

JOB NO.: TCS00864/16

CEDD SERVICE CONTRACT NO. NTE/07/2016 ENVIRONMENTAL TEAM FOR DEVELOPMENT OF ANDERSON ROAD QUARRY SITE - SITE FORMATION AND ASSOCIATED INFRASTRUCTURE WORKS

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (APRIL 2017)

PREPARED FOR CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Reference No. **Prepared By Certified By Date**

23 May 2017 TCS00864/16/600/R0043v3

> Nicola Hon Tam Tak Wing (Environmental Consultant) (Environmental Team Leader)

Version	Date	Remarks
1	12 May 2017	First Submission
2	18 May 2017	Amended according to the IEC's comment on 16 May 2017
2	23 May 2017	Amended according to the IEC's comment on 22 May 2017



Civil Engineering and Development Department

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Your reference:

HKCEDD10/50/104309

Date:

24 May 2017

Attention: Mr Stephen T S Li

BY POST

Dear Sirs

Agreement No.: NTE 08/2016

Independent Environmental Checker for Development of Anderson Road Quarry Site

- Site Formation and Associated Infrastructure Works

Monthly Environmental Monitoring and Audit Report (April 2017)

We refer to the emails of 12, 18, 23 and 24 May 2017 from Action-United Environmental Services and Consulting attaching a Monthly Environmental Monitoring and Audit Report (April 2017) for the captioned project.

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report (April 2017).

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Nic Lam on 2618 2836.

Yours faithfully ANEWR CONSULTING LIMITED

Independent Environmental Checker

LYMA/LHHN/CYYH/csym

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EXECUTIVE SUMMARY

- ES01 Action-United Environmental Services & Consulting (AUES) has been awarded the Civil Engineering and Development Department (CEDD) Service Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site Site Formation and Associated Infrastructure Works (hereinafter called "the Service Contract") on 15 December 2016. The commencement date of the Service Contract is from December 2016 and the Contract Period is 70 months.
- ES02 The Services under the Service Contract is to provide environmental monitoring and audit (EM&A) services for the Works Contracts pursuant to the requirement of Environmental Team (ET) under the EM&A manual to ensure that the environmental performance of the Works Contracts comply with the requirement specified in the EM&A Manual and EIA Report of Development of Anderson Road Quarry and other relevant statutory requirements.
- ES03 To facilitate the project management and implementation, the Service Contract is divided to three CEDD contracts including Contract 1 (NE/2016/01), Contract 2 (NE/2016/05) and Contract 3. As advised by the RE, the date for commencement of Contract 1 was in late December 2016 and the major construction works has been commenced on 12 April 2017. The date for commencement of Contract 2 was 31 March 2017 and the major construction activities will be commenced in May 2017. The EM&A programme under the Project was therefore commenced on 12 April 2017 pursuant to the requirement under the EM&A manual.
- ES04 This is the 1st monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 30 April 2017 (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES05 Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Environmental	Environmental Monitoring	Reporting Period		
Aspect	Parameters / Inspection	Number of Active Monitoring Locations	Total Occasions	
Ain Orralian	1-hour TSP	4	48	
Air Quality	24-hour TSP	4	15	
Construction Noise	L _{eq(30min)} Daytime	2	8	

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES06 No exceedances of air quality and construction noise registered in the Reporting Period. Furthermore, no noise complaints (i.e. Action Level) were received. No Notifications of Exceedances (NOEs) was issued to the RE, IEC and the Main Contractor. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Enginemantal	Manitanina	A 04:0-	T ::4	Event & Action			
Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	NOE Issued	Investigation	Corrective Actions	
Ain Ovality	1-hour TSP	0	0	0	0	0	
Air Quality	24-hour TSP	0	0	0	0	0	
Construction Noise	L _{eq(30min)} Daytime	0	0	0	0	0	

ENVIRONMENTAL COMPLAINT

ES07 No environmental complaints for the Project were received in the Reporting Period.

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NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES08 No environmental summons or successful prosecutions for the Project were recorded in the Reporting Period.

REPORTING CHANGE

ES09 Since this is the 1st Monthly EM&A Report, no reporting changes were made in the Reporting Period.

SITE INSPECTION

- ES10 In this Reporting Period, joint site inspection to evaluate the site environmental performance for *Contract 1* was carried out by the RE, ET and Contractor on 6, 11, 19 and 25 April 2017 in which IEC joined the site inspection on 6 April 2017. No non-compliance was noted during the site inspection.
- ES11 In this Reporting Period, joint site inspection to evaluate the site environmental performance for *Contract 2* has been carried out by the RE, IEC, ET and the Contractor on **28 April 2017**. No non-compliance was noted during the site inspection.

FUTURE KEY ISSUES

- ES12 Special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to resident. The Contractor should fully implement the construction dust mitigation measures properly.
- ES13 Construction noise would be a key environmental issue during construction work of the Project. Noise mitigation measures such as using quiet plants should be implemented in accordance with the EM&A requirement.
- ES14 In addition, all effluent discharge shall be ensure to fulfill Technical Memorandum of Effluent Discharged into Drainage and Sewerage Systems, inland and Coastal Waters criteria or discharge permits stipulation.



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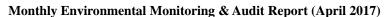
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1. INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 Action-United Environmental Services & Consulting (hereinafter referred as "AUES") has been awarded the CEDD Service Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site Site Formation and Associated Infrastructure Works (hereinafter called "the Service Contract") on 15 December 2016. The commencement date of the Service Contract is in December 2016 and the Contract Period is 70 months.
- 1.1.2 The Services under the Service Contract is to provide environmental monitoring and audit (EM&A) services for the Works Contracts pursuant to the requirement of Environmental Team (ET) under the EM&A manual to ensure that the environmental performance of the Works Contracts comply with the requirement specified in the EM&A Manual and EIA Report of Development of Anderson Road Quarry and other relevant statutory requirements.
- 1.1.3 Development of Anderson Road Quarry is to provide land and the associated infrastructures for the proposed land used at the existing Anderson Road Quarry Site at the North-eastern of East Kowloon according to the final Recommended Outline Development Plan (hereinafter named as the Project Works).
- 1.1.4 To facilitate the project management and implementation, the Service Contract is divided to three CEDD contracts including Contract 1 (NE/2016/01), Contract 2 (NE/2016/05) and Contract 3. As advised by the RE, the date for commencement of Contract 1 was in late December 2016 and the major construction works has been commenced on 12 April 2017. The date for commencement of Contract 2 was 31 March 2017 and the major construction activities will be commenced in May 2017. The EM&A programme under the Project was therefore commenced on 12 April 2017 pursuant to the requirement under the EM&A manual.
- 1.1.5 According to the Approved EM&A Manual, air quality and noise monitoring are required to be monitored during the construction phase of the Project. As part of the EM&A program, baseline monitoring is required to determine the ambient environmental conditions. Baseline monitoring including air quality and noise were conducted on 17th January 2017 to 30th January 2017, 16th February 2017 to 2nd March 2017 and 26th March 2017 to 8th April 2017 at all designated monitoring locations before construction work commencement.
- 1.1.6 The Baseline Monitoring Report which verified by the Independent Environmental Checker (hereinafter referred as "the IEC") has been submitted to Environmental Protection Department (EPD) on *9 May 2017* for endorsement.
- 1.1.7 This is the 1st monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 30 April 2017.

1.2 REPORT STRUCTURE

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

Section	1	Introduction
Section	1	mnoaucnon

Section 2 Project Organization and Construction Progress

Section 3 Summary of Impact Monitoring Requirements

Section 4 Air Quality Monitoring

Section 5 Construction Noise Monitoring

Section 6 Water Quality Monitoring

Section 7 Waste Management

Section 8 Site Inspections

Section 9 Environmental Complaints and Non-Compliance

Section 10 Implementation Status of Mitigation Measures

Section 11 Conclusions and Recommendations



2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project would be divided by the 3 contracts as described in following. The details of each contracts is summarized below and the delineation of each contracts is shown in *Appendix A*.

Contract 1 (Contract No. NE/2016/01)

- 2.1.2 Commencement date of Contract 1 was in late December 2016 and the major scope of work of Contract 1 is listed below:
 - Formation of about 40 hectares (ha) of land platforms at the ARQ site and the associated geotechnical works;
 - Road works including construction of approximately 3-kilometer long vehicular roads, footpaths, cycle tracks, an approximately 130-meter long underpass at the southern end an a public transport terminus at the northern end at the ARQ site;
 - Provision of and improvement to water supply, drainage and sewerage systems as well as landscaping works; and
 - Construction of proposed subway structures and lift tower structures of pedestrian connectivity facilities.

Contract 2 (Contract No. NE/2016/05)

- 2.1.3 Commencement date of Contract 2 was 31 March 2017 and the major Scope of Work of the Contract 2 is listed below:
 - (i) Construction of the following pedestrian connectivity facilities with covered elevated walkways, covered at grad walkways, escalators, life towers with associate staircase and lifts:-
 - (a) Linking Hiu Kwong street with Hiu Ming Street (E1)
 - (b) Linking the proposed "Footbridge Link at Sau Ming Road" with Hiu Ming Street (E2, C1 and E3)
 - (c) Linking the proposed bus-to-bus interchange at Tseung Kwan O Tunnel Toll Plaza with Lin Tak Road (E12)
 - (ii) Construction of bus-to-bus interchange (BBJ) at Tseung Kwan O Tunnel Toll Plaza; and
 - (iii) Associated landscape works.

Contract 3 (Contract number to be assigned)

- 2.1.4 The commencement date of Contract 3 is to be confirmed.
 - (i) Site formation and road works in the following sections:-
 - (a) at junction of Clear Water Bay Road (CWBR) and On Sau Road constructed under the Development at Anderson Road (DAR) project including the provision of U-turn facility and noise mitigation measures (RIW1);
 - (b) at New Clear Water Bay Road (NCWBR) near Shun Lee Tsuen Road including the road widening works at NCWBR, modification of existing subway structure and provision of noise mitigation measures (RIW2); and
 - (c) at the junction of Lin Tak Road and Sau Mau Ping Road, construction of flyover above Tseung Kwan O Road, provision of loading and unloading bays along Lin Tak Road and noise mitigation measures (RIW3).
 - (ii) construction of the following pedestrian connectivity facilities with covered elevated walkways, escalators and lift towers with associated staircases and lifts:-
 - (a) linking Anderson Road Quarry site with the DAR Site (except the works covered under Contract 1) (System A and System B);
 - (b) linking Hiu Ming Street with Hiu Yuk Path (E8); and



- (c) linking the proposed bus-bus interchange at Tseung Kwan O Tunnel Toll Plaza with Sau Mau Ping Road (E11).
- (iii) Associated landscape works.

2.2 PROJECT ORGANIZATION

2.2.1 The project organization is shown in *Appendix B*.

2.3 CONSTRUCTION PROGRESS

2.3.1 In the Reporting Period, the major construction activity conducted under the Project is located in Contract 1 and they are summarized in below. Moreover, the construction program of the Contract 1 is enclosed in *Appendix C*.

Contract 1 (NE/2016/01)

- 1. Site Preparation:
 - (a) Continue site cleaning in Portion A1 to A4, D1 to D2 and B1 to B6 and E2 including areas in the vicinity
 - (b) Continue construction of safety hoarding along existing Anderson Road in Portion D1
 - (c) Delivered 14 concrete blocks to the road L4 for construction of safety hoarding
 - (d) Completed structural works of RE's site office
 - (e) Poured concrete for foundation of JV's site office
- 2. 2 nos. of bored piles adjacent to Road L3 and Underground Stormwater Tank
 - (a) Continued bored pile driving for RW9-P1 on 3 Mar 2017 and in progress (approx.95% of completion)
 - (b) Commenced bored pile construction of RW9-P2 on 24 Mar 2017
- 3. Completed excavation and concreting of 1200 U-ditch channels in Portion A1
- 4. Completed 3 holes comprising of AD BH1 and AD BH5 out of 5 holes at the underpass tunnel (approx. 60% of completion) while AD BH4 has been commenced and under progress.
- 5. Completed last 2 holes comprising of PD-SB06E and PD-SB08E out of 6 holes for pre-drilling for the north lift tower of Pedestrian Connectivity System B (100% of completion)
- 6. Continued excavation of temporary rain water tank TWR no.3 (98% of completion)
- 7. Completed excavation of Portion B6 (100% of completion)
- 8. Commenced excavation of Portion A4 (10% of completion)
- 9. Completed drilling work of the land contamination ground investigation BH12 and now awaiting a sample of ground water

Contract 2 (NE/2016/05)

In the Reporting Period, site preparation works were undertaken for Contract 2. The major construction activities will be commenced in May 2017.

2.3.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection for the Project of contract 1 are presented in *Table 2-1*.

Table 2-1 Status of Environmental Licenses and Permits of the Contracts

		License/Permit Status			
Item	Description	Permit no./	Valid Period		Status
Item	Description	account no./ Ref. no.	From	То	
1	Form NA - Notification pursuant to Air pollution Control (Construction Dust) Regulation	EPD ref. no. 411762	NA	NA	valid

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		License/Permit Status				
Item	Description	Permit no./	Vali	Status		
Tem	Description	account no./ Ref. no.	From	То		
	Form NB - Notification pursuant to Air pollution Control (Construction Dust) Regulation	EPD ref. no. 412730	NA	NA	valid	
2	Chemical Waste Producer Registration	Registration no. WPN 5213-292-C41 15-01	15 Feb 2017	End of project	valid	
3	Water Pollution Control Ordinance - Discharge License	WT00027252- 2017	20 Mar 2017	31 Mar 2022	valid	
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account no. 7026925	20 Jan 2017	End of project	valid	
5	Construction Noise Permit	GW-RE0177-1 7	15 Mar 2017	14 Sep 2017	valid	

3. SUMMARY OF IMPACT MONITORING REQUIREMENTS

3.1 GENERAL

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

3.2 MONITORING PARAMETERS

- 3.2.1 The EM&A program of construction phase monitoring 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*.

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	1-hour TSP by Real-Time Portable Dust Meter; and24-hour TSP by High Volume Air Sampler
Noise	 Leq(30min) in normal working days (Monday to Saturday) 07:00-19:00 except public holiday Supplementary information for data auditing, statistical results such as L₁₀ and L₉₀ shall also be obtained for reference.

3.3 MONITORING LOCATIONS

3.3.1 According to the EM&A Manual Section 4.6, seven (7) most representative and affected air sensitive receivers (ASR) were selected as air monitoring stations (AQM). The air quality monitoring locations are listed in *Table 3-2* and illustrated in *Appendix D*.

Table 3-2 Impact Monitoring Stations - Air Quality

ID	ASR ID in EIA	Location in the EM&A Manual	Identified Location during Site Visit
AMS-1	ACYC-01	Chi Yum Ching She	Ground of Chi Yum Ching facing the project site
AMS-2	DARB-13	Block 8, Site B Note 1	Ground of Block 8, Site B facing On Sau Road
AMS-3	DARC-16	Planned Clinic and Community Centre, Site C2	Ground of Planned Clinic and Community Centre facing Anderson Road
AMS-4	DARC-26	Planned School, Site C2 Note 2	Ground of Planned School facing Anderson Road
AMS-5	DARE-06	Block 5, DAR Site E	Main roof of Oi Tat House of On Tat Estate facing the project site
AMS-6	DARE-17	Block 9, Site E	Main roof of Hau Tat House of On Tat Estate facing the project site
AMS-7	AMYT-04	Ma Yau Tong Village	Balcony at 2 nd floor of Village House Anderson Road No. 1 facing the project site

Note 1: The ASR is under construction and not yet in operation.

Note 2: The ASR is not yet constructed.

3.3.2 In our recent site visit at the subject site, it was noted that some planned ASRs identified in the



EM&A Manual are still under construction/ has not yet constructed and there were no suitable location to set up the high volume sampler to carry out the baseline 24-hour TSP monitoring. Therefore, a proposal changes for the baseline monitoring programme was submitted and agreed by EPD before the baseline monitoring.

