



**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 (MAY 2017)**

**PREPARED FOR  
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
(CEDD)**

Date	Reference No.	Prepared By	Certified By
14 June 2017	TCS00864/16/600/R0051v2	 Nicola Hon (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	8 June 2017	First Submission
2	14 June 2017	Amended according to the IEC's comments on 14 June 2017



Civil Engineering and Development Department  
New Territories East Development Office  
Suite 1213 Chinachem Golden Plaza  
77 Mody Road  
Tsim Sha Tsui East  
Kowloon

Your reference:

Our reference: HKCEDD10/50/104359

Date: 15 June 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 (May 2017)

We refer to the emails of 8, 12 and 14 June 2017 from Action-United Environmental Services and Consulting attaching a Monthly Environmental Monitoring and Audit Report (May 2017) for the captioned project.

We have no further comment and hereby verify the Monthly Environmental Monitoring and Audit Report (May 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

Adi Lee

Independent Environmental Checker

LYMA/LHHN/WCKJ/lhnh

cc CEDD – Mr Eric Li (email: [chikli@cedd.gov.hk](mailto:chikli@cedd.gov.hk))  
CEDD – Mr Matthew Lai (email: [matthewsylai@cedd.gov.hk](mailto:matthewsylai@cedd.gov.hk))  
AECOM – Mr Alex Wong (email: [yc.wong@aecom.com](mailto:yc.wong@aecom.com))  
AECOM – Mr Dennis Leung (email: [sre1tpf@yahoo.com.hk](mailto:sre1tpf@yahoo.com.hk))  
AUES – Mr T W Tam (email: [twtam@fordbusiness.com](mailto:twtam@fordbusiness.com))

**ANewR Consulting Limited**

Unit 517, 5/F, Tower A, Regent Centre

63 Wo Yi Hop Road, Kwai Chung, Hong Kong

Tel: (852) 2618 2836

Fax: (852) 3007 8648

Email: [info@anewr.com](mailto:info@anewr.com)

Web: [www.anewr.com](http://www.anewr.com)



ISO 9001 : 2008  
Certificate No.: CC 3988

**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 on 21 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 have been commenced on 2 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 2<sup>nd</sup> monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 May 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 Aspect	Environmental Monitoring Parameters / Inspection	Reporting Period	
		Number of Active Monitoring Locations	Total Occasions
Air Quality	1-hour TSP	4	60
	24-hour TSP	4	20
Construction Noise	L <sub>eq(30min)</sub> Daytime	2	10

**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.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	0	0
	24-hour TSP	0	0	0	0	0
Construction Noise	L <sub>eq(30min)</sub> Daytime	0	0	0	0	0

**ENVIRONMENTAL COMPLAINT**

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

**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 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 **2, 11, 16, 23 and 29 May 2017** in which IEC joined the site inspection on **11 May 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** was carried out by the RE, ET and Contractor on **10, 17, 24 and 31 May 2017** in which IEC joined the site inspection on **24 May 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.



