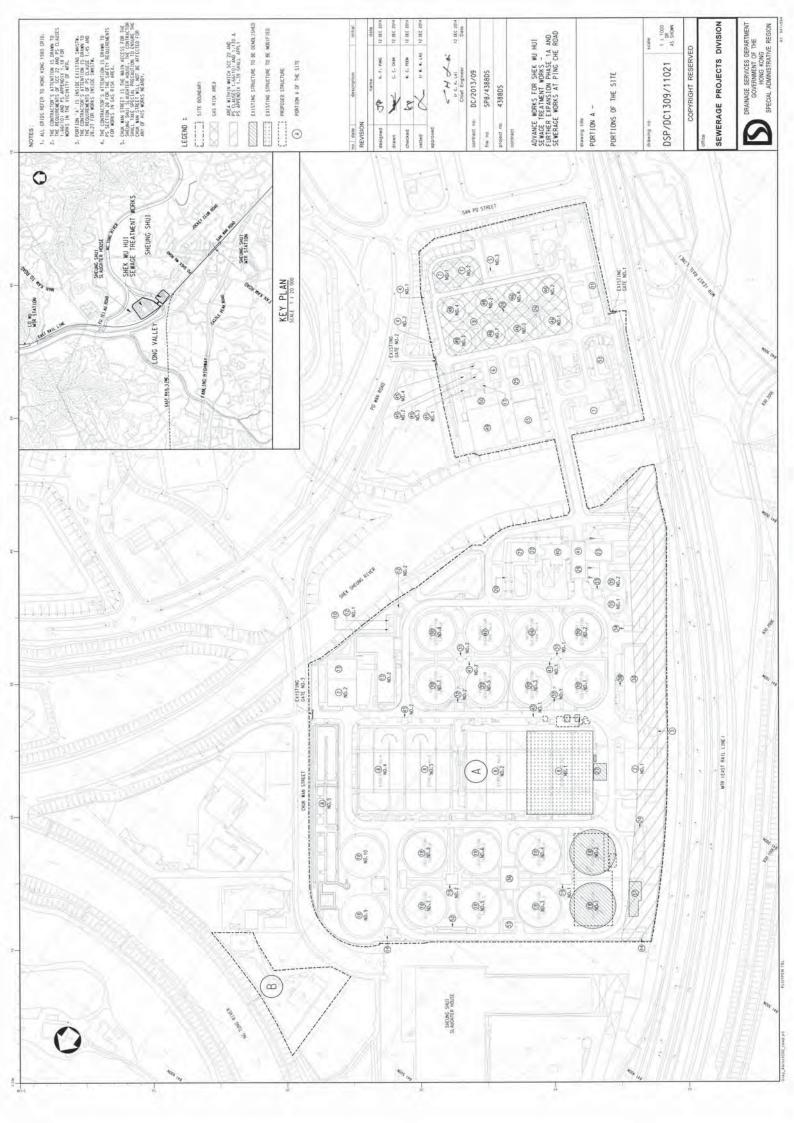


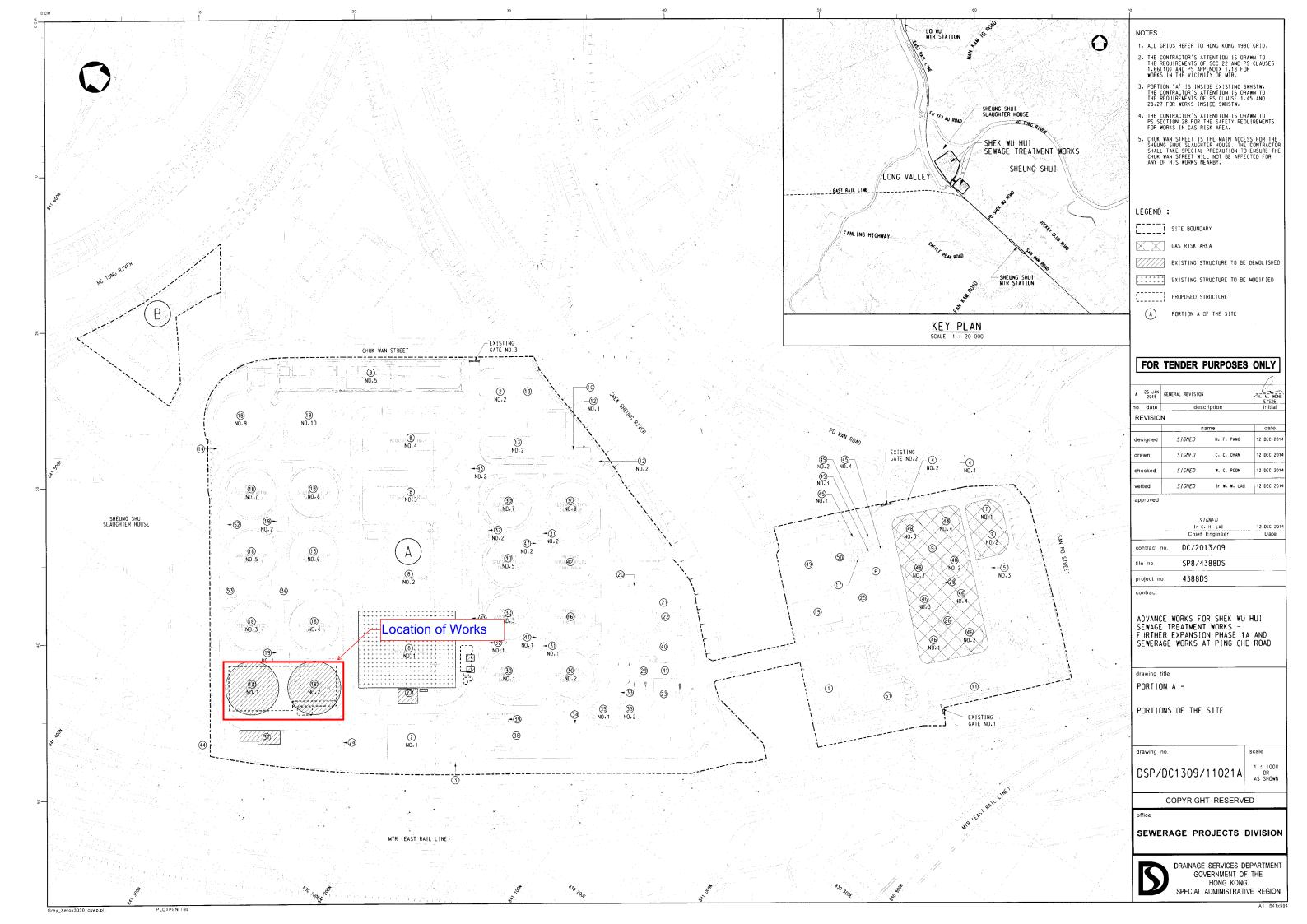


Appendix **B**

LAYOUT PLAN OF ADVANCE WORKS

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Appendix C

ORGANIZATION STRUCTURE AND CONTACT DETAILS OF RELEVANT PARTIES



Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Resident Site Engineer	Mr. Michael Leung	2594 7463	2827 8700
ANewR	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648
Tsun Yip	Project Director	Mr. K. C. KAN	2633 4181	2633 4691
Tsun Yip	Project Manager	Mr. M. T. HO	9507 9634	2633 4691
Tsun Yip	Site Agent	Mr. Ken WONG	9161 9627	2633 4691
Tsun Yip	Environmental Officer	Ms. FONG Ka Ying	6312 1871	2633 4691
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Martin Li	2959 6059	2959 6079

Contact Details of Relevant Parties

Legend:

DSD (Employer & Resident Site Engineer) – Drainage Service Department

Tsun Yip (Main Contractor) – Tsun Yip Waterworks Construction Co Ltd

ANEWR (IEC) – ANEWR Consulting Limited

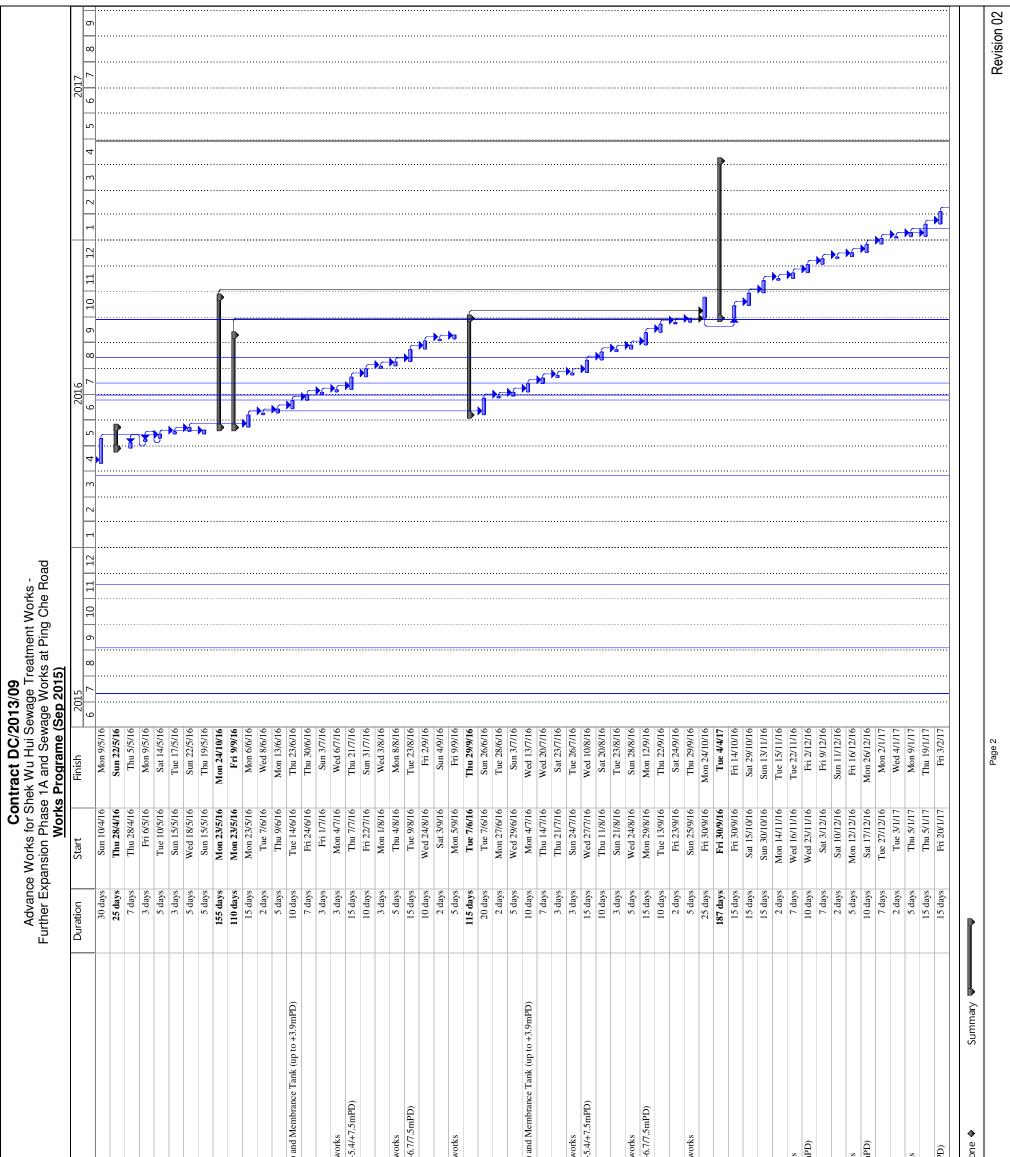
AUES (ET) – Action-United Environmental Services & Consulting