- 3.3.3 In our baseline monitoring proposal, baseline 1-hour TSP monitoring will be conducted at all AQM location AMS-1 to AMS-7. However, baseline 24-hour TSP monitoring will be conducted at existing ASR AMS-1, AMS-5, AMS-6 and AMS-7 only with our justifications present below:
 - (a) AQM Locations AMS-2, AMS-3 & AMS-4 are planned ASRs which are still under construction/ has not yet constructed. During recent site visit, there were no suitable locations for setting up the HVS and electricity supply at these AQM locations.
 - (b) Alternative locations were considered in accordance with EM&A Manual Section 4.7.3. However, there were no suitable location found and our justifications are provided in below:
 - (i) Alternative locations Sau Mau Ping Estate and Shun Tin Estate were located at downhill of the subject site which separated by the active construction site (i.e., AMS-2, AMS-3 & AMS-4) and Sau Mau Ping Road. In view of the level deviation, the baseline data obtained in these alternative locations could not represent the baseline condition of the designated location AMS-2, AMS-3 & AMS-4. Moreover, when the planned ASR AMS-2, AMS-3 & AMS-4 activate sooner or later, impact monitoring should be carried out at these designated locations instead of the alternative locations.
 - (ii) Alternative location such as site boundary of the site subject was considered, however, there were no provisions of power supply to sustain the HVS continuously after consultation with the Contractor.
 - (c) According to EM&A Manual Section 4.7.4, as an exceptional cases, it is proposed to adopt the Action Level established at AMS-5 to AMS-2, AMS-3 & AMS-4 for impact monitoring as AMS-5 with our justification below.
 - (i) AMS-5 is the closest ASR to AMS-2, AMS-3 & AMS-4 under same direction of prevailing wind.
 - (ii) In view of the baseline 1-hour TSP data, the measured results at AMS-5 were lower than those collected at AMS-2, AMS-3 & AMS-4. As a conservation approach, adopting Action Level at AMS-5 for Location AMS-2, AMS-3 & AMS-4 is more stringent for the project.
 - (iii) The Action level for AMS-2, AMS-3 & AMS-4 will be subject to review in accordance with EM&A Manual Section 4.7.5

Construction Noise

3.3.4 According to the EM&A Manual Section 5.5, three (3) most representative and affected noise sensitive receivers (NSR) were selected as monitoring stations. As recommended by the RE and agreed by IEC, one (1) additional noise monitoring location is proposed to add in Oi Tat House of On Tat Estate (hereafter "NMS-4") to oversee the possible noise impact pose to the resident in On Tat Estate, which is an existing NSR close to the major works activities. The details of noise monitoring location are listed in *Table 2-3* and illustrated in *Appendix D*.

Table 3-3 Impact Monitoring Stations - Construction Noise

ID	NSR ID in EIA	Location
NMS-1	Site C2 – School 05 Note 1	Ground of planned school at DAR facing the project
141415-1	Site C2 – School 03	site
NMS-2	Site E – School	Ground area between the planned school and Him
11113-2	Site E – School	Tat House facing the project site
NMS-3	Site C2 – R102 Note 1	Ground of Ancillary Facilities Building facing the
INIVIS-3	Site C2 – R102	project site



	NMS-4*	Oi Tat House	1m from the exterior of ground floor façade of Oi
١		Of fat flouse	Tat House of On Tat Estate facing the project site

Note 1: The NSR is under construction and not yet in operation.

Remark: (*) Additional noise monitoring location is recommended by RE and agreed by IEC

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 The requirements of impact monitoring in the approved *EM&A Manual* and presented as follows.

Air Quality Monitoring

- 3.4.2 Frequency of impact air quality monitoring is as follows:
 - 1-hour TSP 3 times every six days during course of works throughout the construction period
 - 24-hour TSP Once every 6 days during course of works throughout the construction period

Noise Monitoring

- 3.4.3 Noise monitoring will be to conduct at the all available designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:
 - one set of Leq_(30min) measurements between 07:00 and 19:00 hours on normal weekdays

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 prove that the instrument is capable of achieving a comparable results to the HVS. The instrument should be calibrated regularly, and the 1-hour sampling shall be determined on yearly basis by the HVS to check the validity and accuracy of the results measured by direct reading method. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.
- 3.5.2 All equipment to be used for air quality monitoring is listed in *Table 3-4*.

Table 3-4 Air Quality Monitoring Equipment

Equipment		Model	
24-hour	High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170	
TSP	Calibration Kit	TISCH Model TE-5025A	
1- hour TSP	Portable Dust Meter	Laser Dust Monitor TSI AM510 / Sibata LD-3B Laser Dust Monitor	

Noise Monitoring

- 3.5.3 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms⁻¹.
- 3.5.4 Noise equipment as perform for baseline monitoring is listed in *Table 3-5*.

Table 3-5 Construction Noise Monitoring Equipment

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

3.6 MONITORING METHODOLOGY

1-hour TSP

- 3.6.1 The 1-hour TSP monitor was a brand named "Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter" which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:
 - (a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;
 - (b.) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
 - (c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.
- 3.6.2 The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument will be checked before and after each monitoring event.

24-hour TSP

- 3.6.3 The equipment used for 24-hour TSP measurement is Thermo Andersen Model GS2310 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
- 3.6.4 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground or the roof of building. The flow rate of the HVS between 0.6m³/min and 1.7m³/min will be properly set in accordance with the manufacturer's instruction to within the range recommended in *EPA Code of Federal Regulation*, *Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-
 - A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
 - No two samplers should be placed less than 2 meters apart;
 - The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
 - A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
 - Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
 - The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the

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- filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
- After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.
- 3.6.5 All the sampled 24-hour TSP filters will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.
- 3.6.6 The HVS used for 24-hour TSP monitoring will be calibrated before the commencement for sampling, and after in two months interval for 1 point checking of maintenance and six months interval for five points calibrate in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m³/min. Motor brushes of HVS will be regularly replaced of about five hundred hours per time. The calibration certificates of all monitoring equipment used for the impact monitoring program in the Reporting Period and the HOKLAS accredited certificate of laboratory are attached in *Appendix E*.

Noise Monitoring

- 3.6.7 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804:1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.
- 3.6.8 All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq $_{(30 \text{ min})}$ in six consecutive Leq $_{(5 \text{ min})}$ measurements will be used as the monitoring parameter for the time period between 07:00-19:00 hours on weekdays throughout the construction period.
- 3.6.9 The sound level meter will be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield will be fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.
- 3.6.10 Immediately prior to and following each noise measurement the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 3.6.11 Noise measurements will not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed will be checked with a portable wind speed meter capable of measuring the wind speed in m/s.
- 3.6.12 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis. The calibration



certificates of all monitoring equipment used for the impact monitoring program in the Reporting Period is attached in Appendix E.

Meteorological Information

3.6.13 The meteorological information including wind direction, wind speed, humidity, rainfall, air pressure and temperature etc. during baseline monitoring is extracted from the closest Hong Kong Observatory Station. To obtain the most appropriate meteorological information where available, the data of temperature is extracted from the Kwun Tong Observatory Station; the data of wind speed and wind direction are extracted from Kai Tak Observatory Station and the data of humidity is extracted from King's Park Station.

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

3.7.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to the approved Environmental Monitoring and Audit Manual, the air quality, construction noise were set up, namely Action and Limit levels are listed in *Tables 3-6 and 3-7*.

Table 3-6 Action and Limit Levels for Air Quality Monitoring

Manitaring Station	Action Lev	vel (μg /m³)	Limit Level (μg/m³)		
Monitoring Station	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP	
AMS-1	313	154	500	260	
AMS-2	319	165	500	260	
AMS-3	319	165	500	260	
AMS-4	315	165	500	260	
AMS-5	299	166	500	260	
AMS-6	303	168	500	260	
AMS-7	307	156	500	260	

Table 3-7 Action and Limit Levels for Construction Noise

Manitaring Lagation	Action Level	Limit Level in dB(A)			
Monitoring Location	Time Period: 0700-1900 hours on normal weekdays				
NMS-1		75 dB(A) $^{\text{Note 1}}$ / 70 dB(A) $^{\text{Note 2}}$ / 65 dB(A) $^{\text{Note 2}}$			
NMS-2 NMS-3	When one or more documented	70 $dB(A)^{\text{Note 2}} / 65 dB(A)^{\text{Note 2}}$			
	complaints are received	75 dB(A)			
NMS-4*		75 dB(A)			

- Note 1: Locations NMS-1 and NMS-2 are planned school as NSRs which are still under construction/ not yet constructed; hence the Limit Levels of 75dB(A) is adopted for NMS-1 and NMS-2 until the school is occupied and in operation.
- Note 2: Noise Limit Levels for school is 70dB(A) and should be reduced to 65dB(A) during examination period.
- Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

Remark: (*) Additional noise monitoring location is recommended by RE and agreed by IEC

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

3.8 DATA MANAGEMENT AND DATA QA/QC CONTROL

3.8.1 All monitoring data will be handled by the ET's in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will input into a computerized database properly maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the

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data.

For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.



4. AIR QUALITY MONITORING

4.1 GENERAL

- 4.1.1 In the Reporting Period, major construction activities under Contract 1 was commenced on 12 April 2017 and air quality monitoring was performed at the active designated monitoring locations AMS-1, AMS-5, AMS-6 and AMS-7. No monitoring was conducted at AMS-2, AMS-3 and AMS-4 since they are planned ASR which are still under construction/ not yet constructed.
- 4.1.2 The air quality monitoring schedule is presented in **Appendix** G and the monitoring results are summarized in the following sub-sections.

4.2 RESULTS OF AIR QUALITY MONITORING

4.2.1 In the Reporting Period, a total of 48 events of 1-hour TSP and 15 events 24-hours TSP monitoring were carried out and the monitoring results are summarized in Tables 4-1 to 4-4. The detailed 24-hour TSP monitoring data are presented in Appendix H and the relevant graphical plots are shown in *Appendix I*.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results (AMS-1)

	24-hour		1.	-hour TSP (μg	/m ³)	
Date	$TSP (\mu g/m^3)$	Date	Start Time	1 st reading	2 nd reading	3 rd reading
19-Apr-17 (#)	146	13-Apr-17	13:46	74	62	65
24-Apr-17	29	19-Apr-17	9:37	42	38	44
28-Apr-17	118	25-Apr-17	13:07	71	73	75
		29-Apr-17	13:36	80	82	90
Average	98	Avera	•		66	
(Range)	(29 - 146)	(Rang	ge)		(38 - 90)	

Remark (#) 24-hour TSP monitoring at Location AMS-1 was commenced on 19 April 2017 since the power provision for the HVS was granted by the landlord since 19 April 2017.

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results (AMS-5)

	24-hour	1-hour TSP (μg/m³)				
Date	TSP $(\mu g/m^3)$	Date	Start Time	1 st reading	2 nd reading	3 rd reading
12-Apr-17	36	13-Apr-17	9:39	78	65	70
18-Apr-17	64	19-Apr-17	13:28	34	37	32
24-Apr-17	80	25-Apr-17	9:18	76	78	78
28-Apr-17	28	29-Apr-17	9:16	65	74	69
Average (Range)	52 (28 – 80)	Avera (Rang	•		63 (32 – 78)	

Table 4-3 Summary of 24-hour and 1-hour TSP Monitoring Results (AMS-6)

	24-hour		1.	-hour TSP (μg	y/m ³)	
Date	$TSP (\mu g/m^3)$	Date	Start Time	1 st reading	2 nd reading	3 rd reading
12-Apr-17	24	13-Apr-17	9:31	27	29	30
18-Apr-17	51	19-Apr-17	13:11	27	29	30
24-Apr-17	75	25-Apr-17	9:29	74	76	77
28-Apr-17	45	29-Apr-17	9:31	70	75	68
Average	49	Avera	ge		51	
(Range)	(24 - 75)	(Rang	ge)	(22 - 77)		



Table 4-4 Summary of 24-hour and 1-hour TSP Monitoring Results (AMS-7)

	24-hour	1-hour TSP (μg/m³)				
Date	$TSP (\mu g/m^3)$	Date	Start Time	1 st reading	2 nd reading	3 rd reading
12-Apr-17	36	13-Apr-17	9:06	65	66	61
18-Apr-17	25	19-Apr-17	9:07	38	31	37
24-Apr-17	80	25-Apr-17	13:09	72	74	75
28-Apr-17	88	29-Apr-17	13:52	68	75	80
Average	57	Avera	ge		62	
(Range)	(25 - 88)	(Rang	(Range)		(31 - 80)	

- 4.2.2 As shown in *Tables 4-1 to 4-4*, all the 1-hour TSP and 24-hour TSP monitoring results were below the Action/Limit Levels. No Notification of Exceedance (NOE) was issued in this Reporting Period.
- 4.2.3 It was noted that fluctuating and fluctuating high dust results at AMS-1 compared with other stations. According to the observation by the monitoring team, incense burning was occasionally observed at AMS-1 Chi Yim Ching She which may lead to fluctuating and high dust results.
- 4.2.4 The meteorological data during the impact monitoring days are summarized in *Appendix J*.

Associated Infrastructure Works



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5. CONSTRUCTION NOISE MONITORING

5.1 GENERAL

- 5.1.1 In the Reporting Period, major construction activities under Contract 1 was commenced on 12 April 2017 and noise monitoring was performed at the active designated monitoring locations NMS2 and NMS4. No monitoring was conducted at NMS1 and NMS3 since they are planned NSR which are still under construction/ not yet constructed.
- 5.1.2 The noise monitoring schedule is presented in *Appendix G* and the monitoring results are summarized in the following sub-sections.

5.2 NOISE MONITORING RESULTS IN REPORTING MONTH

5.2.1 In the Reporting Period, a total of **8** events noise measurements were carried out at the designated locations. Free-field status were performed at NMS2 and NMS4 and façade correction (+3 dB(A)) has added according to the requirement in this month. The noise monitoring results at the designated locations are summarized in *Tables 5-1*. The detailed noise monitoring data are presented in *Appendix H* and the relevant graphical plots are shown in *Appendix I*.

Table 5-1 Summary of Construction Noise Monitoring Results

Construction Noise Level (L _{eq30min}), dB(A)				
Date	NMS2 ^(*)	NMS4 ^(*)		
13-Apr-17	56	58		
19-Apr-17	53	54		
25-Apr-17	66	65		
29-Apr-17	64	65		
Limit Level	7	5 dB(A)		

Remarks

5.2.2 As shown in *Tables 5-1*, the noise level measured at all designated monitoring locations were below 75dB(A). Moreover, no valid noise complaint (which triggered Action Level exceedance) was recorded in the Reporting Period.

^(*) façade correction (+3 dB(A) is added according to acoustical principles and EPD guidelines



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 K*. Whenever possible, materials were reused on-site as far as practicable.

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

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) ('000m ³)	0	-
Reused in this Contract (Inert) ('000m ³)	0	-
Reused in other Projects (Inert) ('000m ³)	0	-
Disposal as Public Fill (Inert) ('000m ³)	0	-

Table 6-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity	Disposal Location
Recycled Metal ('000kg)	0	-
Recycled Paper / Cardboard Packing	0	-
('000kg)	U	
Recycled Plastic ('000kg)	0	-
Chemical Wastes ('000kg)	0	-
General Refuses ('000m ³)	0.0014	-



7. SITE INSPECTION

7.1 REQUIREMENTS

7.1.1 According to the approved 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

Contract 1

- 7.2.1 In the Reporting Period, joint site inspection for Contract 1 to evaluate site environmental performance was carried out by the RE, ET and the Contractor on 6, 11, 19 and 25 April 2017 in which IEC joined the site inspection on 6 April 2017. No non-compliance was noted.
- 7.2.2 The findings / deficiencies of *Contract 1* that observed during the weekly site inspection are listed in *Table 7-1*.

Table 7-1 Site Observations of Contract 1

Date	Findings / Deficiencies	Follow-Up Status
6 April 2017	 Chemical containers without drip tray were observed. Drip tray should be provided for all chemical storage on-site. As a reminder, surface run-off from site should be diverted to the proper de-silting facilities before discharge from site. Also, all discharge from site should fully comply with discharge license requirement. 	 Chemical containers had been removed. Not required for reminder.
11 April 2017	 Waste oil and emptied lubricate bottles which is retained by pervious land user was observed. The contractor should be cleaned the waste properly. Also, oil stains was observed at the nearby area. The contractor should provide proper mitigation measures to prevent further contamination. (Near West Portal) As a reminder, Stagnant water cumulated on-site after rainstorm should be cleaned or provide proper mitigation measures to prevent mosquito breeding. 	 Waste oil spillage on ground was cleared. Not required for reminder.
19 April 2017	 As a reminder, water spraying should be provided for haul road to reduce dust generation. As a reminder, ponding water cumulated on-site should be removed or provide proper mitigation measures to prevent mosquito breeding. 	 Not required for reminder. Not required for reminder.
25 April 2017	No adverse ~16H&1æ ~1-° 4issue was observed.	NA

Contract 2

- 7.2.3 In the Reporting Period, joint site inspection for Contract 2 to evaluate site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **28 April 2017**. No non-compliance was noted.
- 7.2.4 The findings / deficiencies of *Contract 2* that observed during the weekly site inspection are listed in *Table 7-2*.