## Table of Contents

<b>1. INTRODUCTION</b>	<b>1</b>
1.1 PROJECT BACKGROUND	1
1.2 REPORT STRUCTURE	1
<b>2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS</b>	<b>2</b>
2.1 CONSTRUCTION CONTRACT PACKAGING	2
2.2 PROJECT ORGANIZATION	3
2.3 CONSTRUCTION PROGRESS	3
<b>3. SUMMARY OF IMPACT MONITORING REQUIREMENTS</b>	<b>5</b>
3.1 GENERAL	5
3.2 MONITORING PARAMETERS	5
3.3 MONITORING LOCATIONS	5
3.4 MONITORING FREQUENCY AND PERIOD	7
3.5 MONITORING EQUIPMENT	7
3.6 MONITORING METHODOLOGY	8
3.7 DERIVATION OF ACTION/LIMIT (A/L) LEVELS	10
3.8 DATA MANAGEMENT AND DATA QA/QC CONTROL	10
<b>4. AIR QUALITY MONITORING</b>	<b>12</b>
4.1 GENERAL	12
4.2 RESULTS OF AIR QUALITY MONITORING	12
<b>5. CONSTRUCTION NOISE MONITORING</b>	<b>14</b>
5.1 GENERAL	14
5.2 NOISE MONITORING RESULTS IN REPORTING MONTH	14
<b>6. WASTE MANAGEMENT</b>	<b>15</b>
6.1 GENERAL WASTE MANAGEMENT	15
6.2 RECORDS OF WASTE QUANTITIES	15
<b>7. SITE INSPECTION</b>	<b>16</b>
7.1 REQUIREMENTS	16
7.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH	16
<b>8. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE</b>	<b>18</b>
8.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION	18
<b>9. IMPLEMENTATION STATUS OF MITIGATION MEASURES</b>	<b>19</b>
9.1 GENERAL REQUIREMENTS	19
9.2 KEY ISSUES FOR THE COMING MONTH	20
<b>10. CONCLUSIONS AND RECOMMENDATIONS</b>	<b>21</b>
10.1 CONCLUSIONS	21
10.2 RECOMMENDATIONS	21

**LIST OF TABLES**

TABLE 2-1	STATUS OF ENVIRONMENTAL LICENSES AND PERMITS OF THE CONTRACT 1
TABLE 2-2	STATUS OF ENVIRONMENTAL LICENSES AND PERMITS OF THE CONTRACT 2
TABLE 3-1	SUMMARY OF EM&A REQUIREMENTS
TABLE 3-2	IMPACT MONITORING STATIONS - AIR QUALITY
TABLE 3-3	IMPACT MONITORING STATIONS - CONSTRUCTION NOISE
TABLE 3-4	AIR QUALITY MONITORING EQUIPMENT
TABLE 3-5	CONSTRUCTION NOISE MONITORING EQUIPMENT
TABLE 3-6	ACTION AND LIMIT LEVELS FOR AIR QUALITY MONITORING
TABLE 3-7	ACTION AND LIMIT LEVELS FOR CONSTRUCTION NOISE
TABLE 4-1	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS (AMS-1)
TABLE 4-2	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS (AMS-5)
TABLE 4-3	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS (AMS-6)
TABLE 4-4	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS (AMS-7)
TABLE 5-1	SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS
TABLE 6-1	SUMMARY OF QUANTITIES OF INERT C&D MATERIALS
TABLE 6-2	SUMMARY OF QUANTITIES OF C&D WASTES
TABLE 7-1	SITE OBSERVATIONS OF CONTRACT 1
TABLE 8-1	STATISTICAL SUMMARY OF ENVIRONMENTAL COMPLAINTS
TABLE 8-2	STATISTICAL SUMMARY OF ENVIRONMENTAL SUMMONS
TABLE 8-3	STATISTICAL SUMMARY OF ENVIRONMENTAL PROSECUTION
TABLE 9-1	ENVIRONMENTAL MITIGATION MEASURES

**LIST OF APPENDICES**

APPENDIX A	LAYOUT PLAN OF THE PROJECT
APPENDIX B	ORGANIZATION CHART
APPENDIX C	THREE-MONTHS ROLLING CONSTRUCTION PROGRAMME
APPENDIX D	MONITORING LOCATIONS FOR IMPACT MONITORING
APPENDIX E	CALIBRATION CERTIFICATE OF MONITORING EQUIPMENT AND HOKLAS-ACCREDITATION CERTIFICATE OF THE TESTING LABORATORY
APPENDIX F	EVENT AND ACTION PLAN
APPENDIX G	IMPACT MONITORING SCHEDULE
APPENDIX H	DATABASE OF MONITORING RESULT
APPENDIX I	GRAPHICAL PLOTS FOR MONITORING RESULT
APPENDIX J	METEOROLOGICAL DATA
APPENDIX K	WASTE FLOW TABLE
APPENDIX L	IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES

## 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 on 21 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 have been commenced on 2 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 **17<sup>th</sup> January 2017 to 30<sup>th</sup> January 2017, 16<sup>th</sup> February 2017 to 2<sup>nd</sup> March 2017 and 26<sup>th</sup> March 2017 to 8<sup>th</sup> 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 **2<sup>nd</sup>** monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 May 2017**.