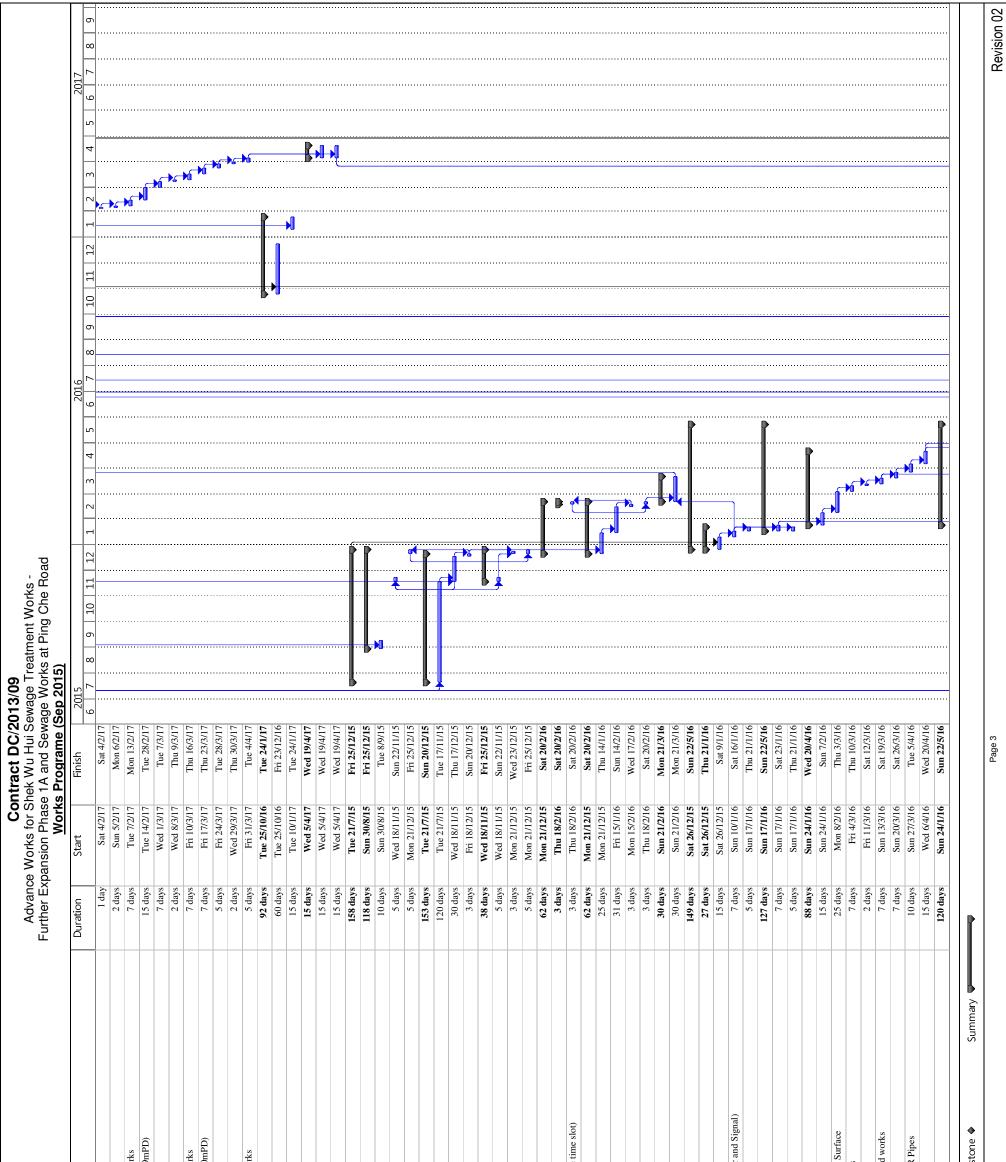
Appendix D

MASTER CONSTRUCTION PROGRAM

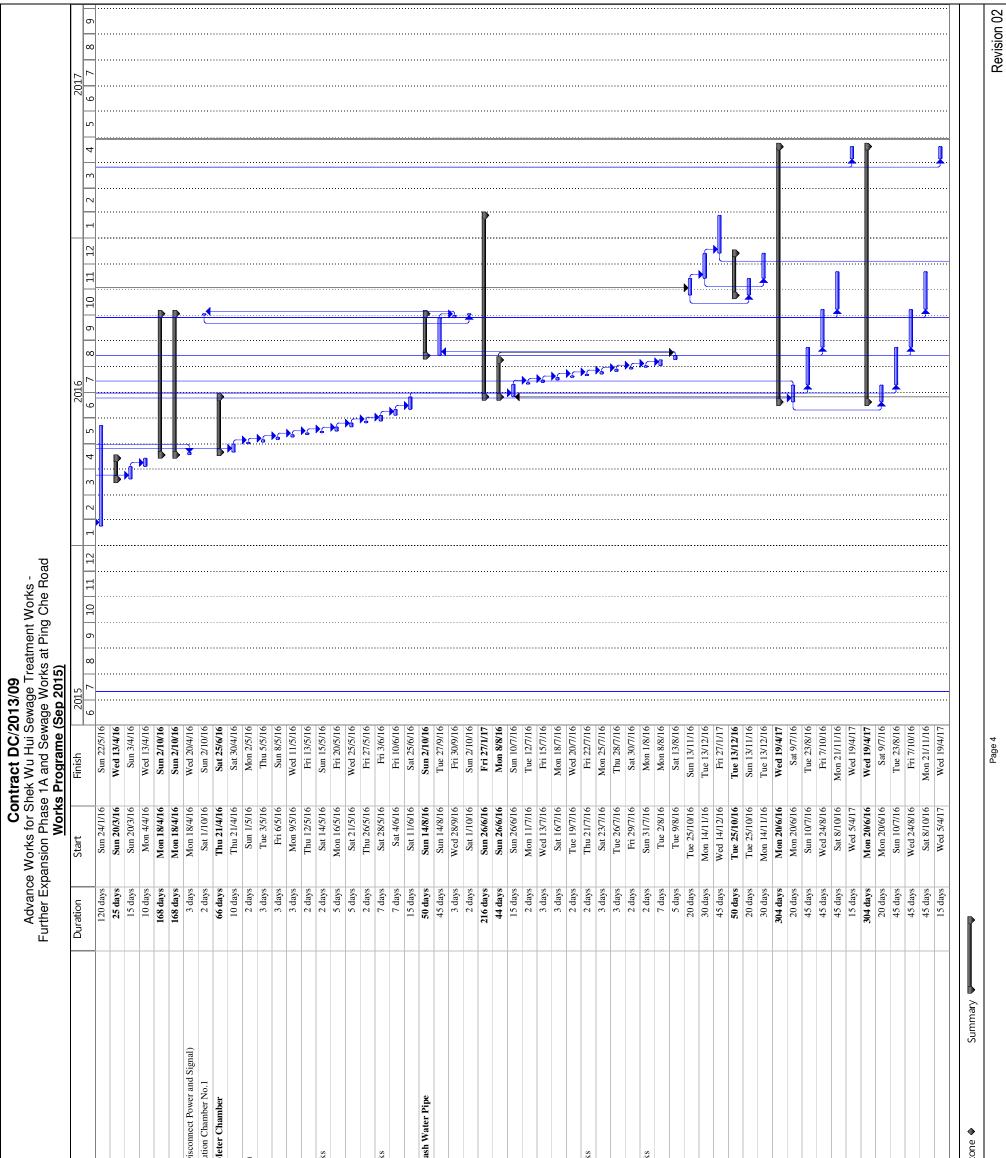
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Image: Second Second Second Second Second Signal) 5 days Sun 30/8/15 Thu 30/9/15 Image: Second	Empty FST1 and FST2 / Suspension of BR2		Tue 25/8/15		
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(II) Demonstration proving Control Proving Vorks / Cable Detection/ Inspection Pits 14 days The 18/8/15 Mol (III) Control and Removal Part of DNG/57 FST Effluent Pipe / DN450 Sludge Drawoff Pipe / DN800 FST Influent Pipe 14 days The 18/8/15 Mit (III) Proving Vorks / Cable Detection/ Inspection Pits Demolition Structure of FST1 & FST2 (Up to +3.0mPD) 25 days Fri 11/9/15 Th (III) Chound Investigation by Drilling Rigs Excavation for Trial Pits / Determination of GI Locations 32 days Mon 4/1/16 T (III) Ground Investigation by Drilling Rigs Excavation for Trial Pits / Determination of GI Locations 32 days Sat 9/1/16 T (III) Ground Investigation by Drilling Rigs Excavation for Trial Pits / Determination of Founding Levels 7 days Fri 20/1/16 T (III) Ground Investigation by Drilling Rigs Constructure 5 days Non 4/1/16 T (III) Ground Investigation by Drilling Rigs Fri 20/1/16 T			Fri 4/9/15		
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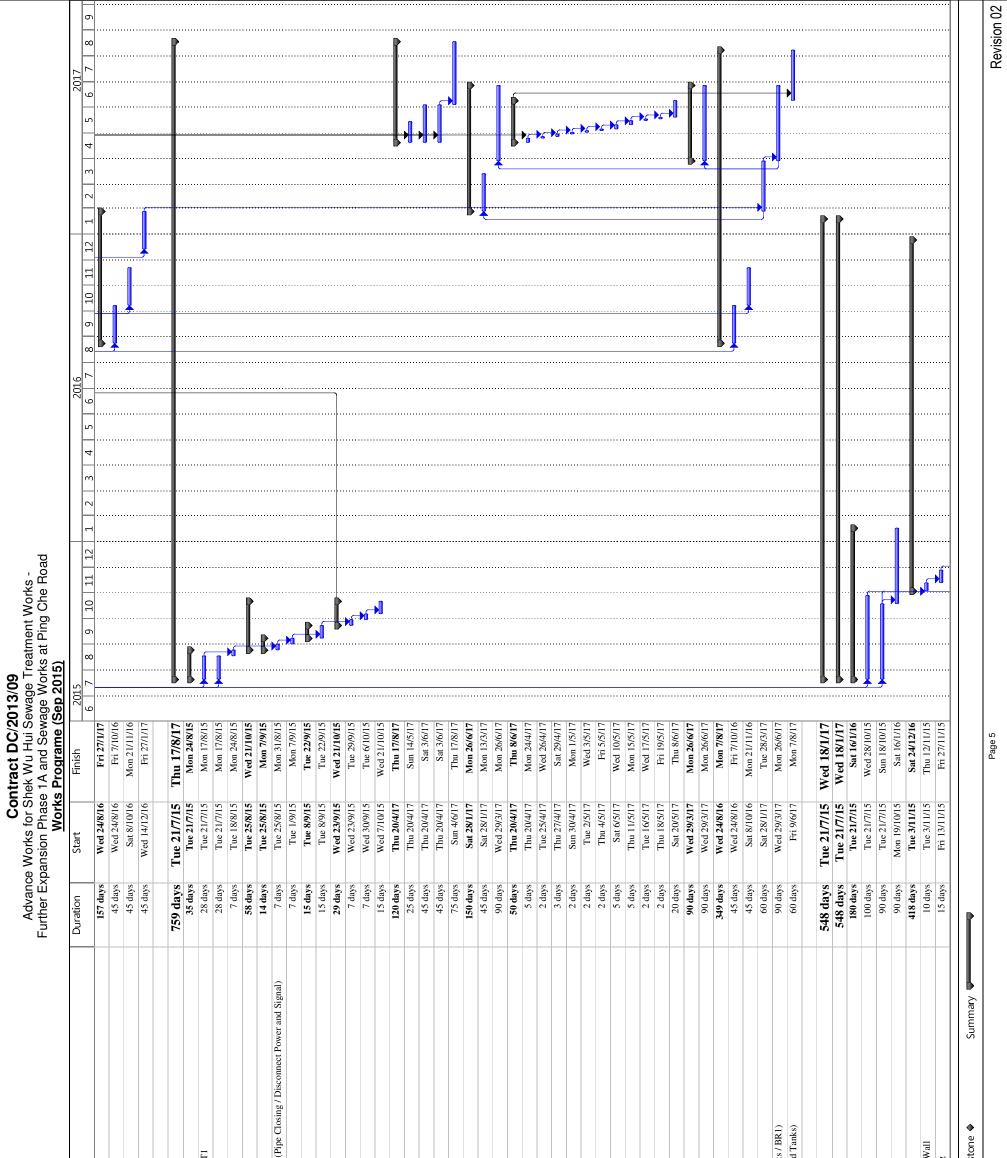
Piles (2nd Batch) of drilling c-Load Test System (1st & 2nd pile) or Main Piles (1st and 2nd pile) setting of Pile-Load Test System or Main Pile (3rd and 4 pile) -Load Test System or Main Pile (3rd and 4 pile) -Layer Sile (40.3/+2.4mPD) Layer Nilehead fembrance Facilitates & Tanks (up to the vaterstop / other accessory te / formwork removal / making good fembrance Facilitates & Tanks (up to terwork / waterstop / other accessory te / formwork removal / making good fembrance Facilitates & Tanks (up to ter / formwork removal / making good wor transof Steetphile erstructure or and Falsework (up to +11.65mPD) or other accessory or / other accessory	Pile Pile Port	rring for Piles (2nd Batch) and Proof drilling p of Pile-Load Test System (1st & 2nd pile) and Test for Main Piles (1st and 2nd pile) 1 and Resetting of Pile-Load Test System and Test for Main Pile (3rd and 4 pile) 1 of Pile-Load Test System of Subtructure Grid C-E/ Grid F-G / Grid G-14 - G+28 in to Formation Level (+0.3/+2.4mPD) Bilnding Layer ion to Formation Level (+0.3/+2.4mPD) Silnding Layer ion for Pilehead ang for Membrance Facilitates (up to +1.9mPD) ion of formwork / waterstop / other accessory ing for Membrance Facilitates & Tanks (up to +6 ing for Membrance Facilitates & Tanks (up to +1.9mPD); ing for Membrance Facilitates & Tanks (up t
Pite Targing and Proof drilling. Setting and Proof drilling. Setting and Proof drilling. Pite-Load Test in Valui Pite (3d and 4 pile). Pite-Load Test in Valui Pite (3d and 4 pile). Removal of Pite-Load Test System. Proof Drilling. Row of Subtructure Proof Drilling. Curing of concret formwork varterstop / other accessory. Droton B. Grid AcV. Grid E.F. / Grid G.G-H4 Proton B. Grid AcV. Grid E.F. / Grid G.G-H4 Proton B. Grid AcV. Grid E.F. / Grid G.G-H4 Proton B. Grid E.F. / Grid G.G-H4 Proton B. Grid E.F. / Grid G.G-H4 Proton B. Groncret formwork varterstop / other accessory.	Port (v) Const Back Const Cons	ing Test System (1st & 2nd pile) Piles (1st and 2nd pile) of Pile-Load Test System Pile (3rd and 4 pile) est System set System est System (F-G / Grid G+14 - G+28 (Level (+0.3/+2.4mPD) (Level (+0.3/+2.4mPD) / waterstop / other accessory nwork removal / making good tee Facilitates & Tanks (up to / waterstop / other accessory nwork removal / making good tee Facilitates & Tanks (up to / waterstop / other accessory nwork removal / making good tee Facilitates & Tanks (up to / waterstop / other accessory nwork removal / making good tee Facilitates & Tanks (up to / waterstop / other accessory nwork removal / making good tee Facilitates (up to +1.9mPD) / waterstop / other accessory nwork removal / making good tee Facilitates (up to +1.9mPD) / waterstop / other accessory nwork removal / making good tee Facilitates (up to +1.9mPD) / waterstop / other accessory nwork removal / making good tee Facilitates (up to +1.9mPD) / waterstop / other accessory