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Table 7-2 Site Observations of Contract 2

Date	Findings / Deficiencies	Follow-Up Status		
28 April 2017	 It was reminded that temporary drainage system should be provided to prevent wastewater run-off entering public area. It was reminded that noise mitigation measures should be enhanced if the noise emission level exceeded that contract requirement. 	Not required for reminder.		

Other Contracts

7.2.5 Since Contract 3 has not yet commenced, no site inspection was performed in the Reporting Period.



8. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

8.1 Environmental Complaint, Summons and Prosecution

8.1.1 In the Reporting Period, no environmental complaint, summons and prosecution under the EM&A Programme was lodged for the project. 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

Domontino Domio d	Contract	Environmental Complaint Statistics				
Reporting Period	no.	Frequency	Cumulative	Complaint Nature		
1 – 30 April 2017	1	0	0	NA		
1 – 30 April 2017	2	0	0	NA		

 Table 8-2
 Statistical Summary of Environmental Summons

Donauting Davied	Contract	Environmental Summons Statistics				
Reporting Period	no.	Frequency	Cumulative	Summons Nature		
1 – 30 April 2017	1	0	0	NA		
1 – 30 April 2017	2	0	0	NA		

Table 8-3 Statistical Summary of Environmental Prosecution

Donoutino Donio d	Contract	Environmental Prosecution Statistics			
Reporting Period no.			Cumulative	Prosecution Nature	
1 – 30 April 2017	1	0	0	NA	
1 – 30 April 2017	2	0	0	NA	

The Other Contracts

8.1.2 Since Contract 3 has not yet commenced, no environmental complaint, summons and prosecution are received in the Reporting Period.



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 approved EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in *Appendix L*.
- 9.1.2 All contracts under the Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented in this Reporting Period are summarized in *Table 9-1*.

Table 9-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	 Wastewater to be treated by filtration system; such as, silt curtain or sedimentation tank before discharge. Replace silt curtain materials if necessary
Air Quality	 Maintain damp / wet surface on access road Keep slow speed in the sites All vehicles must use wheel washing facility before off site All vehicles must use wheel washing facility before off site Sprayed water during breaking works
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 Place noisy plants away from residence or school Provide noise barriers or hoarding to enclose the noisy plants or works Shut down the plants when not in used.
Waste and Chemical Management	 On-site sorting prior to disposal Follow requirements and procedures of the "Trip-ticket System" 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.

9.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 9.2.1 Construction activities for Contracts 1 in the coming month are listed below:
 - 1. Erection of the Engineer's/Contractor's Site Office;
 - 2. Site investigation and Drilling of boreholes for bored piles;
 - 3. Establishment of the site haul road by precast concrete planks hard paving;
 - 4. Construction of the below ground temporary water tanks & outfall pipes/ channels for site drainage system;
 - 5. Pre-drilling works for pedestrian connectivity system A and B;
 - 6. Construction of bored piles for retaining wall at slope A9;
 - 7. Rock cut slope at west portal for underpass;
 - 8. Down pipe diversion at east portal for underpass;
 - 9. Construction of safety hoarding;
 - 10. Site work in portion A4;
 - 11. Site formation works at portion B6;
 - 12. Planning works in portion E1 and E2 (Section XIII, XIIIA and XIIIB)

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9.3 KEY ISSUES FOR THE COMING MONTH

- 9.3.1 Key issues to be considered in the coming month include:
 - Implementation of dust suppression measures at all times;
 - Potential wastewater quality impact due to surface runoff;
 - Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
 - Disposal of empty engine oil containers within site area;
 - Ensure dust suppression measures are implemented properly;
 - Sediment catch-pits and silt removal facilities should be regularly maintained;
 - Management of chemical wastes;
 - Discharge of site effluent to the nearby wetland, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
 - Follow-up of improvement on general waste management issues; and
 - Implementation of construction noise preventative control measures

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10. CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

- 10.1.1 This is 1st monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 30 April 2017.
- 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 the 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 under the Project.
- During the Reporting Period, weekly joint site inspection by the RE, ET with the relevant Main-contractor was carried out for Contracts 1 and 2 in accordance with the EM&A Manual stipulation whereas IEC performed monthly site inspection for both contracts. No non-compliance observed during the site inspection.

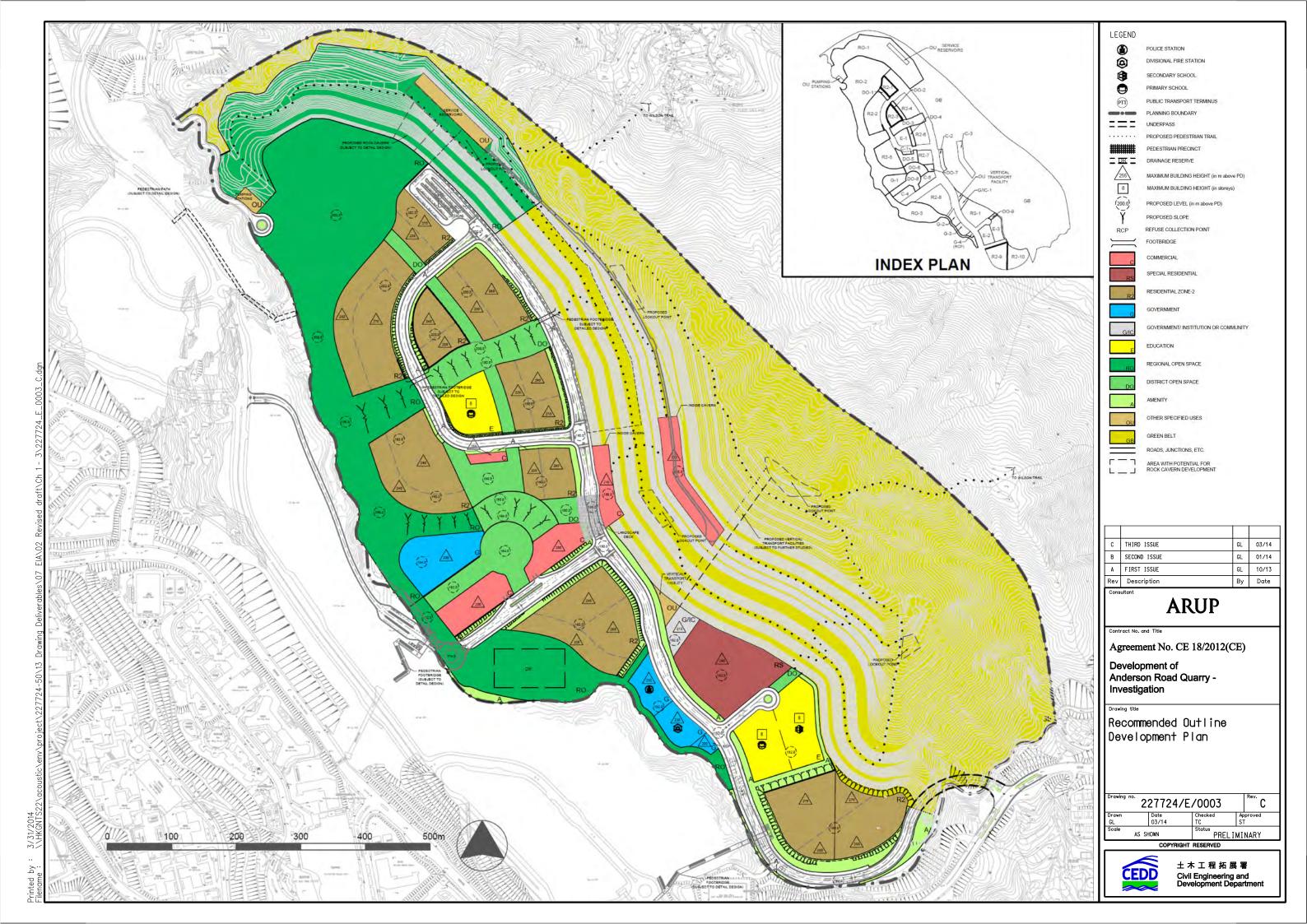
10.2 RECOMMENDATIONS

- During rainy season, muddy water and other water quality pollutants via site surface water runoff get into public areas should be avoided. Mitigation measures for water quality should be properly implemented.
- 10.2.2 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EM&A requirement.
- Moreover, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to resident. The Contractor should fully implement the construction dust mitigation measures properly.
- 10.2.4 Mosquito control measures should be continued to prevent mosquito breeding on site.



Appendix A

Layout plan of the Project

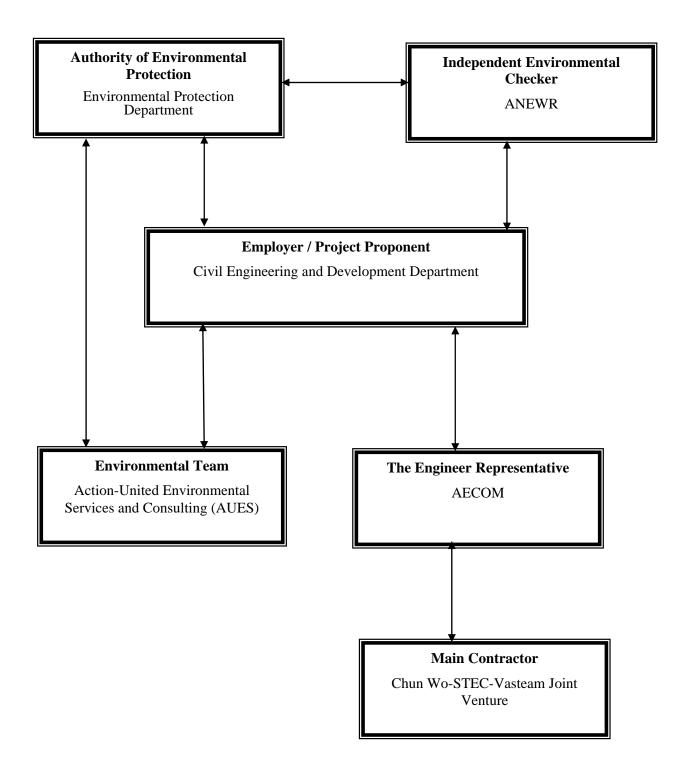


CEDD Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)

Appendix B

Organization Chart

Project Organization Structure for Contract NE/2016/01 (Contract 1)



Contact Details of Key Personnel for Contract 1 – NE/2016/01

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Engineer	Stephen Li	2301 1383	2739 0076
AECOM	Chief Resident Engineer	Dennis Leung	2967 6608	2473 3221
AECOM	Senior Resident Engineer	Simon Leung	2967 6608	2473 3221
ANEWR	Independent Environmental Checker	Adi Lee	2618 2836	3007 8648
CSVJV	Project Manager	William Leung	2638 7181	2744 6937
CSVJV	Site Agent	TY Leung	2638 7181	2744 6937
CSVJV	Project Environmental Manager	Shelton Chan	2638 7181	2744 6937
CSVJV	Environmental Officer	Kiwi Chan	2638 7181	2744 6937
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

CEDD (Employer) - Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CSVJV (Main Contractor) – Chun Wo-STEC-Vasteam Joint Venture SMEC (IEC) – SMEC Asia Limited

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

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Appendix C

Construction Programme for Contract 1 (NE/2016/01)



俊和-上隧-浩隆聯營

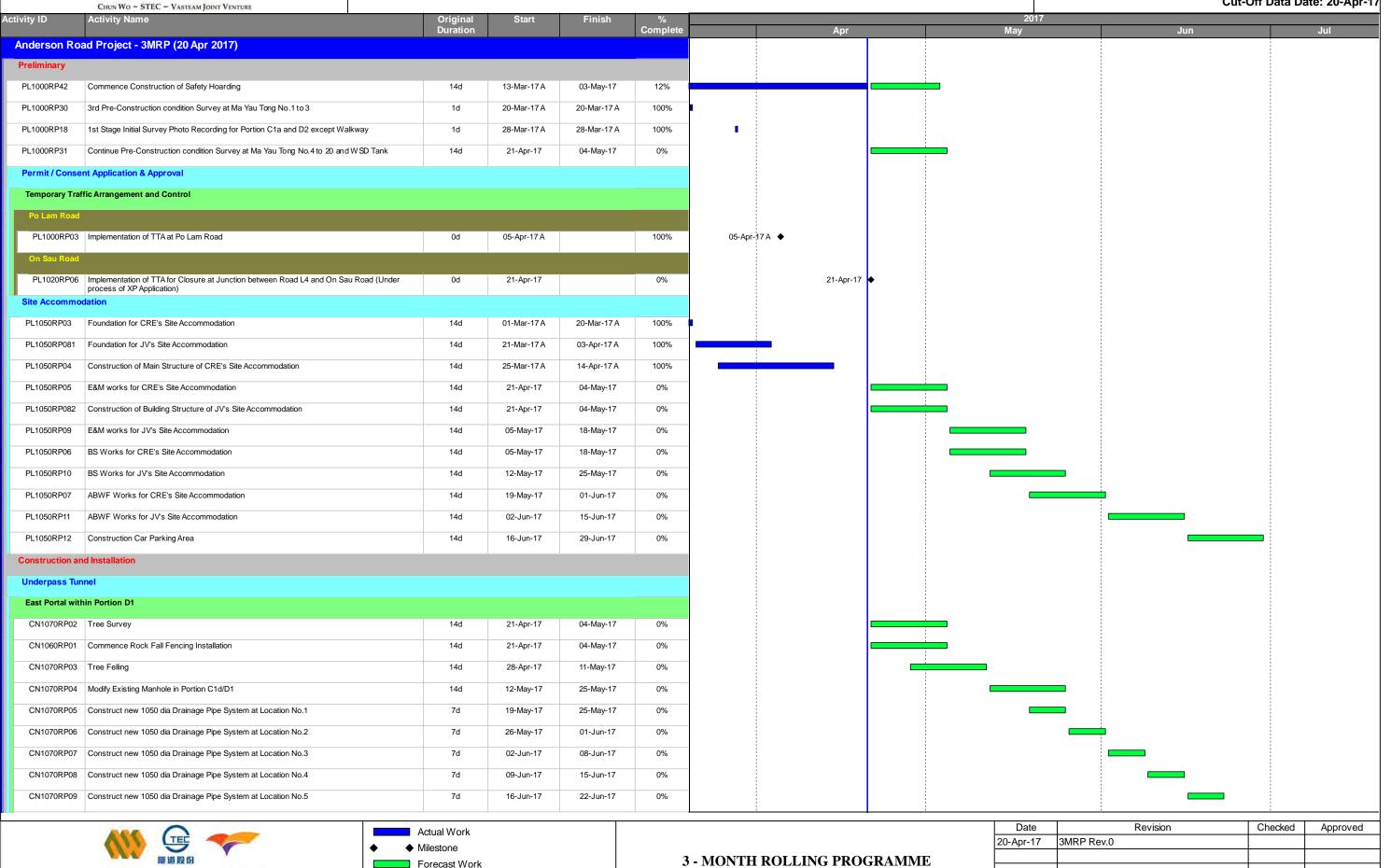
CHUN WO - STEC - VASTEAM JOINT VENTURE

CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON **ROAD QUARRY SITE**

3 - MONTH ROLLING PROGRAMME (20 APR TO 20 JUL 2017)

Page 1 of 4

Cut-Off Data Date: 20-Apr-17



(Based on IWP)