### 1.2 REPORT STRUCTURE

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

<b>Section 1</b>	<i>Introduction</i>
<b>Section 2</b>	<i>Project Organization and Construction Progress</i>
<b>Section 3</b>	<i>Summary of Impact Monitoring Requirements</i>
<b>Section 4</b>	<i>Air Quality Monitoring</i>
<b>Section 5</b>	<i>Construction Noise Monitoring</i>
<b>Section 6</b>	<i>Water Quality Monitoring</i>
<b>Section 7</b>	<i>Waste Management</i>
<b>Section 8</b>	<i>Site Inspections</i>
<b>Section 9</b>	<i>Environmental Complaints and Non-Compliance</i>
<b>Section 10</b>	<i>Implementation Status of Mitigation Measures</i>
<b>Section 11</b>	<i>Conclusions and Recommendations</i>

## 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 and 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 grade walkways, escalators, lift towers with associated 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 (BBI) 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 The three-months rolling construction program for Contracts 1 and 2 are enclosed in [Appendix C](#). As provided by the Contractors of Contracts 1 and 2, the major construction activities conducted under Contracts 1 and 2 are summarized in below.

### Contract 1 (NE/2016/01)

1. Completed installation of corrugated sheets from Point 51 to 73
2. Completed site clearance from Point 74 to 83
3. Commenced laying concrete blocks along Anderson Road from Point 74 to 83
4. Commenced ABWF works (e.g. internal wall works, ceiling installation, floor tiling works) and electrical installation of CRE's site office.
5. Completed structural works and commenced ABWF works (e.g. internal wall works, ceiling installation, floor tiling works) and electrical installation of JV's site office.
6. Continue bored pile construction of PW9-P1
7. Continue bored pile construction of PW9-P2
8. Land Contamination Ground Investigation completed 8 out of 29 holes
9. Completed 4 GI holes out of 5 holes at the West Portal and the underpass tunnel
10. Completed all pre-drilling work for ground investigation of north and south lift towers of Pedestrian Connectivity System B.
11. Completed 24 out of 42 holes of pre-drilling works for ground investigation at PTT
12. Completed construction of temporary water tank TWR no.3 and associated channels and put into operation
13. Continued excavation and filling up in Portion A4
14. Continued construction of the temporary haul road to West Portal
15. Commenced trimming slope at West Portal at top-down direction
16. Commenced demolishment of existing 1050 dia. down drainage pipes and commenced modification works of the existing manhole
17. Submitted TMDP for construction of temporary drainage system for diversion at the road L4/L3 Road junction
18. Commenced breaking of existing access road for construction of RWA18 and noise barrier bay no. 1 to 33
19. Commenced excavation Underground Stormwater Tank

### Contract 2 (NE/2016/05)

1. Set up hoarding at Portion 1.
2. Site Clearance at Portion 1, 2, 8, 9.
3. Tree Survey at Portion 1-9.
4. Set up site office at Portion 2.
5. Scaffolding on Portion 8
6. Pre-drill Work at Portion 1

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

**Table 2-1 Status of Environmental Licenses and Permits of the Contract 1**

Item	Description	License/Permit Status		
		Permit no./	Valid Period	Status

		account no./ Ref. no.	From	To	
1	Form NA - Notification pursuant to Air pollution Control (Construction Dust) Regulation	EPD ref. no. 411762	NA	NA	valid
	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