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Portion A - Grid CLF / Grid C-H4 - C+43 Exervation for Pitchead Steelffxing for Membrance Facilitates (up to +19mE) Laying Blinding Layer Steelffxing for Membrance Facilitates & Tanks (up to 19mE) Installation of formwork / waterstop/ other accessory Concreting Curing of concrete/formwork / waterstop/ other accessory Concreting Curing of concrete/formwork / waterstop/ other accessory Concreting Curing of concrete/formwork / waterstop/ other accessory Concreting Concreting Concreting Concreting <td>Port</td> <td>- G+28 nPD) o +1.9mPD accessory aking good unks (up to accessory aking good nPD) nPD) nPD) aking good aking good aking good nPD)</td>	Port	- G+28 nPD) o +1.9mPD accessory aking good unks (up to accessory aking good nPD) nPD) nPD) aking good aking good aking good nPD)
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(q)	Inspection Pits (b) Work Front A (CH00-CH765) Pipe Laying for Rising Mains (CH165-CH185) / Under D Pipe Laying for Rising Mains (CH185-CH205) / Road Cr Task	98	Application for XP
(p)	(b) Work Front A (CH00-CH765) Pipe Laying for Rising Mains (CH165-CH185) / Under D Pipe Laying for Rising Mains (CH185-CH205) / Road Cr Task	5	
	Pipe Laying for Rising Mains (CH185-CH205) / Road Cr Task	<u>∞</u>	-
	Task	20	Pipe Laying for Rising Mains (CH185-CH205) / Road Crossing
		11	

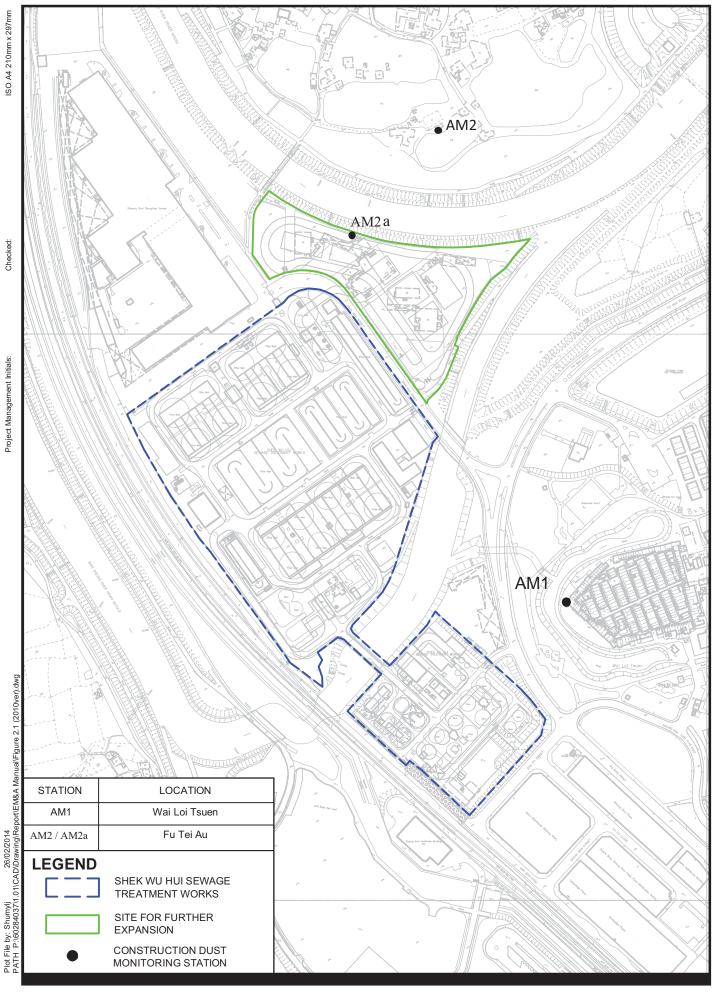
15 days Wed 20/4/16 20 days Thu 5/5/16 25 days Wed 25/5/16 7 days Sun 19/6/16 7 days Sun 26/6/16 15 days Mon 11/7/16 10 days Thu 21/7/16 10 days Thu 21/7/16 115 days Sun 26/6/16 115 days Sun 26/6/16 116 days Thu 21/7/16 117 117 10 days 118 days Sul 24/9/16 118 days Sul 24/9/16 119 days Sul 24/9/16 116 days Sul 24/9/16 117 14 116 days 118 days Sul 24/9/16 119 days Sul 24/9/16 110 days Sul 24/9/16 117 14/16 11 118 days Sul 24/9/16 119 days Sul 24/9/16 119 days Sul 24/9/16 110 days Sul 24/9/16 111 July Haby 111 July Haby	ossing 28 days 3at 20/1/16 Frt 26/2/16 ossing 20 days Sat 27/2/16 Thu 17/3/16 'arf Wall 33 days Fri 18/3/16 Tue 19/4/16 ssing 15 days Wed 20/4/16 Wed 4/5/16 ssing 20 days Thu 3/5/16 Tue 24/5/16	Tue 3/11/15 Weat 10/11/15 Tue 3/11/15 Sat 7/11/15 Sun 8/11/15 Sun 22/11/15 Mon 23/11/15 Fri 27/11/15 Sat 28/11/15 Sat 12/12/15 Sun 13/12/15 Mon 4/1/16 Tue 5/1/16 Tue 19/1/16 Wed 20/1/16 Fri 29/1/16 Sat 30/1/16 Fri 26/2/16	Pipe Laying for Rising Mains (CH590-CH660)/Under Dwarf Wall35 daysMon 13/6/16Sun 17/7/16Mon 13/6/16Sun 17/7/16Pipe Laying for Rising Mains (CH600-CH50)/ Road Crossing15 daysMon 187/16Mon 187/16Mon 187/16Pipe Laying for Rising Mains (CH600-CH750)/Under Dwarf Wall15 daysTue 2/8/16Sun 11/9/16Sun 25/9/16Pipe Laying for Rising Mains (CH750-CH755)/Road Crossing15 daysNun 1/8/16Sun 25/9/16Mon 10/10/16Pipe Laying for Rising Mains (CH750-CH155)/Road Crossing15 daysMon 26/9/16Mon 10/10/16Sun 25/9/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath2 daysMon 26/9/16Mon 10/10/16Sun 27/11/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath2 daysMon 28/11/16Sut 17/12/16Aut 11/10/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath2 daysMon 28/11/16Sut 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16Pipe Laying for Rising Mains (CH00-CH60) / Footpath7 daysSun 18/12/16Sat 24/12/16	'all 58 days Fri 25/3/16 7 days Sun 22/5/16	Fipe Laying for Rising Mains (CH245-CH265) / Footpath 20 days Fit 18/12/15 Mon 4/1/16 Pipe Laying for Rising Mains (CH245-CH360) / Road Crossing 10 days Tuu 14/1/16 Pipe Laying for Rising Mains (CH245-CH360) / Footpath 20 days Fit 18/12/16 Pipe Laying for Rising Mains (CH255-CH360) / Footpath 35 days Fit 15/11/16 Pipe Laying for Rising Mains (CH255-CH455) / Under Dwarf Wall 35 days Thu 14/21/16
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Appendix E