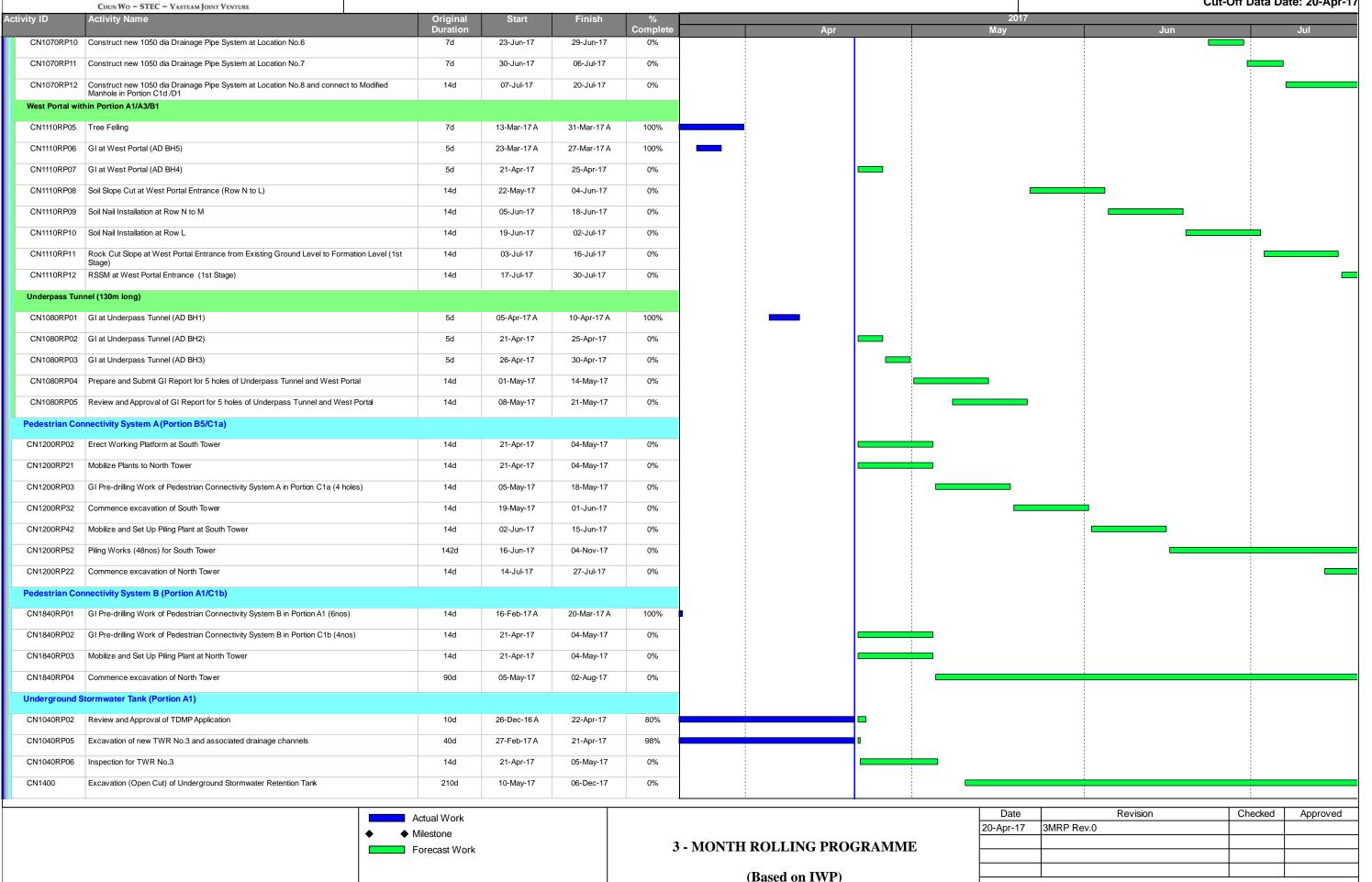


CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON **ROAD QUARRY SITE**

3 - MONTH ROLLING PROGRAMME (20 APR TO 20 JUL 2017)

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Cut-Off Data Date: 20-Apr-17





俊和-上隧-浩隆聯營

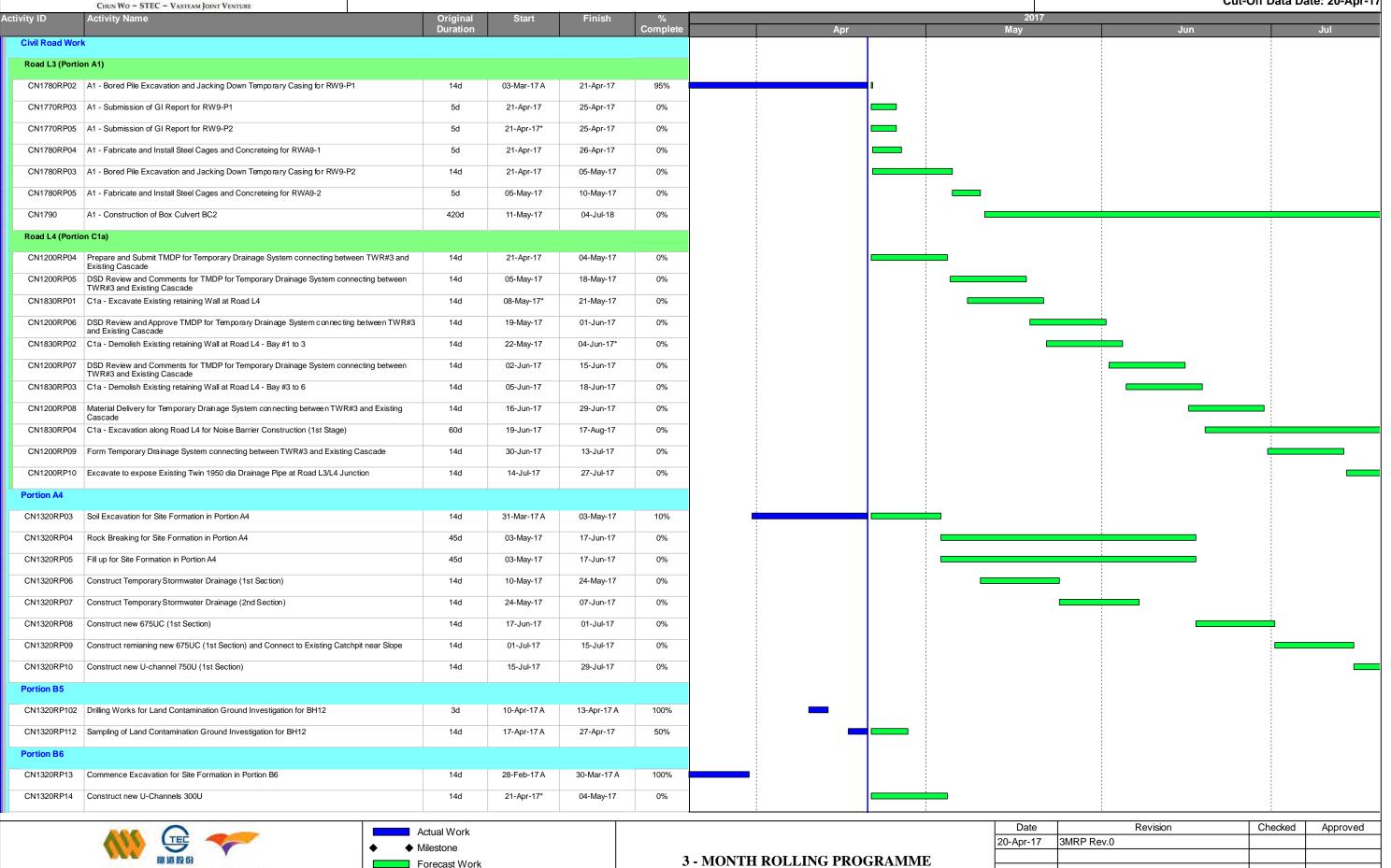
CHUN WO - STEC - VASTEAM JOINT VENTURE

CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON ROAD QUARRY SITE

3 - MONTH ROLLING PROGRAMME (20 APR TO 20 JUL 2017)

Page 3 of 4

Cut-Off Data Date: 20-Apr-17



(Based on IWP)



CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON **ROAD QUARRY SITE**

3 - MONTH ROLLING PROGRAMME (20 APR TO 20 JUL 2017)

Page 4 of 4

Cut-Off Data Date: 20-Apr-17

CHUN WO - STEC - VASTEAM JOINT VENTURE Activity ID 05-May-17 18-May-17 CN1320RP15 Construct new Catchpit TC5 0% CN1320RP16 Construct new U-Channels 525U 14d 19-May-17 0% 01-Jun-17 CN1320RP17 Construct new Catchpit TC5a 14d 02-Jun-17 15-Jun-17 0% CN1320RP18 Construct new U-Channels 900U 14d 16-Jun-17 29-Jun-17 0% CN1320RP19 Construct new U-Channels 450U 14d 30-Jun-17 13-Jul-17 0% CN1320RP20 Lay 450mm dia Drainage Pipe connecting to TC5 14d 14-Jul-17 27-Jul-17 0% **Entrustment Works and Upgrading Works (Instruction by CEDD)** CN1180RP01 Installation of Slope Registration Sign Plates at Slope No.7SE-C/R129 1d 13-Apr-17 A 13-Apr-17 A 100% CN1180RP02 Installation of Slope Registration Sign Plates at Slope No.7SE-C/R131 1d 13-Apr-17 A 13-Apr-17 A 100% Installation of Slope Registration Sign Plates at Slope No.7SE-C/R134 CN1180RP04 1d 13-Apr-17 A 13-Apr-17 A 100% CN1180RP03 Installation of Slope Registration Sign Plates at Slope No.7SE-C/R133 1d 13-Apr-17 A 13-Apr-17 A 100% CN1180RP05 Installation of Slope Registration Sign Plates at Slope No.7SE-C/R137 1d 13-Apr-17 A 13-Apr-17 A 100% CN1180RP06 Installation of Slope Registration Sign Plates at Slope No.7SE-C/R139 1d 13-Apr-17 A 100% 13-Apr-17 A CN1180RP07 Installation of Slope Registration Sign Plates at Kau To 14d 21-Apr-17 04-May-17 0% 14d CN1180RP08 Landscape Works fro Slope 7SE-C/CR309 05-May-17 18-May-17 0% Landscape Works fro Slope 7SE-C/C673 14d CN1180RP09 19-May-17 01-Jun-17 0% CN1180RP10 Landscape Works fro Slope 7SE-C/C240 14d 02-Jun-17 15-Jun-17 0% CN1180RP11 Landscape Works fro Slope 7SE-C/F239 14d 16-Jun-17 29-Jun-17 0% CN1180RP12 Landscape Works fro Slope 7SE-A/C604 14d 30-Jun-17 13-Jul-17 0%



CN1180RP13 Landscape Works fro Slope 7SE-A/C605





14d

14-Jul-17

27-Jul-17

0%

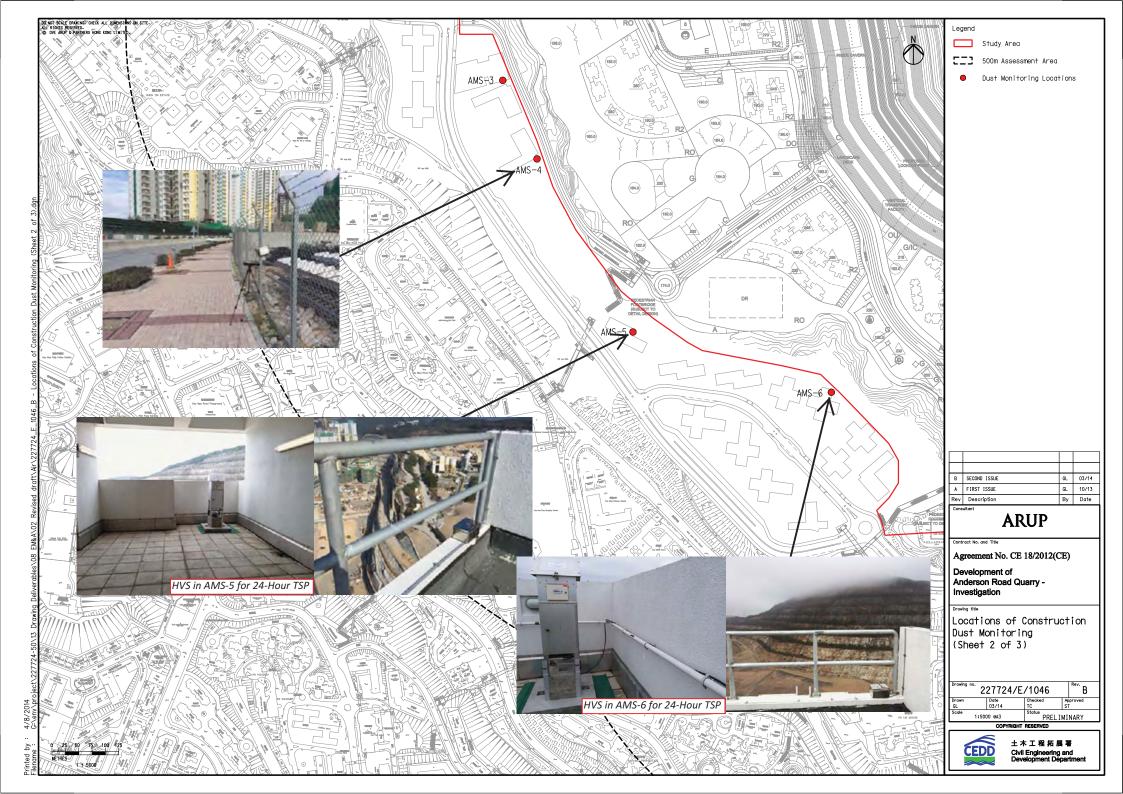
Date	Revision	Checked	Approved
20-Apr-17	3MRP Rev.0		

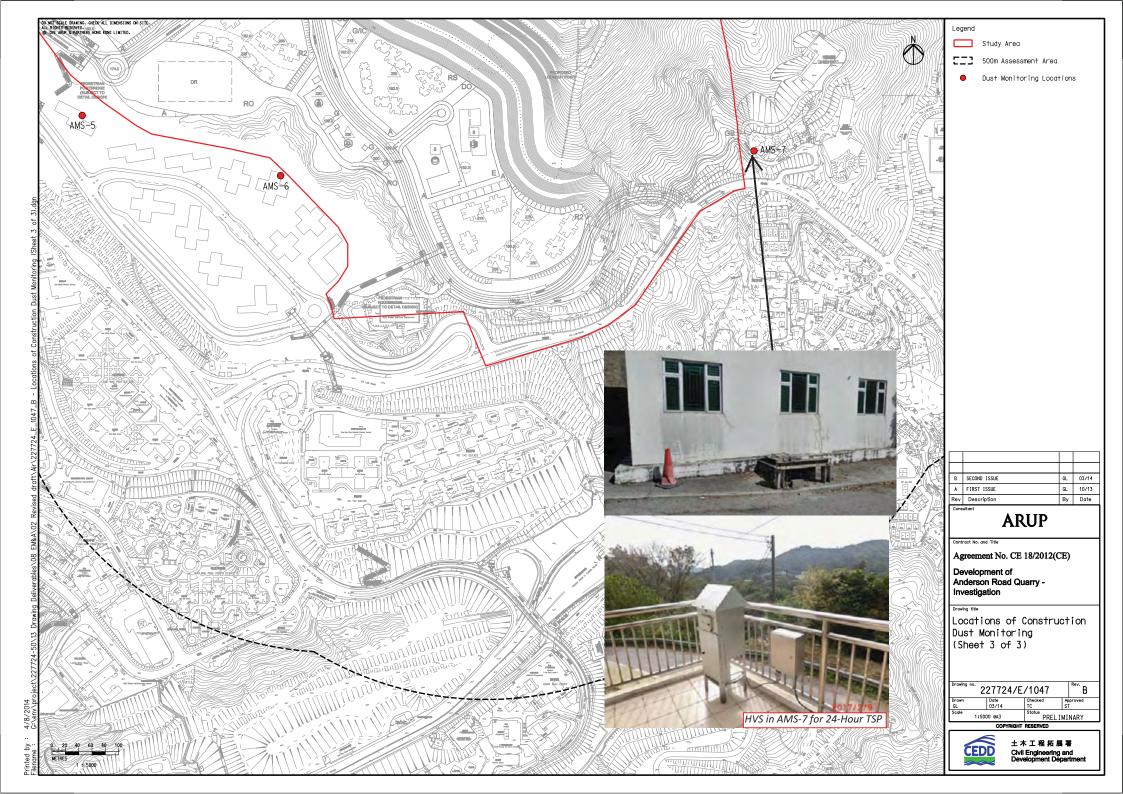
CEDD Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)