Table 2-2 Status of Environmental Licenses and Permits of the Contract 2

Item	Description	License/Permit Status			
		Permit no./ account no./ Ref. no.	Valid Period		Status
			From	To	
1	Water Pollution Control Ordinance - Discharge License	Application in progress			
2	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account no. 7027548	12 Apr 2017	End of project	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	<ul style="list-style-type: none"> <li>• 1-hour TSP by Real-Time Portable Dust Meter; and</li> <li>• 24-hour TSP by High Volume Air Sampler</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Leq(30min) in normal working days (Monday to Saturday) 07:00-19:00 except public holiday</li> <li>• Supplementary information for data auditing, statistical results such as <math>L_{10}</math> and <math>L_{90}</math> shall also be obtained for reference.</li> </ul>

#### 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 <sup>Note 1</sup>	Ground of Block 8, Site B facing On Sau Road
AMS-3	DARC-16	Planned Clinic and Community Centre, Site C2 <sup>Note 1</sup>	Ground of Planned Clinic and Community Centre facing Anderson Road
AMS-4	DARC-26	Planned School, Site C2 <sup>Note 2</sup>	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 <sup>nd</sup> 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 proposed 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 <sup>Note 1</sup>	Ground of planned school at DAR facing the project site
NMS-2	Site E – School	Ground area between the planned school and Him Tat House facing the project site
NMS-3	Site C2 – R102 <sup>Note 1</sup>	Ground of Ancillary Facilities Building facing the project site

NMS-4*	Oi Tat House	1m from the exterior of ground floor façade of Oi 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 TSP	High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
	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 0.6m<sup>3</sup>/min and 1.7m<sup>3</sup>/min will be properly set in accordance with the manufacturer’s instruction to within the range recommended in *EPA Code of Federal Regulation, Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-

- A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
- A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
- Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
- The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the

- filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
  - After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.
- 3.6.5 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 m<sup>3</sup>/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<sub>(30 min)</sub> in six consecutive Leq<sub>(5 min)</sub> 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**

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
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**

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NMS-1	When one or more documented complaints are received	75 dB(A) <sup>Note 1</sup> /
NMS-2		70 dB(A) <sup>Note 2</sup> / 65 dB(A) <sup>Note 2</sup>
NMS-3		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



data.

- 3.8.2 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, 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 **60** events of 1-hour TSP and **20** 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)**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-May-17	39	5-May-17	13:08	76	79	77
10-May-17	46	11-May-17	10:03	92	87	98
16-May-17	25	17-May-17	13:07	66	67	69
22-May-17	57	23-May-17	13:11	68	69	70
27-May-17	41	29-May-17	9:24	62	63	66
Average (Range)	<b>42</b> (25 – 57)	Average (Range)		<b>74</b> (62 – 98)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-May-17	26	5-May-17	9:25	69	72	73
10-May-17	112	11-May-17	13:11	87	109	101
16-May-17	29	17-May-17	9:27	70	69	73
22-May-17	22	23-May-17	9:21	62	66	67
27-May-17	30	29-May-17	13:12	62	71	72
Average (Range)	<b>44</b> (22 – 112)	Average (Range)		<b>75</b> (62 – 109)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-May-17	31	5-May-17	9:18	67	69	73
10-May-17	120	11-May-17	13:00	93	104	90
16-May-17	36	17-May-17	9:31	64	69	70
22-May-17	50	23-May-17	9:37	61	63	64
27-May-17	9	29-May-17	13:07	69	70	67
Average	<b>49</b>	Average		<b>73</b>		

(Range)	(9 – 120)	(Range)	(61 – 104)
---------	-----------	---------	------------

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-May-17	32	5-May-17	13:19	72	78	74
10-May-17	87	11-May-17	9:35	94	93	90
16-May-17	51	17-May-17	13:09	69	73	74
22-May-17	41	23-May-17	13:08	67	65	67
27-May-17	37	29-May-17	9:27	61	63	62
Average (Range)	<b>50</b> (32 – 87)	Average (Range)		<b>73</b> (61 – 94)		

- 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 The meteorological data during the impact monitoring days are summarized in **Appendix J**.