PROPOSED MONITORING LOCATIONS

Z:\Jobs\2015\TCS00757 (Shek Wu Hui)\600\EM&A Report\Impact\Monthly EM&A Report\4th EM&A (January 2016)\R0023v2.doc



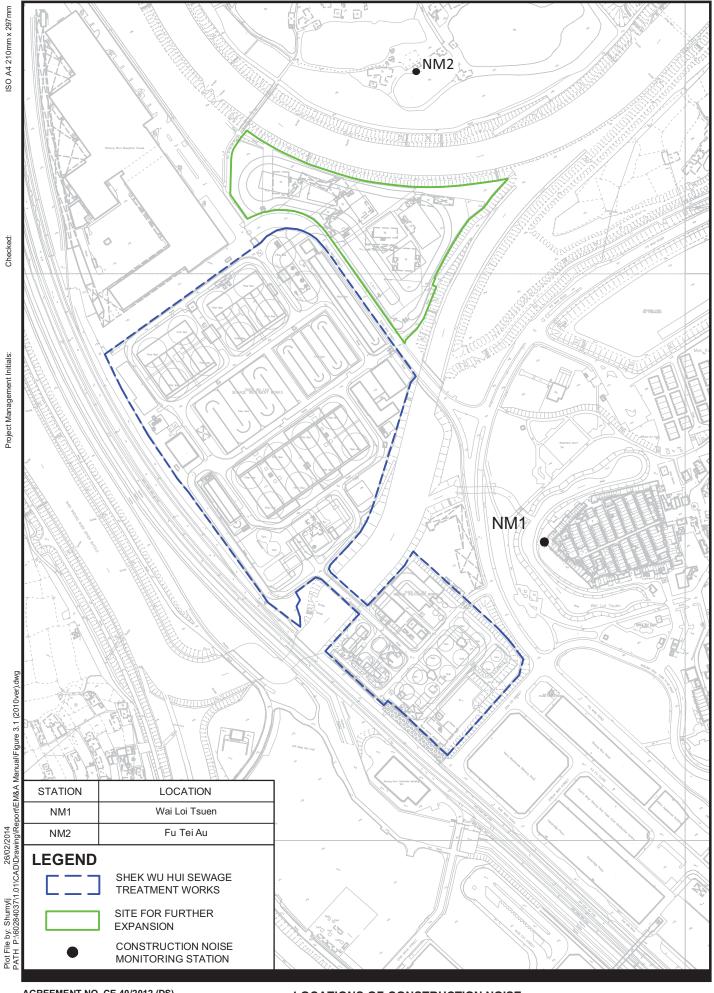
AGREEMENT NO. CE 40/2012 (DS) SHEK WU HUI SEWAGE TREATMENT WORKS - FURTHER EXPANSION PHASE 1A - INVESTIGATION

PROPOSED CONSTRUCTION DUST MONITORING STATIONS FOR CONSTRUCTION PHASE AND OPERATION PHASE



Drawing No. 60284037/EM&AM/405

Project No.: 60284037 Date: FEB. 2014



AGREEMENT NO. CE 40/2012 (DS) SHEK WU HUI SEWAGE TREATMENT WORKS - FURTHER EXPANSION PHASE 1A - INVESTIGATION LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS



Drawing No. 60284037/EM&AM/407



Appendix F

EVENT ACTION PLAN

Z:\Jobs\2015\TCS00757 (Shek Wu Hui)\600\EM&A Report\Impact\Monthly EM&A Report\4th EM&A (January 2016)\R0023v2.doc

Event and Action Plan for Construction Dust

Event		Action		
Event	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	 Identify source, investigate the causes of complaint and propose remedial measures; Inform IEC and ER; Repeat measurement to confirm finding; Increase monitoring frequency to daily. 	 Check monitoring data submitted by ET; Check Contractor's working method. 	1. Notify Contractor.	 Rectify any unacceptable practice; Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	 Identify source; Inform IEC and ER; Advise the ER on the effectiveness of the proposed remedial measures; Repeat measurements to confirm findings; Increase monitoring frequency to daily; Discuss with IEC and Contractor on remedial actions required; If exceedance continues, arrange meeting with IEC and ER; If exceedance stops, cease additional monitoring. 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ET on the effectiveness of the proposed remedial measures; Supervise Implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	 Submit proposals for remedial actions to IEC within three working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
Limit level being exceeded by one sampling	 Identify source, investigate the causes of exceedance and propose remedial measures; Inform Contractor, IEC, ER, and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; Supervise implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within three working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	 Notify IEC, ER, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. 	 Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; Supervise the implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing; Notify Contractor; In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; 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. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within three working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated.

AUES

Event and Action Plan for Construction Noise

Event	Action								
Event	ET	IEC	ER	Contractor					
Action Level	 Notify IEC and Contractor; Carry out investigation; Report the results of investigation to the IEC, ER and Contractor; Discuss with the Contractor and formulate remedial measures; Increase monitoring frequency to check mitigation effectiveness. 	 Review the analysed results submitted by the ET; Review the proposed remedial measures by the Contractor and advise the ER accordingly; Supervise the implementation of remedial measures. 	 Confirm receipt of notification of failure in writing; Notify Contractor; Require Contractor to propose remedial measures for the analysed noise problem; Ensure remedial measures are properly implemented. 	 Submit noise mitigation proposals to IEC; Implement noise mitigation proposals. 					
Limit Level	 Identify source; Inform IEC, ER, EPD and Contractor; 	 Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; Supervise the implementation of remedial measures. 	 Confirm receipt of notification of failure in writing; Notify Contractor; Require Contractor to propose remedial measures for the analysed noise problem; Ensure remedial measures properly implemented; 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. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated. 					



Appendix G

VALID CALIBRATION CERTIFICATES

Z:\Jobs\2015\TCS00757 (Shek Wu Hui)\600\EM&A Report\Impact\Monthly EM&A Report\4th EM&A (January 2016)\R0023v2.doc

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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Location :	No. 31	Wai Loi	Tsuen				Date of C	Calib	ration: 28-I	Dec-15		
Location 1	D :	AM1				ľ			n Date: 28-F			
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					С		TIONS					
				Г			I				F	
	Se	a Level I]	1026.6			Corrected F			769.95
		Temp	erature	(°C)		17.3			Temp	perature (K	()	290
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				Model->					Qstd Inter	-		-0.00335
				Serial # ->					QSIU IIIU	.ccpt ->	Ľ	-0.00555
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					C	ALIBR	ATION					
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18	6.00	6.00	12.0	1.682	· · ·	49	50.63			Slope = 2	7.9460	
13	4.60	4.60	9.2	1.473		44	45.46		Intercept = 4.2359			
10	3.60	3.60	7.2	1.303		40	41.33		Corr.	coeff. =	0.9969	
7	2.30	2.30	4.6	1.042		33	34.10					
5	1.50	1.50	3.0	0.842		26	26.86					
Coloulati												
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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : RE's Site Office						Date of C	alibration: 28-Dec-15	
Location I	D :	AM2a			1	Next Calibra	tion Date: 28-Feb-16	
						Т	echnician: K. C. Cheung	
					CONDI	TIONS		
Sea Level Pressure (hPa)							Corrected Pressure (1	nm Hg) 769.95
		Temp	erature	(°C)	<u>1026.6</u> 17.3		Temperature (I	
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				CA	LIBRATIC	N ORIFICE		
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				Model->	5025A		Qstd Intercept ->	-0.00335
				Serial # ->	1941			
					CALIBR	ATION		
Plate	H20 (L)	H2O (R)	H20	Qstd	Ι	IC	LINEA	R
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESS	ION
18	6.00	6.00	12.0	1.682	49	50.63	Slope = 2	27.9460
13	4.60	4.60	9.2	1.473	44	45.46	Intercept =	4.2359
10	3.60	3.60	7.2	1.303	40	41.33	Corr. coeff. =	0.9969
7	2.30	2.30	4.6	1.042	33	34.10		
5	1.50	1.50	3.0	0.842	26	26.86		
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Calculatio	ons :						FLOW RATE CHART	
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m = calibr	ator Osto	l slope			nse			
b = calibra	ator Østd	intercep	t		ods		*	
	-	-		oration (deg	е К на 30.0 т К на 30.0	00		
	-		_	ation (mm l	la μα		•	
	F				д К д К Hg 20.0 9 9 40.0 9 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			
For subse	equent ca	alculatio	n of san	pler flow:	¥ 20.0			
1/m((I)[S	- Sart(298/	Tav)(Pav	/760)] - h)				
1, 111((1)[2			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	/	10.0	00		
m = sampl	ler slone							
b = sample	_	ent						
I = chart r		CPC			0.0		0.500	4 500
T = chart T Tav = dail	-	e temner	ature			0.000	0.500 1.000 Standard Flow Rate (m3/m	1.500 2.000 in)
Pav = dail								,
r av – uan	, average	e pressui	C					