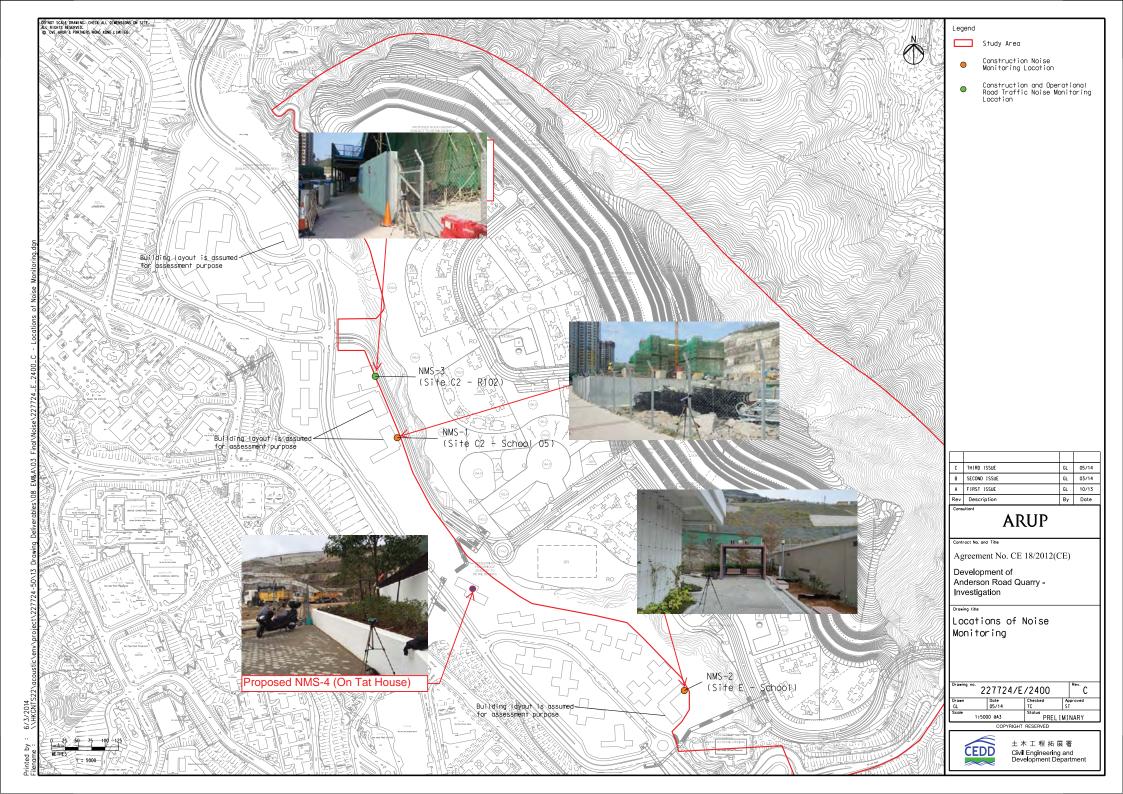
Appendix D

Monitoring Locations for Impact Monitoring









CEDD Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)

Appendix E

Calibration Certificate of Monitoring Equipment and HOKLAS-accreditation Certificate of the Testing Laboratory

Location: Chi Yum Ching She

Location ID: AMS1

Date of Calibration: 16-Feb-17

Next Calibration Date: 16-Apr-17

Technician: Chan Hong Sung

CONDITIONS

Sea Level Pressure (hPa)
Temperature (°C)

1021.6 18.7 Corrected Pressure (mm Hg)
Temperature (K)

766.2 292

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> Qstd Intercept ->

2.00757 -0.01628

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	Ι	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.10	6.10	12.2	1.774	54	55.39	Slope = 34.9092
13	4.80	4.80	9.6	1.574	48	49.24	Intercept = -5.9629
10	3.70	3.70	7.4	1.383	42	43.08	Corr. coeff. = 0.9991
7	2.40	2.40	4.8	1.116	32	32.82	
5	1.50	1.50	3.0	0.884	24	24.62	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

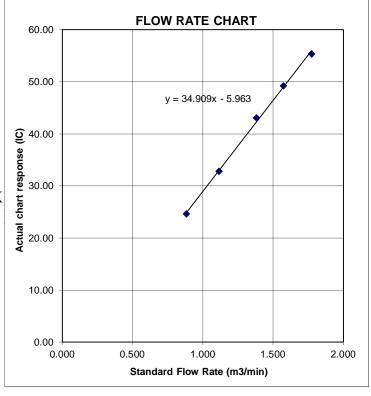
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Oi Tat House Date of Calibration: 25-Mar-17 Location: AMS5 Next Calibration Date: 25-May-17 Location ID: Technician: Chan Hong Sung

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C)

1017.2 20.2

Corrected Pressure (mm Hg Temperature (K)

762.9

CALIBRATION ORIFICE

Make-> TISCH Model-> 5025A Serial # -> 1941

Qstd Slope -> Qstd Intercept -> 2.11965 -0.02696

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.25	6.25	12.5	1.698	53	53.97	Slope = 33.1466
13	5.00	5.00	10.0	1.520	45	45.82	Intercept = -3.5611
10	3.90	3.90	7.8	1.344	40	40.73	Corr. coeff. = 0.9945
7	2.45	2.45	4.9	1.068	30	30.55	
5	1.50	1.50	3.0	0.838	25	25.46	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

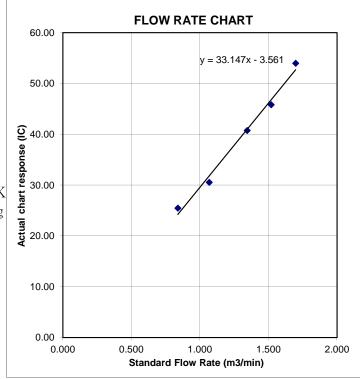
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Hau Tat House Date of Calibration: 25-Mar-17 Location: AMS6 Next Calibration Date: 25-May-17 Location ID: Technician: Chan Hong Sung

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C)

1017.2 20.2

Corrected Pressure (mm Hg Temperature (K)

762.9

CALIBRATION ORIFICE

Make-> TISCH Model-> 5025A Serial # -> 1941

Qstd Slope -> Qstd Intercept -> 2.11965 -0.02696

CALIBRATION

	Plate	H20 (L)	H2O (R)	H20	Qstd	Ι	IC	LINEAR
	No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
	18	6.10	6.10	12.2	1.677	55	56.01	Slope = 30.9886
	13	4.90	4.90	9.8	1.504	48	48.88	Intercept = 3.2893
	10	3.80	3.80	7.6	1.326	43	43.79	Corr. coeff. = 0.9941
	7	2.40	2.40	4.8	1.057	37	37.68	
I	5	1.50	1.50	3.0	0.838	28	28.51	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

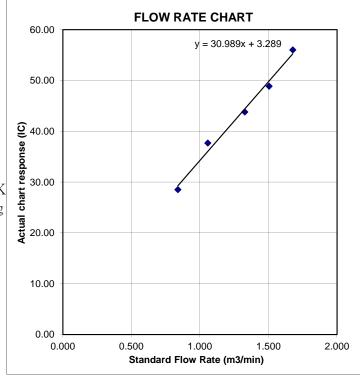
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Location: Ma Yau Tong Village Date of Calibration: 16-Feb-17
Location ID: AMS7 Next Calibration Date: 16-Apr-17

Technician: Chan Hong Sung

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1021.6 18.7

Corrected Pressure (mm Hg)
Temperature (K)

766.2 292

CALIBRATION ORIFICE

Make->	TISCH
Model->	5025A
Serial # ->	1612

Qstd Slope -> Qstd Intercept ->

2.00757 -0.01628

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	5.80	5.80	11.6	1.730	52	53.34	Slope = 35.3658
13	4.60	4.60	9.2	1.541	44	45.13	Intercept = -8.8133
10	3.60	3.60	7.2	1.365	38	38.98	Corr. coeff. = 0.9965
7	2.30	2.30	4.6	1.092	28	28.72	
5	1.50	1.50	3.0	0.884	23	23.59	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

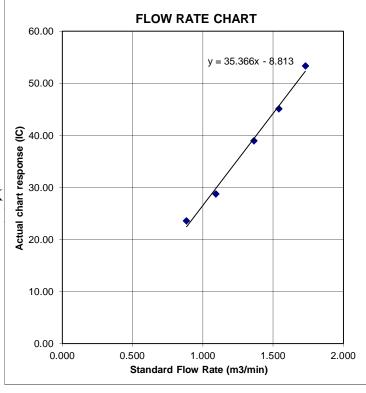
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Location : Chi Yum Ching She Date of Calibration: 19-Apr-17
Location ID : AMS1 Next Calibration Date: 19-Jun-17
Technician: Mr. Ip Ka Hing

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1009.1 26.7 Corrected Pressure (mm Hg)
Temperature (K)

756.825 300

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1941

Qstd Slope -> Qstd Intercept -> 2.11965 -0.02696

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.1	6.1	12.2	1.652	53	52.74	Slope = 34.5668
13	4.8	4.8	9.6	1.467	49	48.76	Intercept = -3.1911
10	3.7	3.7	7.4	1.290	42	41.79	Corr. coeff. = 0.9968
7	2.4	2.4	4.8	1.041	33	32.84	
5	1.5	1.5	3	0.826	25	24.88	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

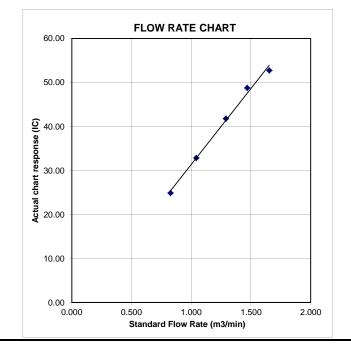
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Location: Ma Yau Tong Village Date of Calibration: 17-Apr-17
Location ID: AMS 7 Next Calibration Date: 17-Jun-17

Technician: Mr. Ip Ka Hing

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1010.9 26.0

Corrected Pressure (mm Hg)
Temperature (K)

758.175 299

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1941

Qstd Slope -> Qstd Intercept ->

2.11965 -0.02696

CALIBRATION

	Plate	H20 (L)	H2O (R)	H20	Qstd	Ι	IC	LINEAR
	No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
ı	18	5.8	5.8	11.6	1.615	51	50.85	Slope = 37.0402
	13	4.6	4.6	9.2	1.440	45	44.87	Intercept = -9.0774
	10	3.6	3.6	7.2	1.275	38	37.89	Corr. coeff. = 0.9948
	7	2.3	2.3	4.6	1.022	27	26.92	
ı	5	1.5	1.5	3	0.828	23	22.93	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

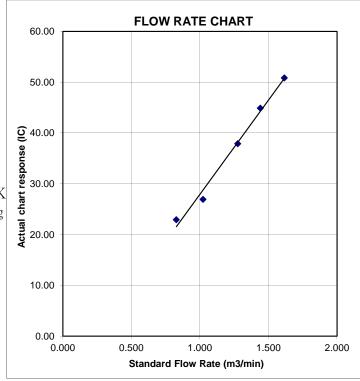
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature





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

					MEMER	ODETCE
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4600	3.2	2.0
2	NA	NA	1.00	1.0410	6.4	4.0
3	NA	NA	1.00	0.9280	7.9	5.0
4	NA	NA	1.00	0.8840	8.7	5.5
5	NA	NA	1.00	0.7290	12.7	8.0

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967 0.9925 0.9904 0.9894 0.9840	0.6827 0.9534 1.0672 1.1192 1.3499	1.4149 2.0010 2.2372 2.3464 2.8299	-	0.9957 0.9915 0.9894 0.9884 0.9830	0.6820 0.9524 1.0661 1.1181 1.3485	0.8851 1.2517 1.3995 1.4678 1.7702
Qstd slo intercep coeffici	t (b) = ent (r) =	2.11965 -0.02696 0.99991 	(=======)	Qa slop intercep coeffici	ot (b) =	1.32729 -0.01686 0.99991

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 Technichem (HK) Pty Ltd



ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPO)RI	
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CONTACT : MR BEN TAM **WORK ORDER** HK1716578

CLIENT ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

RM A 20/F., GOLD KING IND BLDG, **ADDRESS** SUB-BATCH

NO. 35-41 TAI LIN PAI ROAD, DATE RECEIVED 20-APR-2017 DATE OF ISSUE : 25-APR-2017

KWAI CHUNG. N.T. HONG KONG

PROJECT NO. OF SAMPLES CLIENT ORDER

General Comments

Sample(s) were received in ambient condition.

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

Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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

Signatories

Position

Richard Fung

General Manager

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

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

WORK ORDER

: HK1716578

SUB-BATCH

: 1

CLIENT PROJECT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING





ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1716578-001	S/N: 366418	AIR	20-APR-2017	S/N: 366418	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 366418

Equipment Ref: EQ108

Job Order HK1716578

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 23 February 2017

Equipment Verification Results:

Calibration Date: 16 March 2017

Hour	Time	Mean Temp °C Mean Pressure (hPa)		Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)	
2hr02min	09:58 ~ 12:00	17.8	1016.4	0.037	2059	16.9	
2hr07min	12:05 ~ 14:12	17.8	1016.4	0.031	1694	13.3	
2hr02min	14:20 ~ 16:22	17.8	1016.4	0.026	1351	11.0	

Sensitivity Adjustment Scale Setting (Before Calibration) 680 (CPM)

Sensitivity Adjustment Scale Setting (After Calibration) 681 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9981

Date of Issue 20 March 2017

Remarks:

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

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

0.04 0.035 0.03 0.025 0.02 0.015 0.01 0.005 0 5 10 15 20

Operator : Martin Li Signature : Date : 20 March 2017

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

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

CONDITIONS

Sea Level Pressure (hPa)

Temperature (°C)

1017.4 17.9

Corrected Pressure (mm Hg)

Temperature (K)

763.05 291

CALIBRATION ORIFICE

Make-> TISCH Model-> 5025A

Calibration Date-> 14-Mar-16

Qstd Slope ->

Qstd Intercept -> Expiry Date->

2.00411 -0.03059 14-Mar-17

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.2	6.2	12.4	1.797	56	56.79	Slope = 36.1509
13	5	5	10.0	1.616	49	49.69	Intercept = -8.0555
10	3.8	3.8	7.6	1.410	43	43.61	Corr. coeff. = 0.9984
8	2.4	2.4	4.8	1.124	33	33.47	
5	1.4	1.4	2.8	0.862	22	22.31	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

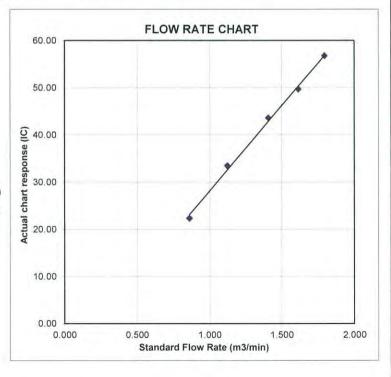
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tay = daily average temperature



ALS Technichem (HK) Pty Ltd



ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM WORK ORDER : HK1716577

CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

ADDRESS : RM A 20/F., GOLD KING IND BLDG, SUB-BATCH : 1

NO. 35-41 TAI LIN PAI ROAD, DATE RECEIVED : 20-APR-2017 KWAI CHUNG, DATE OF ISSUE : 25-APR-2017

KWAI CHUNG,
N.T. HONG KONG

PROJECT : ---- NO. OF SAMPLES : 1
CLIENT ORDER : --

General Comments

Sample(s) were received in ambient condition.