## 5. CONSTRUCTION NOISE MONITORING

### 5.1 GENERAL

- 5.1.1 In the Reporting Period, 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 **10** events noise measurements were carried out at the designated locations. Free-field status were performed at NMS2 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 <sup>(*)</sup>	NMS4
5-May-17	61	60
11-May-17	57	59
17-May-17	60	61
23-May-17	65	62
29-May-17	64	61
<b>Limit Level</b>	<b>75 dB(A)</b>	

*Remarks*

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

- 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.

## 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	Contract 1		Contract 2	
	Quantity	Disposal Location	Quantity	Disposal Location
C&D Materials (Inert) ('000m <sup>3</sup> )	0	-	0	-
Reused in this Contract (Inert) ('000m <sup>3</sup> )	0	-	0	-
Reused in other Projects (Inert) ('000m <sup>3</sup> )	0	-	0	-
Disposal as Public Fill (Inert) ('000m <sup>3</sup> )	0	-	0	-

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

Type of Waste	Contract 1		Contract 2	
	Quantity	Disposal Location	Quantity	Disposal Location
Recycled Metal ('000kg)	0.3880	Licensed collector	0	-
Recycled Paper / Cardboard Packing ('000kg)	0	-	0	-
Recycled Plastic ('000kg)	0	-	0	-
Chemical Wastes ('000kg)	0	-	0	-
General Refuses ('000m <sup>3</sup> )	0.0326	SENT	0	-

## 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 **2, 11, 16, 23 and 29 May 2017** in which IEC joined the site inspection on **11 May 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
2 May 2017	<ul style="list-style-type: none"> <li>C&amp;D waste was observed cumulated, the Contractor should dispose the waste regularly and on-site sorting should be implemented properly. (Site Office)</li> </ul>	<ul style="list-style-type: none"> <li>C&amp;D waste cumulated on site was cleared.</li> </ul>
11 May 2017	<ul style="list-style-type: none"> <li>Soil and mud cumulated inside the U-channel should be cleaned to prevent turbidity water discharge from site. (Near Gate 2)</li> <li>As a reminder, felled tree cumulated on site should be removed ASAP.</li> </ul>	<ul style="list-style-type: none"> <li>Soil and mud cumulated inside the U-channel was cleared.</li> <li>Not required for reminder.</li> </ul>
16 May 2017	<ul style="list-style-type: none"> <li>Stagnant water cumulated inside the drip tray should be cleared.</li> <li>As a reminder, Ponding water cumulated on site after rainstorm should be removed or provide proper mitigation measures to prevent mosquito breeding.</li> </ul>	<ul style="list-style-type: none"> <li>Stagnant water cumulated inside the drip tray was cleared.</li> <li>Not required for reminder.</li> </ul>
23 May 2017	<ul style="list-style-type: none"> <li>Stagnant water cumulated inside the empty oil drums. Stagnant water should be removed to prevent mosquito breeding. (Po Lam Road)</li> <li>C&amp;D waste should be cleaned more frequency. (RE site office)</li> <li>As a reminder, Proper noise mitigation measures should be provided to minimize noise impact to the NSR. (Gate 3).</li> </ul>	<ul style="list-style-type: none"> <li>Stagnant water inside the empty oil drums was cleared.</li> <li>C&amp;D waste cumulated on site was removed.</li> </ul>
29 May 2017	<ul style="list-style-type: none"> <li>Waste oil spillage on ground should be cleaned ASAP to prevent contaminate.</li> <li>NRMM without NRMM label using on site was observed. NRMM label should be displayed properly for all NRMM using on-site.</li> <li>As a reminder, NRMM label should be displayed properly before NRMM using on-site.</li> </ul>	<ul style="list-style-type: none"> <li>To be followed.</li> </ul>



**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 **10, 17, 24 and 31 May 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**.