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

perator	Tisch	Orifice I.	D	1941	Pa (mm) -	- 756.92
					METER	ORFICE
PLATE	VOLUME	VOLUME	DIFF	DIFF	DIFF	DIFF
OR	START	STOP	VOLUME	TIME	Hg	H2O
Run #	(m3)	(m3)	(m3)	(min)	(mm)	(in.)
1	NA	NA	1.00	1.4880	3.2	2.0
2	NA	NA	1.00	1.0510	6.4	4.0
3	NA	NA	1.00	0.9360	7.9	5.0
4	NA	NA	1.00	0.8920	8.8	5.5
5	NA	NA	1.00	0.7360	12.7	8.0

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0121 1.0078 1.0057 1.0046 0.9993	0.6802 0.9589 1.0745 1.1262 1.3578	1.4258 2.0163 2.2543 2.3644 2.8515	0.9958 0.9916 0.9895 0.9884 0.9832	0.6692 0.9434 1.0571 1.1080 1.3358	0.8784 1.2422 1.3888 1.4566 1.7568
Qstd slo intercep coeffici y axis =	ot (b) = lent (r) =	2.10265 -0.00335 0.99999 Pa/760) (298/Ta)]	Qa slop intercep coeffici y axis =	t (b) =	1.31664 -0.00206 0.99999 Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta) Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa] Qa = Va/Time

For subsequent flow rate calculations:

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

ALS L	Technichem (HK) Ptu aboratory Group	l Lta	ALS
	SUB-CONTRACTING	G REPORT	. ,
CONTACT	: MR BEN TAM	WORK ORDER	HK1514380
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 27-APR-2015 2-MAY-2015
PROJECT	:	NO. OF SAMPLES CLIENT ORDER	1

General Comments

- Sample(s) were received in an 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 electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories Position
Richard Fung Right 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.

> Trading Name: ALS Technichem (HK) Pty Ltd 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 A Campbell Brothers Limited Company

WORK ORDER	: HK1514
SUB-BATCH	: 1
CLIENT	: ACTION
PROJECT	:

: HK1514380 : 1 : ACTION UNITED ENVIRO SERVICES : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1514380-001	S/N: 456662	AIR	05-APR-2015	S/N: 456662	

Equipment Verification Report (TSP)

Equipment Calibrated:

Туре:	Laser Dust monitor			
Manufacturer:	Sibata LD-3B			
Serial No.	456662			
Equipment Ref:	EQ118			
Job Order				

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	6 February 2015

Equipment Verification Results:

Testing Date:

5 April 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr11min	10:00 ~ 12:11	26.0	1011.3	0.041	2313	17.7
2hr21min	12:20 ~ 14:41	26.0	1011.3	0.038	2084	14.7
2hr17min	14:50 ~ 17:07	26.0	1011.3	0.057	3487	25.5

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration)

Linear Regression of Y or X

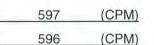
0.0022
0.9939
20 April 2015

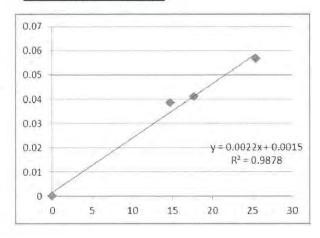
Remarks:

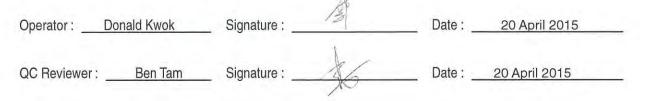
1. Strong Correlation (R>0.8)

2. Factor 0.0022 should be apply for TSP monitoring

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







TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location Location		Gold Kin Calibrati		strial Buildin m	g, Kwai Cł	nung		alibration: 6-Feb-15 tion Date: 6-May-15
					CONE	DITIONS		
	Se	ea Level F Temp	Pressure erature	-	1024.5 13.4	1	Corrected Pressure (Temperature (
				į	CALIBRAT	ION ORIFICE		
Make-> T Model-> 5 Calibration Date-> 7-]	Qstd Slope -> Qstd Intercept -> Expiry Date->	2.00757 -0.01628 7-Apr-15
					CALIB	RATION		
Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINE	
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRES	
18	3.8	3.8	7.6	1.417	56	57.44	Slope =	30.5075
13	3	3	6.0	1.260	52	53.33	Intercept =	14.6821
10	2.3	2.3	4.6	1.104	48	49.23	Corr. coeff. =	0.9974
8 5	1.7 1.0	1.7 1.0	3.4 2.0	0.950 0.731	42 36	43.08 36.92		
		1.0	2.0	0.751		50.72		
Calculati		2005 15	1) (77) 1	(T) () 1.1	70.00)	FLOW RATE CHART	
Sector Street	m[Sqrt(H			/1a))-b]				
IC = I[Sc]	grt(Pa/Psto	1)(1Std/13	a)]		60.00	2		
Octd - ct	andard flo	w rate						^
	ected cha		AC .		50.00			*
	l chart res		20		50.00 ت			•
	orator Qst) est		1	
	rator Qstd				lod 40.00	0		
				bration (deg	K H			
Ta = actual temperature during calibration (deg K Pstd = actual pressure during calibration (mm Hg					10	0		
For subs	equent c	alculation	n of san	npler flow:	¥ 20.00	0		
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)								
n – com	pler slope				10.0	0		
	pler stope					1 I C		
	response	opt			0.0		0.500	000 4 500
	ily averag	e temner	ature			0.000	0.500 1. Standard Flow Rate (m3/m	000 1.500 in)
Iav - ud	iny average	e pressur					Contraction of American Contract, American	C

ALS L	Technichem (HK) Ptu aboratory Group	l Lta	ALS
	SUB-CONTRACTING	G REPORT	
CONTACT	: MR BEN TAM	WORK ORDER	HK1514379
CLIENT ADDRESS	ACTION UNITED ENVIRO SERVICES RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH DATE RECEIVED DATE OF ISSUE	1 27-APR-2015 2-MAY-2015
PROJECT		NO. OF SAMPLES CLIENT ORDER	1

General Comments

Sample(s) were received in an ambient condition.

K.46

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

Signatories Richard Fung

General Manager

A Campbell Brothers Limited Company

WORK ORDER

: HK1514379

SUB-BATCH CLIENT PROJECT ACTION UNITED ENVIRO SERVICES



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1514379-001	S/N: 456660	AIR	05-APR-2015	S/N: 456660	

Equipment Verification Report (TSP)

Equipment Calibrated:

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

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	6 February 2015

Equipment Verification Results:

Testing Date:

5 April 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr11min	10:00 ~ 12:11	26.0	1011.3	0.041	2344	17.9
2hr21min	12:20 ~ 14:41	26.0	1011.3	0.038	2104	14.9
2hr17min	14:50 ~ 17:07	26.0	1011.3	0.057	3514	25.7

Sensitivity Adjustment Scale Setting (Before Calibration) Sensitivity Adjustment Scale Setting (After Calibration) 607 (CPM) 602 (CPM)

Linear Regression of Y or X

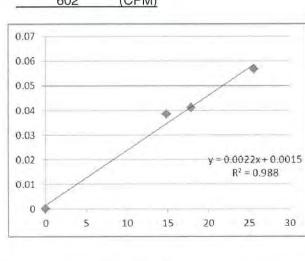
Slope (K-factor):	0.0022
Correlation Coefficient	0.9940
Date of Issue	20 April 2015

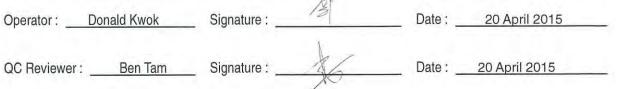
Remarks:

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





TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location Location		Gold Kir Calibrati	100 (10 M M M M M M M M M M M M M M M M M M	strial Buildin m	g, Kwai Ch	nung		alibration: 6-Feb-15 tion Date: 6-May-15
					CONE	DITIONS		
Sea Level Pressure (hPa) Temperature (°C)							Corrected Pressure (1 Temperature (1	A LOW A COLOR OF A LOW
					CALIBRAT	ION ORIFICE		
Make-> T Model-> 5 Calibration Date-> 7-							Qstd Slope -> Qstd Intercept -> Expiry Date->	2.00757 -0.01628 7-Apr-15
					CALIB	RATION		
Plate	H20 (L))H2O (R)	H20	Qstd	I	IC	LINEA	
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRES	
18	3.8	3.8	7.6	1.417	56	57.44	Slope =	30.5075
13	3	3	6.0	1.260	52	53.33	Intercept =	14.6821
10	2.3	2.3	4.6	1.104	48	49.23	Corr. coeff. =	0.9974
8 5	1.7 1.0	1.7 1.0	3.4 2.0	0.950 0.731	42 36	43.08 36.92		
5	1 1.0	1.0	2.0	0.751	50	50.92		
Calculati					70.00)	FLOW RATE CHART	
Carry States in the		120(Pa/Pst		/Ta))-b]	10.00			
iC = I[Sq	rt(Pa/Psto	d)(Tstd/Ta	a)]		c0.00			
0.1	1 10				60.00	,		^
-	andard flo							*
	chart res	rt respone	:5		50.00 ت			*
	rator Qsto				Ise (I		1	
		l intercept	~		Jodg 40.00)		
				bration (deg	Kt			
Ta = actual temperature during calibration (deg K Pstd = actual pressure during calibration (mm Hg					10			
For subs	equent c	alculation	n of san	npler flow:	¥ 20.00	b		
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)))		12		
					10.00	0		
	oler slope							
1	oler interc	ept			0.00			
I = chart :	and the state of the	a tour	atura			0.000	0.500 1.0 Standard Flow Rate (m3/mi	000 1.500
1 OT - do:	iv averag	ge tempera	ature				Standard Flow Rate (m3/mi	



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C152550 證書編號

Description / 儀器名稱	4	Acoustical Calibrator (EQ081)	
Manufacturer / 製造商		Brüel & Kjær	
Model No. /型號	3	4231	
Serial No. / 編號	1	2326408	
Supplied By / 委託者	3	Action-United Environmental Services an	nd Consulting
		Unit A, 20/F., Gold King Industrial Build	ling,
		35-41 Tai Lin Pai Road, Kwai Chung, N.	Τ.

emperature /)温度 - 21 0 Line Voltage / 電壓

Relative Humidity / 伯對/絲/受

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 7 May 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only. All results are within 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	K CLee Project Engineer			
Certified By 核證	: K M Wu Engineer	Date of Issue 簽發日期	:	12 May 2015

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.