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

Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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

Signatories

Position

Richard Fung

General Manager

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

WORK ORDER

: HK1716577

SUB-BATCH

: 1

CLIENT PROJECT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

: ---



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1716577-001	S/N: 366407	AIR	20-APR-2017	S/N: 366407

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 366407

Equipment Ref: EQ107

Job Order HK1716577

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 23 February 2017

Equipment Verification Results:

Testing Date: 16 March 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr02min	09:58 ~ 12:00	17.8	1016.4	0.037	2047	16.8
2hr07min	12:05 ~ 14:12	17.8	1016.4	0.031	1678	13.2
2hr02min	14:20 ~ 16:22	17.8	1016.4	0.026	1451	11.9

Sensitivity Adjustment Scale Setting (Before Calibration) 569 (CPM)

Sensitivity Adjustment Scale Setting (After Calibration) 569 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9977

Date of Issue ______20 March 2017

Remarks:

1. Strong Correlation (R>0.8)

2. Factor 0.0022 should be apply for TSP monitoring

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

0.04 0.035 0.03 0.025 0.02 0.015 0.01 0.005 0 5 10 15 20

Operator : Martin Li Signature : Date : 20 March 2017

QC Reviewer : _____ Ben Tam ____ Signature : ______ Date : ____ Date : ____ 20 March 2017

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

Location ID: Calibration Room Next Calibration Date: 23-May-17

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.2	6.2	12.4	1.797	56	56.79	Slope = 36.1509
13	5	5	10.0	1.616	49	49.69	Intercept = -8.0555
10	3.8	3.8	7.6	1.410	43	43.61	Corr. coeff. = 0.9984
8	2.4	2.4	4.8	1.124	33	33.47	
5	1.4	1.4	2.8	0.862	22	22.31	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

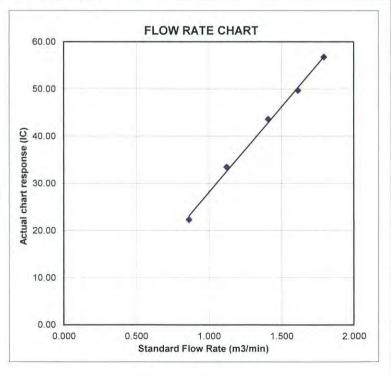
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



ALS Technichem (HK) Pty Ltd



ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM WORK ORDER : HK1703460

CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

ADDRESS : RM A 20/F., GOLD KING IND BLDG, SUB-BATCH

NO. 35-41 TAI LIN PAI ROAD, DATE RECEIVED : 19-JAN-2017 KWAI CHUNG. DATE OF ISSUE : 23-JAN-2017

KWAI CHUNG, N.T. HONG KONG

PROJECT : ---- NO. OF SAMPLES : 1 CLIENT ORDER : ---

General Comments

Sample(s) were received in ambient condition.

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

Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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

Signatories

Position

Richard Fung

General Manager

WORK ORDER

: HK1703460

SUB-BATCH

CLIENT PROJECT : 1 : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1703460-001	S/N: 366410	AIR	19-JAN-2017	S/N: 366410	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 366410

Job Order HK1703460

Standard Equipment:

Equipment Ref:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

EQ110

Equipment Ref: HVS 018

Last Calibration Date: 25 November 2016

Equipment Verification Results:

Testing Date: 9 January 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
3hr14min	09:10 ~ 12:24	20.6	1016.3	0.145	12401	64.0
1hr57min	12:30 ~ 14:27	20.6	1016.3	0.069	3266	27.9
1hr58min	14:35 ~ 16:33	20.6	1016.3	0.091	4878	41.1

0.16

Sensitivity Adjustment Scale Setting (Before Calibration) 677 (CPM)

Sensitivity Adjustment Scale Setting (After Calibration) 675 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9984

Date of Issue 11 January 2017

0.14 0.12 0.1 0.08 0.06 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.04 0.05 0.06 0.06 0.06 0.06 0.06 0.06 0.09 0

Remarks:

1. Strong Correlation (R>0.8)

2. Factor 0.0022 should be apply for TSP monitoring

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

Operator: Martin Li Signature: Date: 11 January 2017

QC Reviewer : _____ Ben Tam ___ Signature : _____ Date : ____ 11 January 2017

Location: Gold King Industrial Building, Kwai Chung Date of Calibration: 25-Nov-16

Location ID: Calibration Room Next Calibration Date: 25-Feb-17

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate	H20 (L)	1000	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.1	6.1	12.2	1.776	56	56.56	Slope = 35.6871
13	4.7	4.7	9.4	1.560	49	49.49	Intercept = -6.1123
10	3.6	3.6	7.2	1.368	43	43.43	Corr. coeff. = 0.9967
8	2.3	2.3	4.6	1.096	34	34.34	
5	1.4	1.4	2.8	0.859	23	23.23	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

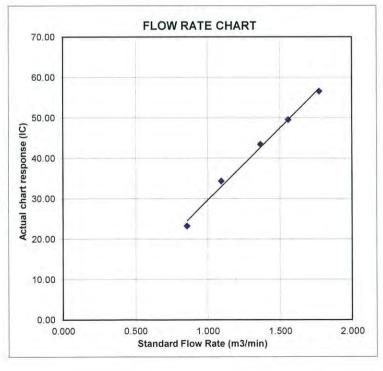
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tay = daily average temperature



ALS Technichem (HK) Pty Ltd



ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

WORK ORDER CONTACT : MR BEN TAM HK1703455

CLIENT ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

RM A 20/F., GOLD KING IND BLDG.

NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG,

N.T. HONG KONG **PROJECT**

DATE OF ISSUE

SUB-BATCH DATE RECEIVED

19-JAN-2017 : 23-JAN-2017

NO. OF SAMPLES CLIENT ORDER

General Comments

Sample(s) were received in ambient condition.

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

Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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

Signatories

ADDRESS

Position

Richard Fung

General Manager

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

: HK1703455

SUB-BATCH

: 1

CLIENT PROJECT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

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ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1703455-001	S/N: 366409	AIR	19-JAN-2017	S/N: 366409

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 366409

Equipment Ref: EQ109

Job Order HK1703455

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 25 November 2016

Equipment Verification Results:

Testing Date: 9 January 2017

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
3hr14min	09:10 ~ 12:24	20.6	1016.3	0.145	12487	64.4
1hr57min	12:30 ~ 14:27	20.6	1016.3	0.069	3433	29.3
1hr58min	14:35 ~ 16:33	20.6	1016.3	0.091	4815	40.5

Sensitivity Adjustment Scale Setting (Before Calibration) 523 (CPM)
Sensitivity Adjustment Scale Setting (After Calibration) 525 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9997

Date of Issue _____11 January 2017

Remarks:

- Strong Correlation (R>0.8)
- Factor 0.0022 should be apply for TSP monitoring

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

0.14 0.12 0.1 0.08 0.06 0.04 0.04 0.02 0 20 40 50 80

Operator: Martin Li Signature: Date: 11 January 2017

QC Reviewer : _____ Ben Tam ___ Signature : _____ Date : ____ 11 January 2017

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

CONDITIONS

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

CALIBRATION ORIFICE

 Make->
 TISCH
 Qstd Slope ->
 2.00411

 Model->
 5025A
 Qstd Intercept ->
 -0.03059

 Calibration Date->
 14-Mar-16
 Expiry Date->
 14-Mar-17

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.1	6.1	12.2	1.776	56	56.56	Slope = 35.6871
13	4.7	4.7	9.4	1.560	49	49.49	Intercept = -6.1123
10	3.6	3.6	7.2	1.368	43	43.43	Corr. coeff. = 0.9967
8	2.3	2.3	4.6	1.096	34	34.34	
5	1.4	1.4	2.8	0.859	23	23.23	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

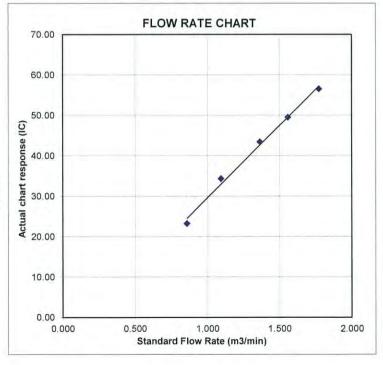
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tay = daily average temperature





Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C163603

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC16-0843)

Date of Receipt / 收件日期: 22 June 2016

Description / 儀器名稱

Integrating Sound Level Meter (EQ008)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No./編號

2285690

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 :

 $(23 \pm 2)^{\circ}C$

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 July 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

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

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

Tested By 測試

H T'Wong

Certified By

核證

Technical Officer

Date of Issue 簽發日期

5 July 2016

Project Engineer

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

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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.: C163603

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 ID CL280

Description

Certificate No.

CL281

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

C160077 PA160023

- 5. Test procedure: MA101N.
- 6. Results:
- Sound Pressure Level 6.1
- 6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting Applied Value							
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	
50 - 130	LAFP	A	F	94.00	1	94.5	

6.1.1.2 After Self-calibration

	UUT Setting				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

	UUT Setting			Applie	UUT	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	50 - 130 L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				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.

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潮源至國際標準。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.: C163603

證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

	UUT Setting			Applied 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.	
	L _{ASP}		S			94.0	± 0.1
	L _{AIP}		I			94.0	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

	UUT	Setting		App	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	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	105.0	-1.0 ± 1.0
	LASP		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		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 _{AFP} A	A	F	94.00	31.5 Hz	54.7	-39.4 ± 1.5	
	1			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.

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Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C163603

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}		F	94.00	31.5 Hz	91.0	-3.0 ± 1.5	
				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	93.9	0.0 ± 1.0
					1 kHz	93.9	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0; -6.0)

6.4 Time Averaging

UUT Setting			Applied Value					UUT	IEC 60804	
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	LAcq	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
		A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1/102		90	89.8	± 0.5	
			60 sec.			1/103		80	79.8	± 1.0
			5 min.			1/104		70	69.8	± 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

104 dB: 1 kHz : ± 0.10 dB (Ref. 94 dB) 114 dB: 1 kHz : ± 0.10 dB (Ref. 94 dB) Burst equivalent level : ± 0.2 dB (Ref. 110 dB) continuous sound level)

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.

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 – 校正及檢測實驗所

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@suncreation.com Website/網址: www.suncreation.com

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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C164113

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC16-0843)

Date of Receipt / 收件日期: 15 July 2016

Description / 儀器名稱

Integrating Sound Level Meter (EO009)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No./編號

2285722

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : Line Voltage / 電壓 :

 $(23 \pm 2)^{\circ}C$

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

28 July 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

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

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

Tested By

測試

H T Wong

Technical Officer

Certified By

核證

Project Engineer

Date of Issue

29 July 2016

簽發日期

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

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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No. : C164113

證書編號

校正證書

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

Equipment ID CL280

Description

Certificate No.

CL281

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

C160077 PA160023

- 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	94.1

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	94.1	± 0.7

6.1.2 Linearity

	UUT Setting				Applied Value		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	
50 - 130 L _{AFP}	A	F	94.00	1	94.1 (Ref.)		
	1 - 2 - 2 - 2			104.00		104.1	
				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.

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

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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C164113

證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting		Applied Value		UUT	IEC 60651		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}		1 1 2 1		200 ms	105.0	-1.0 ± 1.0
	L _{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		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	Α	F	94.00	31.5 Hz	54.6	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
				4 kHz	95.1	$+1.0 \pm 1.0$	
					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



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

Certificate No.: C164113

證書編號

6.3.2 C-Weighting

14.14.55	UUT	Setting		Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.0	-3.0 ± 1.5
	1,75.4				63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
			4 kHz	93.2	-0.8 ± 1.0		
					8 kHz	91.0	-3.0 (+1.5; -3.0
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0

6.4

	UUT	Setting		Applied Value UUT		Applied Value		UUT	IEC 60804	
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	LAcq	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
		1997				1/102		90	89.7	± 0.5
			60 sec.			1/103		80	79.2	±1.0
			5 min.			1/104		70	69.1	± 1.0

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

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

- Uncertainties of Applied Value: 94 dB : 31.5 Hz - 125 Hz : ± 0.35 dB

250 Hz - 500 Hz : ± 0.30 dB : ± 0.20 dB 1 kHz 2 kHz - 4 kHz $: \pm 0.35 \text{ dB}$ 8 kHz : ± 0.45 dB

12.5 kHz $: \pm 0.70 \text{ dB}$

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 %.

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.

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 - 校正及檢測實驗所

c/o 香港新界屯門興安里一號青山灣機樓四樓

Fax/傳真: 2744 8986 Tel/電話: 2927 2606

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.: C162438

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC16-0843)

Date of Receipt / 收件日期: 5 May 2016

Description / 儀器名稱

Acoustical Calibrator (EQ081)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號 Serial No./編號

4231

Supplied By / 委託者

2326408 Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓:

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

10 May 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

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

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

Tested By 測試

HT Wong

Certified By

核證

Technical Officer

K C Lee Project Engineer Date of Issue

11 May 2016

簽發日期

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F, Tsing Shan Wan Exchange Building, I Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 - 校正及檢測實驗所

0/0 香港新界屯門興安里一號青山灣機樓四樓

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

Page 1 of 2



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C162438

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 IDDescriptionCertificate No.CL130Universal CounterC153519CL281Multifunction Acoustic CalibratorPA160023TST150AMeasuring AmplifierC161175

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	I 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.



Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C163601

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC16-0843)

Date of Receipt / 收件日期: 22 June 2016

Description / 儀器名稱

Sound Calibrator (EQ086)

Manufacturer / 製造商

Rion

Model No. / 型號 Serial No. / 編號

NC-74 34657230

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 : (23 ± 2)°C

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

4 July 2016

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

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

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

Tested By 測試

H T Wong

Technical Officer

Certified By 核證

Date of Issue 簽發日期

5 July 2016

Project Engineer

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.: C163601

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. C153519 PA160023 C161175

Test procedure: MA100N.

5. Results:

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value (Hz)
(kHz)	(kHz)	Spec.	
1	1.002	1 kHz ± 1 %	± 1

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

Note:

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

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.



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 : HOKLAS 066

註冊號碼:



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

CEDD Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)

Appendix F

Event and Action Plan

 $\begin{tabular}{ll} Environmental Team for Development of Anderson Road Quarry Site-Site Formation and Associated Infrastructure Works \\ \end{tabular}$

Monthly Environmental Monitoring & Audit Report (April 2017)

Event / Action Plan for construction dust

Event	Action			
	ET	IEC	ER	Contractor
Action Level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER and Contractor; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Notify Contractor.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Rectify any unacceptable practice and implement remedial measures; and 3. Amend working methods agreed with ER if appropriate.
Action Level exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER and Contractor; 3. Advise the ER and Contractor on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC, ER and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal if appropriate.

 $\begin{tabular}{ll} Environmental Team for Development of Anderson Road Quarry Site-Site Formation and Associated Infrastructure Works \\ \end{tabular}$

Monthly Environmental Monitoring & Audit Report (April 2017)

Limit Level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor, IEC and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ER and ET on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit Level exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise and ensure remedial measures properly implemented; and 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level Exceedance	1. Notify IEC, ER and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	Submit noise mitigation proposals to IEC and ER; Implement noise mitigation proposals.
Limit Level Exceedance	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

CEDD Contract No. NTE/07/2016 Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)

Appendix G

Impact Monitoring Schedule



Impact Monitoring Schedule for the Reporting Period

		N. N.	Air Quality	Monitoring
	Date	Noise Monitoring (0700 – 1900)	1-hour TSP	24-hour TSP
SUN	9-APR-17			
Mon	10-Apr-17			
TUE	11-Apr-17			
WED	12-Apr-17			✓
THU	13-APR-17	✓	✓	
FRI	14-APR-17			
SAT	15-Apr-17			
SUN	16-APR-17			
Mon	17-APR-17			
TUE	18-Apr-17			✓
WED	19-Apr-17	✓	✓	
THU	20-Apr-17			
Fri	21-APR-17			
SAT	22-APR-17			
SUN	23-APR-17			
Mon	24-APR-17			✓
TUE	25-APR-17	✓	✓	
WED	26-APR-17			
THU	27-APR-17			
Fri	28-APR-17			✓
SAT	29-Apr-17	✓	✓	
SUN	30-Apr-17			

✓	Monitoring Day
	Sunday or Public Holiday



Impact Monitoring Schedule for next Reporting Period

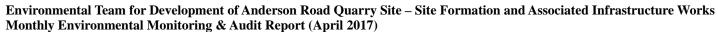
		Naisa Manidania	Air Quality	Monitoring
	Date	Noise Monitoring (0700 – 1900)	1-hour TSP	24-hour TSP
Mon	1-MAY-17			
TUE	2-MAY-17			
WED	3-MAY-17			
THU	4-May-17			✓
Fri	5-MAY-17	✓	✓	
SAT	6-MAY-17			
SUN	7-MAY-17			
Mon	8-MAY-17			
TUE	9-MAY-17			
WED	10-MAY-17			✓
THU	11-MAY-17	✓	✓	
Fri	12-MAY-17			
SAT	13-MAY-17			
SUN	14-MAY-17			
Mon	15-MAY-17			
TUE	16-MAY-17			✓
WED	17-MAY-17	✓	✓	
THU	18-MAY-17			
Fri	19-MAY-17			
SAT	20-MAY-17			
SUN	21-MAY-17			
Mon	22-MAY-17			✓
TUE	23-MAY-17	✓	✓	
WED	24-MAY-17			
THU	25-MAY-17			
FRI	26-MAY-17			
SAT	27-MAY-17			✓
SUN	28-MAY-17			
Mon	29-MAY-17	✓	✓	
TUE	30-MAY-17			
WED	31-MAY-17			

✓	Monitoring Day
	Sunday or Public Holiday





Database of Monitoring Result





24-hour TS	P Monitorii	ng Data for	r AMS-1												
DATE	SAMPLE NUMBER	ELA	ME	CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER W		DUST WEIGHT COLLECTED	24-hr TSP	
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(g)	(µg/m ³)
(#) 19-Apr-17	20870	17898.99	17923.1	1444.20	45	48	46.5	23.4	1011.8	1.44	2080	2.8083	3.1104	0.3021	146
24-Apr-17	20863	17923.06	17947	1435.80	36	38	37.0	21.5	1014.3	1.17	1679	2.8149	2.8636	0.0487	29
28-Apr-17	20874	17946.99	17971.1	1447.20	37	39	38.0	23	1014.4	1.20	1731	2.8159	3.0195	0.2036	118

Remark (#) 24-hour TSP monitoring at Location AMS-1 was commenced on 19 April 2017 since the power provision for the HVS was granted by the landlord since 19 April 2017.