**Table 7-2 Site Observations of Contract 2**

Date	Findings / Deficiencies	Follow-Up Status
10 May 2017	<ul style="list-style-type: none"> <li>No environmental issue was observed during the site inspection</li> </ul>	NA
17 May 2017	<ul style="list-style-type: none"> <li>It was reminded that tree protection zone should be provided and maintained for retained trees if necessary.</li> <li>The Contractor was reminded to provide and display the Noise Emission Label for the air compressors before in use.</li> </ul>	Not required for reminders.
24 May 2017	<ul style="list-style-type: none"> <li>No environmental issue was observed during the site inspection</li> </ul>	NA
31 May 2017	<ul style="list-style-type: none"> <li>The contractor was reminded to dispose general waste.</li> </ul>	Not required for reminders.

**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**

Reporting Period	Contract no.	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
1 – 30 April 2017	1	0	0	NA
1 – 30 April 2017	2	0	0	NA
1 – 31 May 2017	1	0	0	NA
1 – 31 May 2017	2	0	0	NA

**Table 8-2 Statistical Summary of Environmental Summons**

Reporting Period	Contract no.	Environmental Summons Statistics		
		Frequency	Cumulative	Summons Nature
1 – 30 April 2017	1	0	0	NA
1 – 30 April 2017	2	0	0	NA
1 – 31 May 2017	1	0	0	NA
1 – 31 May 2017	2	0	0	NA

**Table 8-3 Statistical Summary of Environmental Prosecution**

Reporting Period	Contract no.	Environmental Prosecution Statistics		
			Cumulative	Prosecution Nature
1 – 30 April 2017	1	0	0	NA
1 – 30 April 2017	2	0	0	NA
1 – 31 May 2017	1	0	0	NA
1 – 31 May 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	<ul style="list-style-type: none"> <li>Wastewater to be treated by filtration system; such as, silt curtain or sedimentation tank before discharge.</li> <li>Replace silt curtain materials if necessary</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>Maintain damp / wet surface on access road</li> <li>Keep slow speed in the sites</li> <li>All vehicles must use wheel washing facility before off site</li> <li>All vehicles must use wheel washing facility before off site</li> <li>Sprayed water during breaking works</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.</li> <li>Keep good maintenance of plants</li> <li>Place noisy plants away from residence or school</li> <li>Provide noise barriers or hoarding to enclose the noisy plants or works</li> <li>Shut down the plants when not in used.</li> </ul>
Waste and Chemical Management	<ul style="list-style-type: none"> <li>On-site sorting prior to disposal</li> <li>Follow requirements and procedures of the “Trip-ticket System”</li> <li>Predict required quantity of concrete accurately</li> <li>Collect the unused fresh concrete at designated locations in the sites for subsequent disposal</li> </ul>
General	<ul style="list-style-type: none"> <li>The site was generally kept tidy and clean.</li> </ul>

### 9.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 9.2.1 Construction activities for Contract 1 in the coming month are listed below:
- Continue ABWF and BS works for CRE’s site accommodation
  - Continue ABWF and BS works for JV’s site accommodation
  - Commence excavation for the south tower of Pedestrian Connectivity System A
  - Continue construction of bored pile RW9-P1
  - Continue construction of bored pile RW9-P2
  - Diversion of down pipe system at East Portal
  - Commence slope cut at West Portal
  - Continue construction of safety hoarding at Point 74 to 83 along Anderson Road
  - Continue site formation work in Portion A4 and trimming of Slope A16
  - Continue site formation in Portion A3
  - Continue per-drilling work for ground investigation at PTT remaining 26 holes
  - Planning works in Portion E1 and E2 (Section XIII, XIII A and XIII B)
  - Continue open-cut exaction for the underground stormwater tank
  - Continue breaking of the existing access road for retaining wall RWA18 and noise barrier along the road L4