本意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而批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory v/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 顧創工程有限公司 - 校正及檢測實驗所 c/o 香港新界屯門與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/asuncreation.com Website/網址: www.suncreation.com



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C152550 證書編號

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

Equipment ID CL130 CL281 TST150A Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier Certificate No. C143868 DC130171 C141558

- 4. Test procedure : MA100N.
- 5. 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	114.0		

5.2 Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(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 :

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.

本證書所載故正用之測試器材均可測源至國際標準,局部複印本證書需先獲本實驗所書面批准,



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C153053 證書編號

ITEM TESTED / 送檢I	頁目	(Job No./序引編號: IC15-0720)	Date of Receipt / 收件日期: 15 May 2015
Description / 儀器名稱	:	Integrating Sound Level Meter (EQ008)	
Manufacturer / 製造商	:	Brüel & Kjær	
Model No. / 型號	1	2238	
Serial No. / 編號	:	2285690	
Supplied By / 委託者	3	Action-United Environmental Services an	d Consulting
and a second		Unit A, 20/F., Gold King Industrial Build	ing,
		35-41 Tai Lin Pai Road, Kwai Chung, N.T.	r.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 4 June 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only. All results are within 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	÷ .	K Lee Project Engineer			
Certified By 核證	Ξ.	K M Wu Engineer	Date of Issue 簽發日期	1	5 June 2015

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。局部復印本證書需先獲本實驗所書面批准。



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C153053 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.
- 2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment :

Equipment IDDescriptionCertificate No.CL28040 MHz Arbitrary Waveform GeneratorC150014CL281Multifunction Acoustic CalibratorDC130171

- 5. Test procedure : MA101N.
- 6. Results :
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level
- 6.1.1.1 Before Self-calibration

	UUT	Setting		Applied	UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	LAFP	A	F	94.00	1	93.5

6.1.1.2 After Self-calibration

	UUT	Setting		Applie	d Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	LAFP	A	F	94.00	1	94.0	± 0.7	

6.1.2 Linearity

	UU	Γ Setting		Applied Value		UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	
50 - 130	-130 L _{AFP}	AFP A	F	94.00	1	94.0 (Ref.)	
	CON			104.00		104.0	
				114.00		114.0	

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

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

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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C153053 證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

	TUU	Setting		Applie	d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.0	Ref.
	LASP		S			94.0	± 0.1
	LAIP		I			94.0	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

A-Weighting 6.3.1

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	А	F	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	$+1.2 \pm 1.0$
					4 kHz	95.0	$+1.0 \pm 1.0$
					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調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 and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C153053 證書編號

6.3.2 C-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq,	Reading (dB)	Type 1 Spec. (dB)	
50 - 130	L _{CFP}	С	F	94.00	31.5 Hz	91.0	-3.0 ± 1.5	
	1.000				63 Hz	93.2	-0.8 ± 1.5	
				125 Hz	93.8	-0.2 ± 1.0		
			250 Hz	93.9	0.0 ± 1.0			
				500 Hz	94.0	0.0 ± 1.0		
					1 kHz	94.0	Ref.	
					2 kHz	93.8	-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	87.9	-6.2 (+3.0 ; -6.0)	

6.4

Time Averaging

-	UUT	UUT Setting Applied Value					Applied Value			
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAei	L _{Aeq.} A 10 sec.	A 10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
	1				1/102		90	89.7	± 0.5	
			60 sec.	1		1/103		80	79.9	± 1.0
			5 min.	1		1/104		70	69.7	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812706

- 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
11	250 Hz - 500 Hz	
	1 kHz	$:\pm 0.20 \text{ dB}$
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
	104 dB : 1 kHz	$\pm 0.10 \text{ dB}$ (Ref. 94 dB)
	114 dB : 1 kHz	$\pm 0.10 \text{ dB}$ (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 estibiration 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・局部復印本證書需先獲本實驗所書面批准。



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 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, of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as 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 listed in the HOKLAS Directory of Accredited Laboratories within the test category of 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 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 quality management system (see joint IAF-ILAC-ISO Communiqué). (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 : HCKLAS 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

∟ 000552



Appendix H

IMPACT MONITORING SCHEDULE

Z:\Jobs\2015\TCS00757 (Shek Wu Hui)\600\EM&A Report\Impact\Monthly EM&A Report\4th EM&A (January 2016)\R0023v2.doc



Impact Monitoring Schedule for Reporting Month – January 2016

		Dust Mo				
U D	ate	1-hour TSP	24-hour TSP	Noise Monitoring		
Fri	1-Jan-16					
Sat	2-Jan-16	\checkmark				
Sun	3-Jan-16					
Mon	4-Jan-16					
Tue	5-Jan-16		✓			
Wed	6-Jan-16					
Thu	7-Jan-16	\checkmark		√		
Fri	8-Jan-16					
Sat	9-Jan-16					
Sun	10-Jan-16					
Mon	11-Jan-16		\checkmark			
Tue	12-Jan-16					
Wed	13-Jan-16	\checkmark		\checkmark		
Thu	14-Jan-16					
Fri	15-Jan-16					
Sat	16-Jan-16		\checkmark			
Sun	17-Jan-16					
Mon	18-Jan-16					
Tue	19-Jan-16	\checkmark		√		
Wed	20-Jan-16					
Thu	21-Jan-16					
Fri	22-Jan-16		✓			
Sat	23-Jan-16					
Sun	24-Jan-16					
Mon	25-Jan-16	\checkmark		\checkmark		
Tue	26-Jan-16					
Wed	27-Jan-16					
Thu	28-Jan-16		\checkmark			
Fri	29-Jan-16					
Sat	30-Jan-16	\checkmark				
Sun	31-Jan-16					

✓	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Air Quality	1-hour TSP	AM1 and AM2
	24-hour TSP	AM1 and AM2a
Construction N	oise	NM1 and NM2



<u>Tentative Impact Monitoring Schedule for next Reporting Period – February 2016</u>

		Dust Mo		
	Date	1-hour TSP	24-hour TSP	Noise Monitoring
Mon	1-Feb-16			
TUE	2-Feb-16			
WED	3-Feb-16		\checkmark	
Thu	4-Feb-16			
Fri	5-FEB-16	\checkmark		√
SAT	6-Feb-16			
SUN	7-Feb-16			
Mon	8-Feb-16			
TUE	9-Feb-16		✓	
WED	10-Feb-16			
THU	11-Feb-16	\checkmark		√
Fri	12-Feb-16			
SAT	13-Feb-16			
SUN	14-Feb-16			
Mon	15-Feb-16		\checkmark	
TUE	16-Feb-16			
WED	17-Feb-16	\checkmark		√
Thu	18-Feb-16			
Fri	19-Feb-16			
SAT	20-Feb-16		\checkmark	
SUN	21-Feb-16			
Mon	22-Feb-16			
TUE	23-Feb-16	\checkmark		√
WED	24-Feb-16			
Thu	25-FEB-16			
Fri	26-Feb-16		\checkmark	
SAT	27-Feb-16			
SUN	28-Feb-16			
Mon	29-Feb-16	\checkmark		✓

✓	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Air Quality	1-hour TSP	AM1 and AM2
	24-hour TSP	AM1 and AM2a
Construction N	loise	NM1 and NM2



Appendix I

24-HOUR TSP AND CONSTRUCTION NOISE MONITORING DATA



24-Hr TSP N	Aonitoring	Data	ofor AM	1															
DATE SAMPLE			ELAPSED TIME				CHAF	DING	AV0 TEM		AVG AIR PRESS				WEIGHT (g)	DUST WEIGHT COLLECTED	24-Hr TSP (m^3)		
	NUMBE	K I	NITIAL	FINAL	(mi	1)	MIN	MAX	AVC	í D°) i)	(hPa)	(m ³ /min)	(std m ³)	INITIAL			g)	$(\mu g/m^3)$
5-Jan-16	28914	1	3432.14	13448.7	5 996.	60	35	39	37.0	17		1020.4	1.20	1191	2.8153	2.8533	0.0	380	32
11-Jan-16	28750	1	3448.75	13473.2	5 1470	.00	36	40	38.0	16.1	7	1020.1	1.23	1811	2.7785	2.8040	0.0	255	14
16-Jan-16	28940	1	3473.25	13497.2	5 1440	.00	36	40	38.0	16.4	1	1013.5	1.23	1769	2.8111	2.8406	0.0	295	17
22-Jan-16	28950	1	3497.25	13521.2	7 1441	.20	38	43	40.5	15.9)	1019.7	1.32	1909	2.8125	2.8353	0.0	228	12
28-Jan-16	28992	1	3521.27	13545.2	7 1440	.00	30	32	31.0	10.4	1	1027.1	0.99	1431	2.8662	2.8662 2.9088		426	30
24-Hr TSP N	Aonitoring	, Data	n for AM2	2a															
DATE	SAMPLE ELAPSED TIME			CHART READING			AV0 TEM		AVG AIR PRESS	STANDAR FLOW RAT			FILTER WEIGHT		VEIGHT ECTED	24-Hr TSP			
	NUMBE	R I	NITIAL	FINAL	(mi	1) İ	MIN	MAX	AVC	i (°C))	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(§	g)	$(\mu g/m^3)$
5-Jan-16	28915	1	0035.71	10059.7	1 1440	.00	36	41	38.5	17		1020.4	1.25	1800	2.8060	2.8513	0.04	453	25
11-Jan-16	28683	1	0059.71	10083.7	0 1439	.40	38	42	40.0	16.1	7	1020.1	1.30	1878	2.7791	2.8321	0.0530		28
16-Jan-16	28939	1	0083.70	10107.6	3 1435	.80	38	42	40.0	16.4	1	1013.5	1.30	1868	2.8280	2.9233	3 0.0953		51
22-Jan-16	28967	1	0107.63	10131.6	4 1440	.60	39	45	42.0	15.9)	1019.7	1.38	1987	2.8640	2.9118	0.04	478	24
28-Jan-16	28991	1	0131.64	10155.6	3 1439	.40	39	43	41.0	10.4	1	1027.1	1.36	1962	2.8668	2.9660	0.0992		51
Noise Measu	rement Ro	esults	(dB) of N	NM1															
Date	Start Time Le	1 st q _{5min}	L10	L90	2 nd Leq _{5min}	L10	L9	0 3 ¹ Leq		L10 I	.90	4 th Leq _{5min}	L10 L90	5 th Leq _{5min}	L10 L90) 6 th Leq _{5mir}	L10	L90	Leq30min
7-Jan-16	13:28 5	5.7	58.6	48.4	52.9	56.3	48.	1 53	.7 5	4.6 4	7.5	56.6	59.4 49.0		58.1 51.3	3 54.3	57.0	49.8	55
	-	-			-			-	-			-							