24-hour TS	P Monitorin	ng Data fo	r AMS-5												
DATE	SAMPLE NUMBER		APSED TII	ME	CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER W		DUST WEIGHT COLLECTED	24-hr TSP
	INI		FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(g)	(µg/m³)
12-Apr-17	20869	4153.26	4177.00	1424.40	40	40	40.0	22.1	1013.3	1.26	1788	2.8139	2.8787	0.0648	36
18-Apr-17	20873	4177.00	4201.16	1449.60	40	40	40.0	26.7	1008.9	1.24	1803	2.8177	2.932	0.1143	64
24-Apr-17	20933	4201.16	4225.43	1456.20	34	36	35.0	23.4	1011.8	1.11	1612	2.7929	2.9205	0.1276	80
28-Apr-17	20943	4225.43	4249.88	1467.00	36	37	36.5	23	1014.4	1.15	1718	2.8059	2.8537	0.0478	28

24-hour TS	P Monitorir	ng Data for	r AMS-6												
DATE	SAMPLE NUMBER		APSED TII	ME	CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER V		DUST WEIGHT COLLECTED	24-hr TSP
		INITIAL FINAL (min)		MIN	MAX	AVG	(°C)	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(g)	(µg/m³)	
12-Apr-17	20868	9293.49	9317.62	1447.80	42	42	42.0	22.1	1013.3	1.31	1901	2.8170	2.8630	0.0460	24
18-Apr-17	20871	9317.62	9341.94	1459.20	39	40	39.5	26.7	1008.9	1.23	1794	2.7947	2.8870	0.0923	51
24-Apr-17	20936	9341.94	9366.46	1471.20	38	39	38.5	23.4	1011.8	1.21	1778	2.8092	2.9421	0.1329	75
28-Apr-17	20729	9366.46	9391.41	1497.00	40	42	41.0	23	1014.4	1.28	1921	2.8043	2.8908	0.0865	45





24-hour TS	P Monitorii	ng Data fo	r AMS-7												
DATE	SAMPLE NUMBER		APSED TII	ME	CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER W	_	DUST WEIGHT COLLECTED	24-hr TSP
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(g)	$\mu g/m^3$
12-Apr-17	20867	4896.96	4921.21	1455.00	37	38	37.5	22.1	1013.3	1.18	1720	2.8122	2.8740	0.0618	36
18-Apr-17	20872	4921.21	4945.14	1435.80	39	39	39.0	26.7	1008.9	1.21	1744	2.8022	2.8457	0.0435	25
24-Apr-17	20934	4945.14	4968.68	1412.40	36	38	37.0	23.4	1014.4	1.17	1647	2.805	2.9354	0.1304	80
28-Apr-17	20864	4968.68	4992.29	1416.60	36	38	37.0	23	1014.4	1.17	1653	2.805	2.9499	0.1449	88

Noise Meas	ureme	nt Resu	ults (dB)	of NM	S2																
Date	Start	1st	Leq (5m	in)	2nd	Leq (5n	nin)	3rd Leq (5min)			4th Leq (5min)			5th	Leq (5n	nin)	6th	Leq (5n	nin)	Leg30min,	Corrected Noise
Date	Time	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	dB(A)	Level*, dB(A)
13-Apr-17	10:11	51.7	54.0	47.0	51.3	53.5	47.0	53.3	56.5	48.0	52.8	55.0	48.0	53.3	55.5	48.5	52.3	55.5	48.0	53	56
19-Apr-17	14:31	50.7	62.6	54.9	51.7	63.4	55.2	50.3	63.5	54.7	49.8	58.8	51.3	49.5	54.7	51.1	48.1	56.6	49.8	50	53
25-Apr-17	10:22	64.0	67.2	61.5	64.5	67.3	61.5	63.2	66.0	60.0	62.1	64.5	59.3	63.0	65.6	59.7	62.1	65.0	58.9	63	66
29-Apr-17	10:50	59.8	62.5	58.0	60.2	63.6	58.1	60.8	62.8	57.1	61.3	63.8	58.7	60.5	64.6	58.0	62.1	64.9	60.1	61	64

Noise Meas	Noise Measurement Results (dB) of NMS4																				
Date	Start	1st	Leq (5m	in)	2nd	Leq (5n	nin)	3rd Leq (5min)			4th	Leq (5n	nin)	5th	Leq (5n	nin)	6th	Leq (5n	nin)	Leg30min,	Corrected Noise
Date	Time	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	dB(A)	Level*, dB(A)
13-Apr-17	11:28	55.1	57.5	51.0	55.1	57.5	51.0	54.2	56.0	50.0	55.5	57.5	50.5	54.6	55.5	50.0	56.0	56.5	50.5	55	58
19-Apr-17	13:48	49.9	61.6	52.8	49.7	61.6	53.0	51.5	63.0	53.6	51.8	64.7	56.3	49.9	63.8	52.9	51.8	62.1	54.5	51	54
25-Apr-17	9:29	62.3	65.0	58.5	61.5	64.0	56.0	62.5	65.7	58.2	63.3	66.2	59.9	61.2	62.8	58.1	62.2	65.2	58.8	62	65
29-Apr-17	9:40	60.5	64.6	57.6	62.3	66.5	58.1	61.5	63.8	58.4	61.0	65.5	57.6	62.6	66.6	57.1	62.9	64.2	58.6	62	65

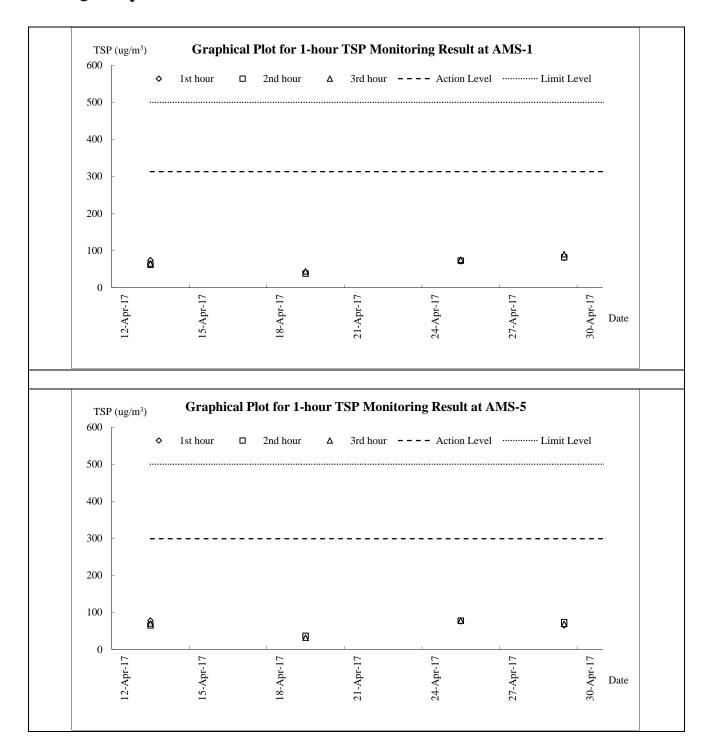


Appendix I

Graphical Plots for Monitoring Result



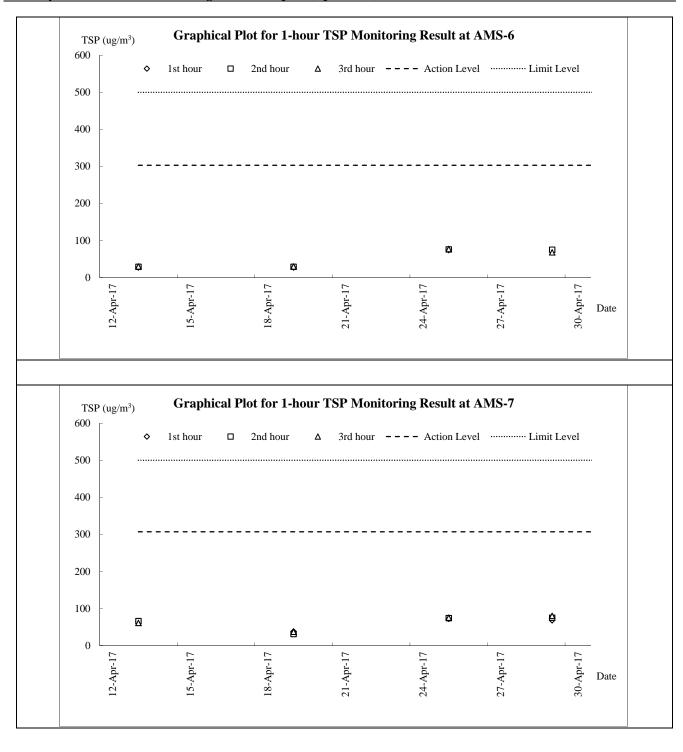
Air Quality – 1-hour TSP



Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works

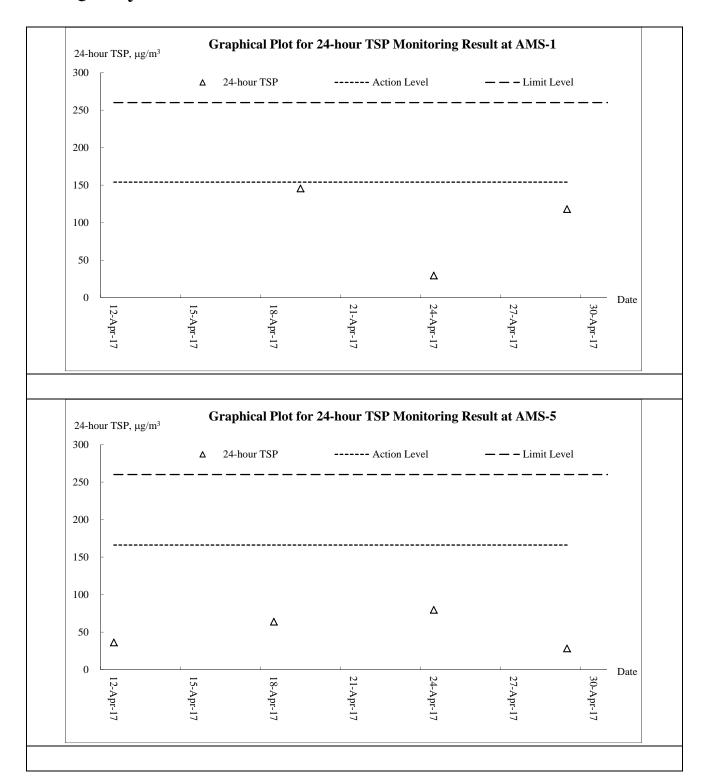


Monthly Environmental Monitoring & Audit Report (April 2017)





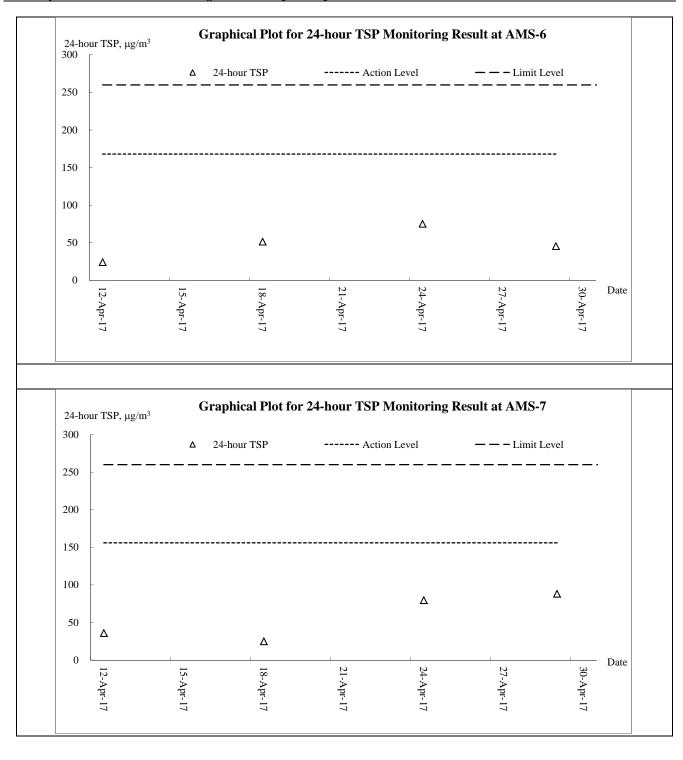
Air Quality – 24-hour TSP



Environmental Team for Development of Anderson Road Quarry Site – Site Formation and AUES **Associated Infrastructure Works**

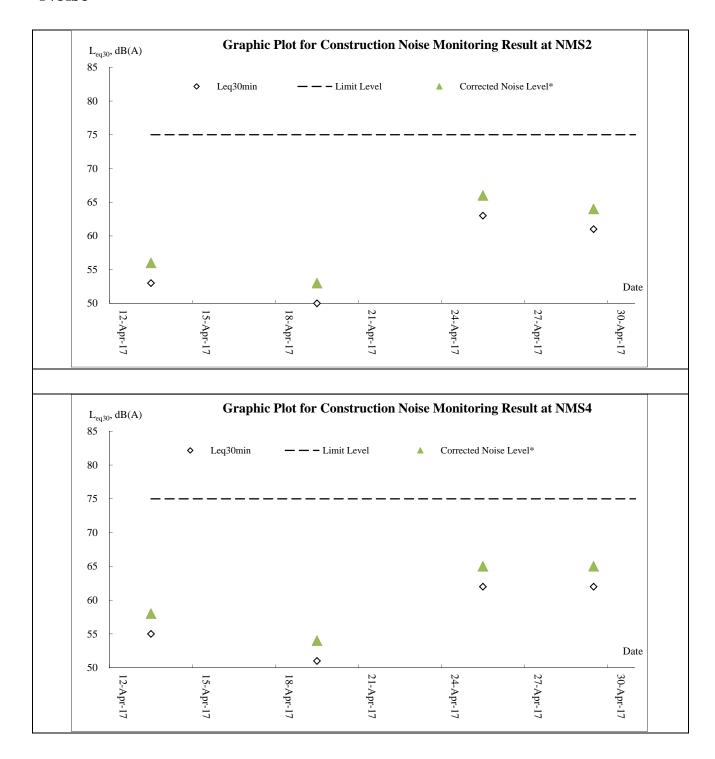


Monthly Environmental Monitoring & Audit Report (April 2017)





Noise





Appendix J

Meteorological Data

Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Acceptated Infrastructure Works **Associated Infrastructure Works**



Monthly Environmental Monitoring & Audit Report (April 2017)