15. Commence demolishment of existing reinforced earth walls at the road L4
16. Excavation of Pedestrian Connectivity System A
17. Excavation of cascade diversion

9.2.2 Construction activities for Contract 2 in the coming month are listed below:

1. Set up hoarding at Portion 1
2. Site Clearance at Portion 1,2,4,5,6,7,8,9
3. Tree Survey at Portion 1-9
4. Set up site office at Portion 2
5. Scaffolding on Portion 8
6. Pre-drill work at Portion 1
7. Fell tree at Portion 1

### **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

## 10. CONCLUSIONS AND RECOMMENDATIONS

### 10.1 CONCLUSIONS

- 10.1.1 This is 2<sup>nd</sup> monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 31 May 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.
- 10.1.5 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.

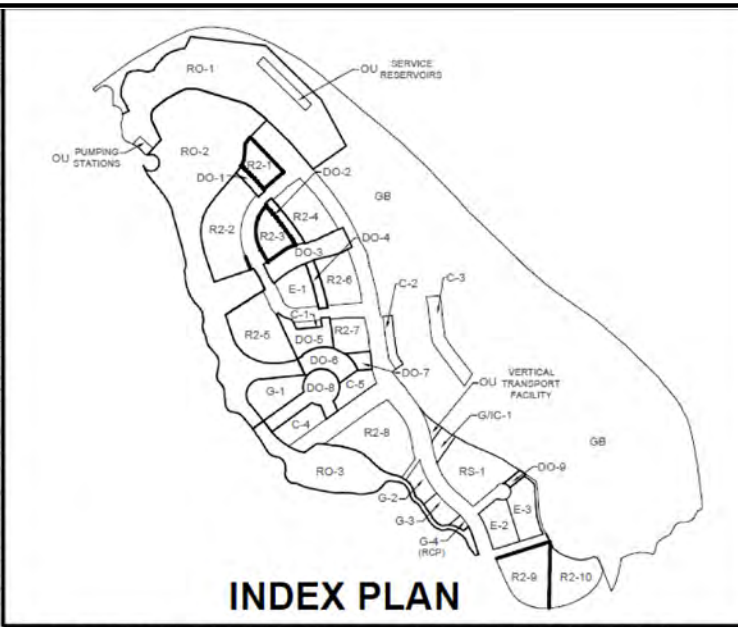
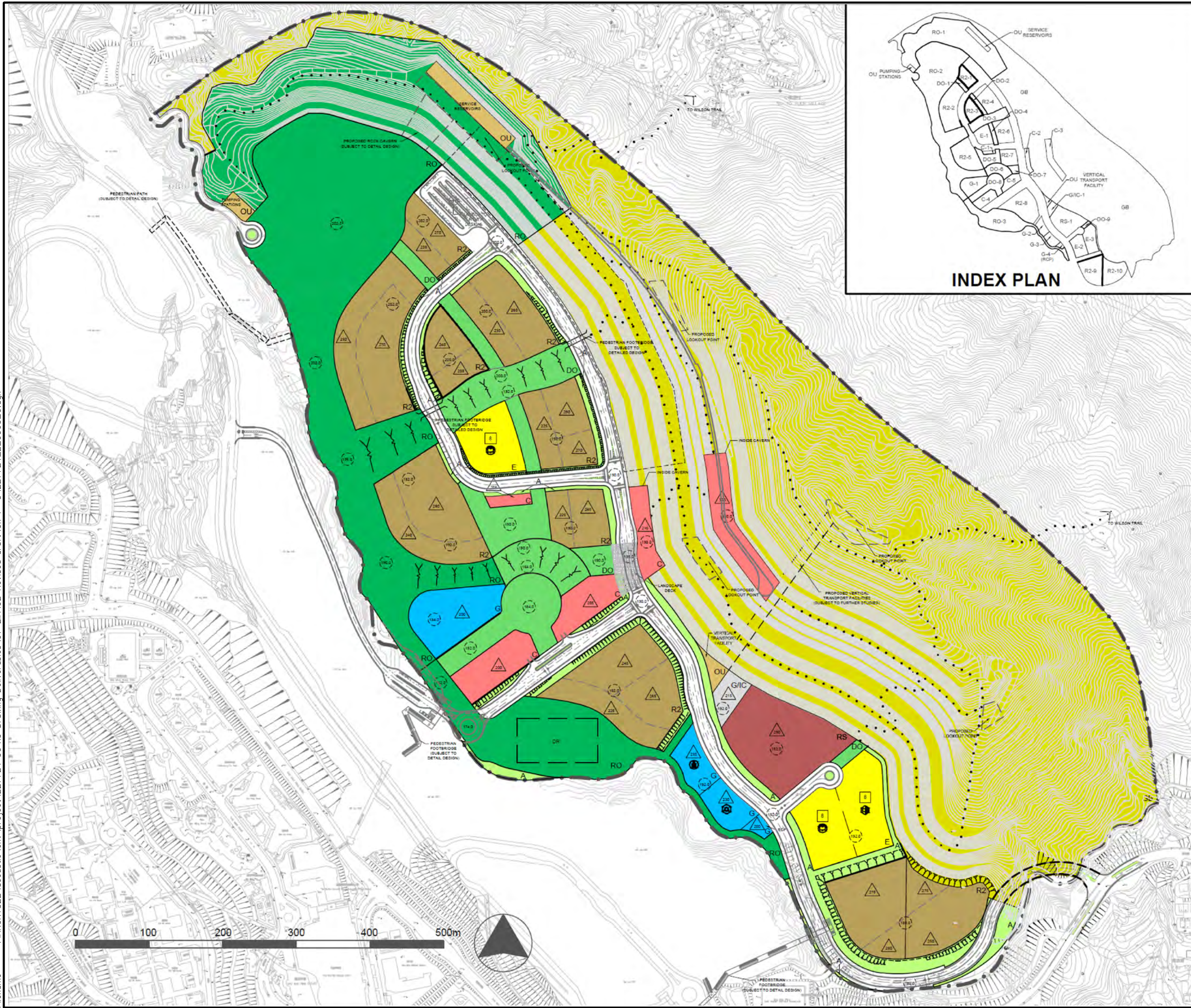
### 10.2 RECOMMENDATIONS