	TIME	LCq5min			LCq5min			LCq5min			LCq5min			LCq5min			LCq5min			
7-Jan-16	13:28	55.7	58.6	48.4	52.9	56.3	48.1	53.7	54.6	47.5	56.6	59.4	49.0	54.9	58.1	51.3	54.3	57.0	49.8	55
13-Jan-16	9:45	55.6	58.6	51.3	57.8	61.4	51.3	58.8	62.0	53.3	55.6	59.8	49.7	55.4	58.2	48.4	57.9	61.2	51.5	57
19-Jan-16	10:45	51.5	53.5	47.7	49.5	50.9	47.8	51.0	52.2	48.8	50.8	53.0	48.1	49.8	51.8	47.4	50.2	51.7	48.2	51
25-Jan-16	9:46	52.9	55.5	47.6	52.1	54.4	47.6	51.7	53.9	47.8	52.2	54.6	48.1	52.5	54.8	48.3	53.9	55.9	49.5	53
30-Jan-16	10:13	55.2	57.5	47.8	57.4	60.8	49.0	53.3	55.3	49.7	53.0	54.8	49.4	53.1	54.8	50.6	52.1	54.1	49.9	54
Noise Measu	Noise Measurement Results (dB) of NM2																			
Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 nd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq30min
7-Jan-16	10:39	52.3	54.7	45.8	51.8	54.2	45.0	50.3	53.1	46.3	50.9	53.8	45.4	49.9	53.4	44.3	48.3	51.1	44.3	51
13-Jan-16	13:29	52.1	53.6	42.6	52.6	55.9	43.5	51.2	54.4	45.1	50.0	534.0	43.7	51.4	53.7	43.0	54.7	57.0	45.3	52
19-Jan-16	11:25	50.0	52.1	47.6	50.5	52.8	47.6	49.4	51.7	46.7	50.8	52.3	48.2	50.3	52.1	48.3	50.9	52.7	48.1	50
25-Jan-16	13:43	53.1	54.6	43.6	52.6	55.9	43.5	51.2	54.4	45.1	54.7	57.0	45.3	51.4	53.7	43.0	50.0	53.4	43.7	52
	10.10		00																	



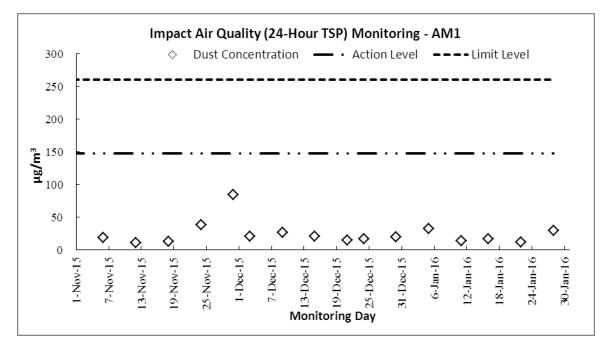
Appendix J

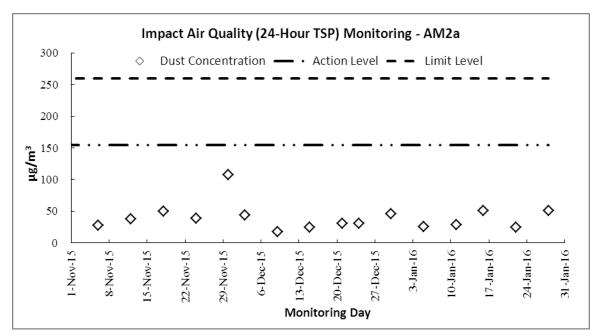
GRAPHICAL PLOTS

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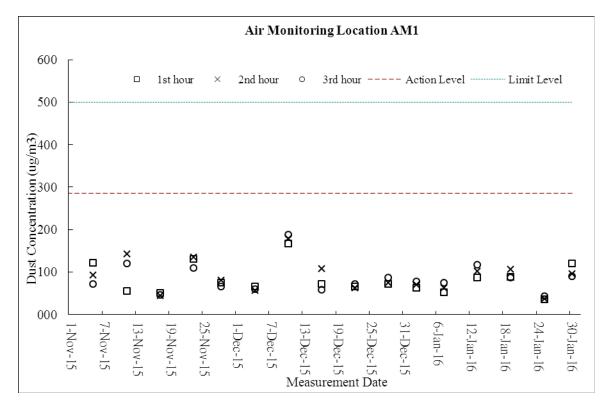
<u>Air Quality – 24-Hour TSP</u>

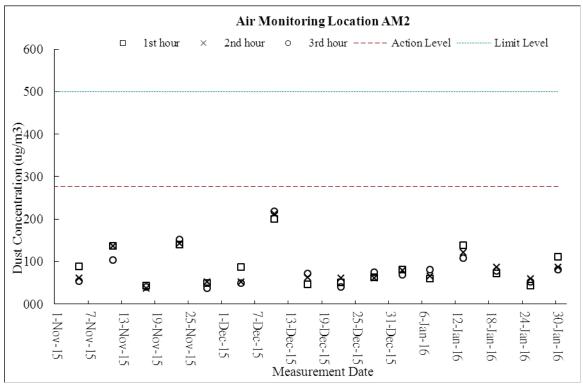






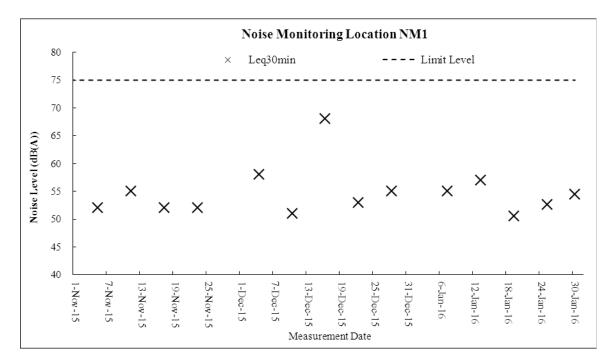
Air Quality - 1-Hour TSP

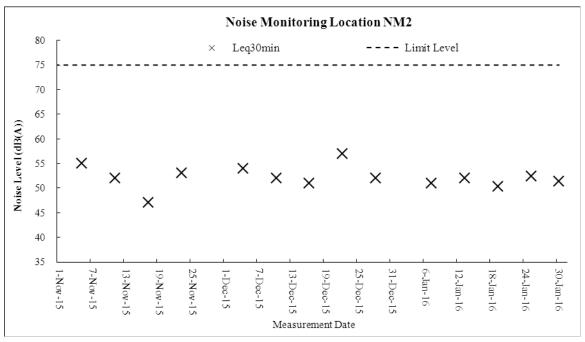






Construction Noise







Appendix K

METEOROLOGICAL DATA DURING THE REPORTING MONTH (TA KWU LING STATION)



				,	Ta Kwu	Ling Station	on
Date		Weather	Total Rainfal l (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidit y (%)	Wind Directio n
1-Jan-16	Fri	Mainly fine. Light to moderate northeasterly winds.	Trace	18.3	5.7	71.2	E/SE
2-Jan-16	Sat	Mainly fine. Light to moderate northeasterly winds.	0.3	17.7	6	77.5	E/SE
3-Jan-16	Sun	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	5.6	18.9	4.5	95	Е
4-Jan-16	Mo n	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	Trace	21.2	5.4	86.5	E/SE
5-Jan-16	Tue	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	46.2	20.3	8.2	92	Е
6-Jan-16	Wed	occasionally fresh tomorrow.	Trace	21	6.5	78	N/NW
7-Jan-16	Thu	Sunny periods Mainly cloudy tonight Moderate east to		17.9	6.1	75.5	Ν
8-Jan-16	Fri	Mainly fine. Light to moderate northeasterly winds.	0	17.1	6.5	74	N/NW
9-Jan-16	Sat	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	0	15.8	8.5	78.7	E/NE
10-Jan-16	Sun	Mainly fine. Light to moderate northeasterly winds.	6.9	17.1	9.1	84	E/SE
11-Jan-16	Mo n	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	30.7	18.6	7.5	82.5	Е
12-Jan-16	Tue	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	0	15.5	7.6	75	N/NW
13-Jan-16	Wed	Mainly fine. Cool in the morning. Moderate northeasterly winds.	0	15.1	5.3	70	Ν
14-Jan-16	Thu	Mainly fine. Light to moderate northeasterly winds.	1.1	14	7.5	83	E/SE
15-Jan-16	Fri	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	38.8	13.8	10	85	E/SE
16-Jan-16	Sat	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	12.3	15.9	13	91.7	E/SE
17-Jan-16	Sun	Mainly fine. Cool in the morning. Moderate northeasterly winds.	24.6	16.2	8.4	83.5	N/NW
18-Jan-16	Mo n	Mainly cloudy. Sunny intervals in the afternoon. Moderate to fresh east to northeasterly winds.	0	12.6	11.6	77	Ν
19-Jan-16	Tue	Mainly cloudy. Sunny intervals in the afternoon. Moderate to fresh east to northeasterly winds.	0	15.6	7.7	75.5	N
20-Jan-16	Wed	Cloudy to overcast with a few rain patches. It will be cool. Fresh easterly winds, strong offshore and on high ground.	3.3	15.2	11.3	84.7	Е
21-Jan-16	Thu	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0.1	14.5	5.7	92.5	N/NW
22-Jan-16	Fri	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	12.9	10.6	6.5	93.2	N/NW
23-Jan-16	Sat	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0.5	6.5	15.2	33	NN/E
24-Jan-16	Sun	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	4	3.5	13.5	38.7	N/NE
25-Jan-16	Mo n	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0	6.7	15.2	33	N/NE
26-Jan-16	Tue	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	Trace	6.7	5.4	59	N/NW
27-Jan-16	Wed	Cloudy to overcast. It will be humid with occasional rain.Moderate easterly winds, fresh at times at first.	3.5	11.2	5.2	89.5	NW
28-Jan-16	Thu	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	42.5	15.4	7.1	92.5	E/SE
29-Jan-16	Fri	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	32.8	17.8	5.5	88.7	E/SE
30-Jan-16	Sat	Cloudy to overcast. It will be humid with occasional rain.Moderate easterly winds, fresh at times at first.	0	18.3	6.5	80.5	Е
31-Jan-16	Sun	Cloudy to overcast. It will be humid with occasional rain.Moderate easterly winds, fresh at times at first.	0.3	15.6	9.7	84.2	Е



Appendix L

MONTHLY SUMMARY WASTE FLOW TABLE

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Monthly Summary Waste Flow Table

Department:	Drainage Services Department	nt Contract No.:	DC/2013/09	_	
Contract Title:	Advance Works for Shek Wu	Hui Sewage Treatment Works -	Further Expansion Phase 1.	A and Sewerage Works at P	ing Che Road
Commencement Date	: 21-Jul-2015	Estimated completion Date:	19-Aug-2016	Estimated Contract Sum:	1.56M

		Actual Quanti	ities of Inert C&D N	Materials Generated	Monthly			Actual Quantities	of C&D Waste	s Generated Monthl	у
Month	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	0.335	0.111	0.060	0.000	0.164	0.000	0.000	0.000	0.000	0.000	0.000
Feb											
Mar											
Apr											
May											
June											
Sub-total	0.335	0.111	0.060	0.000	0.164	0.000	0.000	0.000	0.000	0.000	0.000
July											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.335	0.111	0.060	0.000	0.164	0.000	0.000	0.000	0.000	0.000	0.000

Notes: (1) The waste flow table should cover the whole construction period of the Contract.