			Total	Kwun Tong Station	Kai Tal	k Station	King's Park Station
Date		Weather	Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Wind Direction	Mean Relative Humidity (%)
1-Apr-17	Sat	Mainly cloudy.	0.2	19.4	10.2	E/SE	72.5
2-Apr-17	Sun	Sunny intervals and isolated showers	0	19.4	17.7	Е	48.7
3-Apr-17	Mon	Mainly cloudy.	0	19.7	13.4	Е	64
4-Apr-17	Tue	Mainly cloudy. Moderate south to southwesterly winds	0	21.2	15	E/NE	73
5-Apr-17	Wed	Light to moderate southwesterly winds.	0	22.8	10.5	E/NE	76.2
6-Apr-17	Thu	Sunny intervals and isolated showers	0.3	23.2	12	SE	84
7-Apr-17	Fri	Mainly cloudy.	0	25.5	10	SE	78.7
8-Apr-17	Sat	Light to moderate southwesterly winds.	0	25	7.5	SW	61.5
9-Apr-17	Sun	Mainly cloudy. Moderate south to southwesterly winds	0	25.7	7	S/SW	79
10-Apr-17	Mon	Cloudy with a few showers.	Trace	27.1	7.8	S/SW	81
11-Apr-17	Tue	Sunny intervals and isolated showers	0.6	25.5	6.5	S/SW	88.5
12-Apr-17	Wed	Mainly cloudy. Moderate south to southwesterly winds	21.5	20.4	11.7	N/NE	86.5
13-Apr-17	Thu	Light to moderate southwesterly winds.	Trace	19.6	9	N/NE	70.5
14-Apr-17	Fri	Mainly cloudy. Moderate south to southwesterly winds	0	22	11.5	E/SE	77.8
15-Apr-17	Sat	Cloudy with a few showers.	0	24.4	8.5	E/SE	87.8
16-Apr-17	Sun	Sunny intervals and isolated showers	Trace	26.1	7.5	W/NW	83.5
17-Apr-17	Mon	Mainly cloudy.	Trace	27.5	12	W	74.5
18-Apr-17	Tue	Mainly cloudy.	0	28	9.7	W/SW	76.2
19-Apr-17	Wed	Cloudy with a few showers.	0	27.7	10.1	SW	77
20-Apr-17	Thu	Cloudy with a few showers.	3.1	25.9	7.5	E/SE	83.7
21-Apr-17	Fri	Cloudy with a few showers.	7.8	25.8	22.7	S/SW	86.5
22-Apr-17	Sat	Cloudy with a few showers.	6.6	20.6	10.8	S/SW	89.5
23-Apr-17	Sun	Cloudy with a few showers.	1.4	20.5	9	E/SE	79.7
24-Apr-17	Mon	Moderate east to southeasterly winds.	Trace	21.1	14.7	E/SE	81.2
25-Apr-17	Tue	Mainly cloudy. Rather low visibility in some areas.	10.9	21.5	14.6	E/SE	89.7
26-Apr-17	Wed	Cloudy with a few showers.	2.9	24.6	9.7	E/SE	87.5
27-Apr-17	Thu	Moderate east to southeasterly winds.	3.5	22.1	8.2	SE	84.7
28-Apr-17	Fri	Mainly cloudy. Rather low visibility in some areas.	0	21.8	8.9	E/SE	67
29-Apr-17	Sat	Sunny periods and one or two showers	0	22.7	5.8	SE	37.8
30-Apr-17	Sun	Light winds.	0	23.6	7.5	E/SE	34.3



Appendix K

Waste Flow Table

Contract No.: NE/2016/01

Site Formation and Infrastructure Works for Development of Anderson Road Quarry Site

Monthly Summary Waste Flow Table for <u>2017</u> (year)

		Actual Quan	tities of Inert C&I	Materials Genera	ted Monthly			Actual Quantities	of C&D Wastes C	Generated Monthly	
Month	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract (see Note 6)	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	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0.0014
May	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0	0	0	0.0014
Jul	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0.0014



Appendix L

Implementation Schedule for Environmental Mitigation Measures





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
Dust Impa	ct (Contraction Phase)				
S4.7.2 to S4.7.5	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road is proposed to achieve dust removal efficiency of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.75 L/m2 to achieve the respective dust removal efficiencies.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	V
S4.7.6	The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construct ion Dust) Regulation.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	V
S4.7.6	 Following dust suppression measures should also be incorporated by the Contractor to control the dust nuisance throughout the construction phase: 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 materials remaining after a stockpile is removed should be wet ted with water and cleared from the surface of roads; A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones; The load of dusty materials on a vehicle leaving a construct ion 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 sect ion 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 construct ion period. The port ion of any road leading only to construct ion 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 	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; Any area that involves demolition activities 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; 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 pulverised 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 fit ted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; and Exposed earth should be properly treated by compact ion, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construct ion activity on the construction site or part of the construct ion site where the exposed earth lies. 				
S4.7.7	Implement regular dust monitoring under EM&A programme during the Construct ion phase.	Control construction airborne noise	Selected Representative dust monitoring station	All construction sites where practicable	V
	act (Contraction Phase)				
S5.6.9	 Implement the following good site management practices: only well-maintained plant should be operated on-site and plant should be serviced regularly during the construct ion programme; machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direct ion, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construct ion equipment should be properly fit ted 	Control construct ion airborne noise	Contractor	All construction sites where practicable	V

Environmental Team for Development of Anderson Road Quarry Site – Site Formation and Associated Infrastructure Works Monthly Environmental Monitoring & Audit Report (April 2017)



EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 and maintained during the construct ion works; mobile plant should be sited as far away from NSRs as possible and practicable; and material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construct ion activities. 				
S5.6.11 to S5.6.13	Use of "Quiet" Plant and Working Methods.	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	@
S5.6.14	Install temporary site hoarding (approx 2.5m high) located on the site boundaries between noisy construct ion activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construct ion noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites where practicable	NA
S5.6.15 to S5.6.18	Install movable noise barriers, full enclosure and acoustic mat, screen the noisy plants including air compressor and generator.	Screen the noisy plant items to be used at all construct ion sites	Contractor	All construct ion sites where practicable	V
\$5.6.19	Sequencing operation of construction plants equipment.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construct ion sites where practicable	V
S5.6.34	Implement temporary noise barrier along Road L4.	Further reduce the construct ion airborne noise	Contractor	Road L4 of ARQ	N/A
\$5.6.35	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected Representativ e Noise monitoring stations	V
	lity Impact (Contraction Phase)				
S6.6.3	Construction Runoff In accordance with the Practice Note for Professional Persons on Construct ion Site Drainage, Environmental Protect ion Department , 1994 (ProPECC PN 1/94), best management practices should be implemented as far as	Control construction runoff	Contractor	All construction sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 Practicable as below: At the start of site establishment, perimeter cut -off drains to direct off-site water around the site should be constructed with internal drainage works. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stornwater to silt removal facilities. Diversion of natural stornwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimize polluted runoff. Sediment at ion tanks with sufficient capacity, constructed from preformed individual cells of approximately 6 to 8 m² capacities, are recommended as a general mitigation measure which can be used for set t ling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped. The dikes or embankments for flood protect ion should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt /sediment t rap. The silt /sediment t raps should be incorporated in the permanent drainage channels to enhance deposit ion rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construct ion. Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces shoul				





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 excavations. If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sect ions wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. All open stockpiles of construct ion materials (for example, aggregates, sand and fill material) of should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construct ion materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construct ion materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. 				
	• Precautions to be taken at any time of year when rainstorms are likely, act ions to be taken when a rainstorm is imminent or forecasted, and act ions to be taken during or after rainstorms are summarized in Appendix A2 of <i>ProPECC PN 1/94</i> . Particular attention should be paid to the control of silty surface runoff during storm events.				
	• All vehicles and plant should be cleaned before leaving a construct ion site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construct ion site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The sect ion of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient back all toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and rains.				
	 Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. Construct ion solid waste, debris and rubbish on site should be collected, 				
	 Construct ion solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bun ds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. 				





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Not ices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the rivers. 				
S6.6.6 and 6.6.7	 Portable chemical toilets should be provided for handling the construction sewage generated by the workforce. Assume that the capacity of the chemical toilets would be 0.4m3 and suck up twice a day under normal practices, around 45 chemical toilets would be required for the whole site at peak hour. And it should be noted that under normal construction periods, less chemical toilets would be needed. In addition, the total number of the chemical toilets would be subject to later detailed design, the capacity of the chemical toilets, and contractor's site practices. Nevertheless, a licensed contractor should be employed to provide appropriate and adequate portable toilets to cater around 37.5 m3/day sewage and be responsible for appropriate disposal and maintenance. Since portable chemical toilets will be provided, no adverse water quality impact from the workforce sewage is anticipated. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construct ion phase of the Project. Regular environmental audit on the construct ion 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 	Handling of site sewage	Contractor	All construction sites	V
	during the construction phase of the Project would not cause water quality impact after undertaking all required measure				
S6.6.8 and 6.6.9	Accidental Spillage To prevent accidental spillage of chemicals, proper storage and handling facilities should be provided. All the tanks, containers and storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and storm drains. The Contractor is required to register as a chemical waste producer if chemical wastes would be generated from the construct ion activities. Storage of chemical waste arising from the construct ion activities should be well managed with suitable labels and warnings while disposal of those chemical wastes should be comply with the requirement states in Waste Disposal Ordinance (Cap 354) as well as Waste Disposal (Chemical Waste)	Prevent ion of accidental spillage	Contractor	All construction sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	(General) Regulations.				
S6.6.11- S6.6.14	Groundwater from Contaminated Area The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater discharge. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed during the process of discharge license application. The compliancy to the TM-DSS and the existence of prohibited substance should be confirmed after further SI. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with TMDSS or properly recharged into the ground. If wastewater treatment is deployed, the wastewater treatment unit shall deploy	Minimize contaminated groundwater impacts	Contractor	All construction sites	NA
	suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. Petroleum Carbon Ranges (PCRs)). All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be discharged into the foul sewers.				
	If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Sect ion 2.3 of TM-DSS. The baseline groundwater quality shall be determined prior to the select ion of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances				
Weste Mer	such as PCRs should be removed as necessary by installing the petrol interceptor. nagement (Contraction Phase)				
S8.5.2	Good Site Practice The following good site practices are recommended throughout the construct ion activities: • nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for	Minimize waste generation during construction	Contractor	All construction sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 collect ion 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 collect ion for disposal; appropriate measures to minimize windblown litter and dust during transportation of waste by either covering t rucks or by transporting wastes in enclosed containers; regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; 				
S8.5.2 (6)	The contractor should submit a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the <i>ETWB TC(W) No. 19/2005</i> for construct ion phase. The EMP should be submit ted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.	Minimize waste generation during construction	Contractor	All construction sites	V
S8.5.3	 Waste Reduction Measures Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction: segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling o materials and their proper disposal; proper storage and site practices to minimize the potential for damage and contamination of construct ion materials; plan and stock construct ion 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 port ions (i.e. soil, broken concrete, metal etc.); provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 	Reduce waste generation	Contractor	All construction sites where practicable	V
S8.5.5	Storage of Waste The following recommendation should be implemented to minimize the impacts: • waste such as soil should be handled and stored well to ensure secure containment; • stockpiling area should be provided with covers and water spraying system	Minimize waste impacts from storage	Contractor Contractor	All construct ion sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 to prevent materials from wind-blown or being washed away; different locations should be designated to stockpile each material to enhance reuse; 				
S8.5.6	Collection and Transportation of Waste The following recommendation should be implemented to minimize the impacts: 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 disposal of waste should be done at licensed waste disposal facilities.	Minimize waste impacts from storage	Contractor	All construction sites	V
S8.5.8	 Excavated and C&D Material Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials: 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; implement a recording system for the amount of waste generated, recycled and disposed of for checking; The recommended C&D materials handling should include: On-site sorting of C&D materials Reuse of C&D materials Use of Standard Formwork and Planning of Construction Materials purchasing Provision of wheel wash facilities 	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	V
S8.5.15	Contaminated Soil As a precaution, it is recommended that standard good site practice should be implemented during the construct ion phase to minimize any potential exposure to contaminated soils or groundwater. The details of mitigation measures to minimize the potential environmental implications arising from the handling of contaminated materials refer to Land Contamination Section.	Remediate contaminated soil	Contractor	All construction sites where applicable	V
S8.5.17	Chemical Waste If chemical wastes are produced at the construct ion site, the Contractors	Control the chemical waste and ensure proper	Contractor	All construction	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	should register with EPD as chemical waste producer. 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 Cent re, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	storage, handling and disposal.		sites	
S8.5.18	 General Waste 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 collect ion 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	All construction sites	V
S8.5.19	 Sewage The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities. Regularly collect ion by licensed collectors should be arranged to minimize potential environmental impacts. 	Minimize production of sewage impacts	Contractor	All construction sites	V
Ecology (C	ontraction Phase)				
S. 10.7.2 to 10.7.6	Re-provision of Wooded Area for ecological function at the future Quarry Park.	Compensate for the loss of three woodland patches of a total area of about 1.13ha.	Contractor/ Detailed Design Consultant (qualified botanist / horticulturist / Certified Arborist to supervise the planting).	Northern part of the proposed Quarry Park.	N/A
.10.7.10	Construction phase in situ mitigation measures to minimize impacts on hydrological condition and water quality of hillside watercourses include: • Temporary sewerage and drainage will be designed and installed to collect wastewater and prevent it from entering nearby watercourses;	Minimize impacts on Hydrological condition and water quality of hillside watercourses.	Contractor	All construction sites	V





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	 Proper locations well away from nearby watercourses will be used for temporary storage of materials (i.e. equipment, fill materials, chemicals and fuel) and temporary stockpile of construction debris and spoil, and these will be identified before commencement of works; To prevent muddy water entering nearby watercourses, work sites close to nearby watercourses will be isolated, using such items as sandbags or silt curtains with lead edge at bot tom and properly supported props. Other protective measures will also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the works site; Stockpiling of construct ion materials, if necessary, will be properly covered and located away from nearby watercourses; Erection of temporary geotextile silt fences will be carried out around earth-moving works to t rap any sediments and prevent them from entering watercourses; Construction debris and spoil will be covered and/or properly disposed as soon as possible to avoid being washed into nearby watercourses; Exposed soil will be covered as quickly as possible following format ion works, followed, where appropriate, by covering with biodegradable geotextile blanket for erosion control purposes; Where appropriate, earth-bunding will be carried out of areas where soils have been disturbed or where vegetation has been cleared, to ensure that surface runoff will not move soils off-site; Construct ion effluent, site run-off and sewage will be probably collected and/or treated. Wastewater from any construct ion site will be minimised via the following in descending order: reuse, recycling and treatment; Proper locations for discharge out lets of wastewater treatment facilities well away from sensitive receivers will be identified and used; Silt t raps will be installed at points where drainage from the site enters local watercourses; Appropriate sanitary facilities for on-site workers will be provid		measures?		
0.10.7.11	points. If the monitoring and audit results show that pollution occurs, adequate measures including temporary cessation of works will be considered.	W. dad a day of	Control	A 11	NI/A
S.10.7.11	Implement an emergency contingency plan during the construction phase and the	winninze impacts on	Contractor	All	N/A





EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	Implementation Status
	plan will include, but not be limited to, the following:	Hydrological condition		construction	
	Potential emergency situations;	and water quality of		sites	
	Chemicals or hazardous materials used on-site (and their location);	hillside watercourses.			
	Emergency response team;				
	Emergency response procedures;				
	List of emergency telephone hot lines;				
	Locations and types of emergency response equipment, and				
	Training plan and testing for effectiveness.				
	and visual (Contraction Phase)				
S11.14.23,	All existing trees to be retained shall be carefully protected during construction.	Avoid disturbance and	Detailed Design	The whole	V
Table		protection of the existing	Consultant /	project area	
11.9, CM1		trees		where	
[4]				applicable	
S11.14.23,	Tree Transplantation - Should removal of trees be unavoidable due to	Minimize landscape	Detailed Design	Onsite where	*
Table	construction impacts, trees will be transplanted or felled. Detailed transplanting	impact and retention of	Consultant /	possible.	
11.9, CM2	proposal will be submit ted to relevant government departments for approval in	landscape resources		Otherwise	
[3]	accordance with LAO GN No. 7/2007, ETWB TCW No. 29/2004 and 10/2013.			consider	
	Final locations of transplanted trees shall be agreed prior to commencement of			offsite	
	the work.			locations	
S11.14.23,	Control of operation night -time glare with well-planned light ing operation	Minimize glare impact	Contractor/	The whole	N/A
Table	system to minimize potential glare impact to adjacent VSRs	to	CEDD	project area	
11.9, CM3		adjacent VSRs		where	
[4]				applicable	
S11.14.23,	Erection of decorative screen hoarding.	Minimize visual impact	Contractor/	The whole	N/A
Table			CEDD	project area	
11.9, CM				where	
[4]				applicable	
S11.14.23,	Minimise disturbance and limitation of run-off – temporary structures and	Minimize visual impact	Contractor/	The whole	V
Table	construction works should be planned with care to minimize disturbance to		CEDD	project area	
11.9, CM5	adjacent landscape, vegetation, natural stream habitats.			where	
[2]				applicable	

 $Legend: V = implemented; \ x = not \ implemented; \ @ = partially \ implemented; \ * = pending \ to \ be \ implemented; \ N/A = not \ applicable$