(2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.

(3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.

(4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.

(5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(6) Broken concrete for recycling into aggregates.

	Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse	
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)	
164.350	5.050	3.500	0.000	3.000	1.000	150.000	0.500	N/A	1.000	0.300	

Notes:

(1) Note Used.

(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Sites.

(3) Plastics refer to plastic bottles/containers, plastic dheets/foam from packaging materials. Recycle of plastics is not appliable now.

(4) The summary table shall be submitted to br submitted to the Engineer's Reoresentative monthly together with the Waste Flow Table for review and monitoring accordance with PS Clause 25.4



Appendix M

IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES (ISEMM)

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	Environmental Monttoring and Audit (EM&A) Report for January 20					
EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Air Qualit						
S2.4.1.3	 Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty material remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; 	To minimize the dust impact	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Air Pollution Control Ordinance (APCO) and Air Pollution Control (Construction Dust) Regulation

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Air Qualit	ty Impact					
	 Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabilizer within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 					

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Noise Imp	act					
\$3.4.1.1	Use of movable barrier, enclosure, acoustic mat and quiet plant. Use of wooden frames barrier with a small-cantilevered upper portion of superficial density not less than 14kg/m ² on a skid footing with 25mm thick internal sound absorptive lining.	To minimize construction noise impact arising from the Project at the affected noise sensitive receivers (NSRs)	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, Noise Control Ordinance (NCO)
\$3.4.1.2	 Good Site Practice: Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. Mobile plant, if any, should be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction period of Advance Works and Main Works of Phase 1A	EIAO-TM, NCO

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Ecologica	l Impact					
S4.2.1.1	Solid dull green noise/visual barriers of at least 2m high shall be erected and maintained between active works area and all areas of ecological importance.	Minimize noise and human disturbances during construction phase.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.2	Avoid unnecessary lighting.	Minimize mortality impacts on birds.	Design / Contractor/ Plant Operator	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.3	Good construction site practice to minimise dust generation should be followed on all construction sites. Measures to avoid, minimise and mitigate impacts on air quality are detailed in this schedule	Minimize dust generation from construction sites.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.4	 The following measures to avoid, minimise and mitigate impact on water quality during construction phase shall be implemented Temporary sewerage and drainage to be designed and installed to collect wastewater and prevent it from entering water bodies; Proper locations well away from nearby water bodies should be used for temporary storage of materials (i.e. equipment, filling materials, chemicals and fuel) and temporary stockpiles of construction debris and spoil, and these should be identified before commencement of works; To prevent muddy water entering nearby water bodies, work sites close to nearby water bodies should be isolated, using such items as sandbags or silt curtains with lead edge at bottom and properly supported props. Other protective measures should also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the work sites; Construction debris and spoil should be covered and/or properly disposed of as soon as possible to avoid these being washed into nearby water bodies; Proper locations for discharge outlets of temporary wastewater treatment facilities well away from sensitive receivers should be identified; 	Avoid, minimise and mitigate impact on water quality	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM

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Ecological	Impact	-				
	 Adequate lateral support should be erected where necessary in order to prevent soil/mud from slipping into water bodies; Site boundaries should be clearly marked and any works beyond the boundary strictly prohibited; Regular water monitoring and site audit should be carried out at adequate points along any watercourses where construction works are underway upstream within their catchments and also on the Ng Tung, Sheung Yue and Shek Sheung Rivers. If the monitoring and audit results show that pollution occurs, adequate measures including temporarily cessation of works should be considered; Excavation profiles should be properly designed and executed with attention to the relevant requirements for environment, health and safety; Where soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table by installing well points or similar means; Stockpiling sites should be lined with impermeable sheeting and bunded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of contaminated soil to minimize contaminated runoff and construction materials should be properly covered and located away from nearby water bodies; and Supply of suitable clean backfill material after excavation, if required. Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated run-off, and truck bodies and tailgates should be sealed to prevent discharge during transport or during wet season; Speed control for the trucks carrying contaminated materials should be enforced; Vehicle wheel washing facilities at construction sites' exit points should be established and used, where necessary; and Other measures as detailed in this schedule. 					

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Water Qu	ality Impact					
85.2.2.1	Construction Site Runoff Practices and measures provided in the Practice Note for Professional Persons on Construction Site Drainage, (PROPECC PN1/94) should be followed where applicable.	Control construction runoff	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO
85.2.2.2 	 Sewage from Workforce Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures 	Handling of site sewage	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
Waste Mar				-		
\$6.2.2.1	 Good Site Practices and Waste Reduction Measures: Nomination of an approved person, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; Provision of sufficient waste disposal points and regular collection for disposal; Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; An Environmental Management Plan (EMP) should be prepared by the contractor and submitted to the Engineer for approval. 	Minimize waste generation during construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal Ordinance (WDO)
\$6.2.3.1	 Waste Reduction Measures: Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; Proper storage and site practices to minimize the potential for damage and contamination of construction materials; Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); and Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 	Reduce waste generation	Contractor	Work Sites	Prior to the commencement of construction of Advance Works and Main Works of Phase 1A	WDO
S6.2.4.1 - S6.2.4.2	 Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: Waste, such as soil, should be handled and stored well to ensure secure 	Minimize waste impacts arising from waste storage	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	WDO

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Waste Ma					-	
	 containment, thus minimizing the potential of pollution; Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and Different locations should be designated to stockpile each material to enhance reuse. Remove waste in timely manner; Employ the trucks with cover or enclosed containers for waste transportation; Obtain relevant waste disposal permits from the appropriate authorities; and 					
86.2.5.2	 Disposal of waste should be done at licensed waste disposal facilities. C&D Materials from Site Formation Maintain temporary stockpiles and reuse excavated fill material for backfilling; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt "selective demolition" technique to demolish the existing structure and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; and Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified. 	Minimize waste impacts from excavated and C&D materials	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO, ETWB TCW No. 19/2005
\$6.2.5.3	 C&D Material from Buildings Demolition and New Building Construction The Contractor should recycle as much as possible of the C&DM on-site. Public fill and C&DM waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. For example, concrete and masonry can be crushed and used as fill, and steel reinforcing bar can be used by scrap steel mills. Different areas of the work sites should be designated for such segregation and storage. The use of wooden hoardings shall not be allowed. An alternative material, such as metal, aluminium or alloy etc, could be used. Government has developed a charging policy for the disposal of waste to landfill at present. It will provide additional incentive to reduce the volume of generated waste and ensure proper segregation to allow 	Minimize waste impacts from building demolition and new building construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO, ETWB TCW No. 19/2005

DSD Contract No: DC/2013/09 Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road 4th Monthly Environmental Monitoring and Audit (EM&A) Report for January 2016

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Waste Ma	nagement							
	 reuse of the inert material on site when implemented. In order to minimize the impacts of the demolition works, the generated wastes must be cleared as quickly as possible after demolition. Therefore, the demolition and clearance works should be undertaken simultaneously. To facilitate proper segregation of inert and non-inert C&D material arising from demolition works, selective demolition method should be adopted. 							
86.2.5.4	 Chemical Waste If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation 	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste		
S6.2.5.5	 General Refuse General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. A reputable waste collector should be employed to remove general refuse on a daily basis. 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste		

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	e and Visual			-		
\$7.3.1.1	 Good Site Practices For areas unavoidably disturbed by the Project on a short term basis e.g. works areas, the general principle to try and restore these to their former state to suit future land use, should be adhered to. With regard to topsoil, where identified, it should be stripped, treated appropriately, and where suitable and practical stored for re-use in the construction of the soft landscape works such as roadside amenity strips, and open space sites. 	Minimize the impact to the landscape and visual	Contractor	Work Sites	Prior to construction and construction phase	
\$7.3.2.1	 MM4 - Tree Protection & Preservation Existing trees to be retained within the Project Site should be carefully protected during construction. In particular Old and Valuable Trees (OVTs) will be preserved according to ETWB TC (Works) No. 29/2004. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas. A detailed tree survey will be carried out for the Tree Removal Application (TRA) process which will be carried out at the later detailed design stage of the Project. The detailed tree survey will propose which trees should be retained, transplanted or felled and will include details of tree protection measures for those trees to be retained. 	Protect and Preserve Trees	Designer / Contractor	Work Sites	Prior to construction and construction phase	ETWB TCW No. 10/2013, 29/2004 and 3/2006
\$7.3.2.1	 MM5 - Tree Transplantation Trees unavoidably affected by the Project works should be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery as far as possible. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, where applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. A detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBTC 2/2004 and 3/2006 and final 	Transplant Trees where suitable for transplantation	Designer / Contractor	Work Sites where possible. Otherwise consider offsite locations	Prior to construction, construction phase and operation phase	WB TCW No. 10/2013, 3/2006 and 2/2004

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Landscap	Landscape and Visual							
	locations of transplanted trees should be agreed prior to commencement of the work.							
\$7.3.2.1	 MM17 - Light Control Construction day and night time lighting should be controlled to minimize glare impact to adjacent VSRs during the Construction phase. Street and night time lighting shall also be controlled to minimize glare impact to adjacent VSRs during the operation phase. 	To minimize glare impact to adjacent VSRs.	Designer / Contractor	Work Sites and/or the Plant	Construction phase and operation phase			