- 10.2.1 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.
- 10.2.3 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**





**LEGEND**

- POLICE STATION
- DIVISIONAL FIRE STATION
- SECONDARY SCHOOL
- PRIMARY SCHOOL
- PUBLIC TRANSPORT TERMINUS
- PLANNING BOUNDARY
- UNDERPASS
- PROPOSED PEDESTRIAN TRAIL
- PEDESTRIAN PRECINCT
- DRAINAGE RESERVE
- MAXIMUM BUILDING HEIGHT (in m above PD)
- MAXIMUM BUILDING HEIGHT (in storeys)
- PROPOSED LEVEL (in m above PD)
- PROPOSED SLOPE
- REFUSE COLLECTION POINT
- FOOTBRIDGE
- COMMERCIAL
- SPECIAL RESIDENTIAL
- RESIDENTIAL ZONE-2
- GOVERNMENT
- GOVERNMENT/ INSTITUTION OR COMMUNITY
- EDUCATION
- REGIONAL OPEN SPACE
- DISTRICT OPEN SPACE
- AMENITY
- OTHER SPECIFIED USES
- GREEN BELT
- ROADS, JUNCTIONS, ETC.
- AREA WITH POTENTIAL FOR ROCK CAVERN DEVELOPMENT

Rev	Description	By	Date
C	THIRD ISSUE	GL	03/14
B	SECOND ISSUE	GL	01/14
A	FIRST ISSUE	GL	10/13

Consultant **ARUP**

Contract No. and Title  
**Agreement No. CE 18/2012(CE)**

**Development of  
Anderson Road Quarry -  
Investigation**

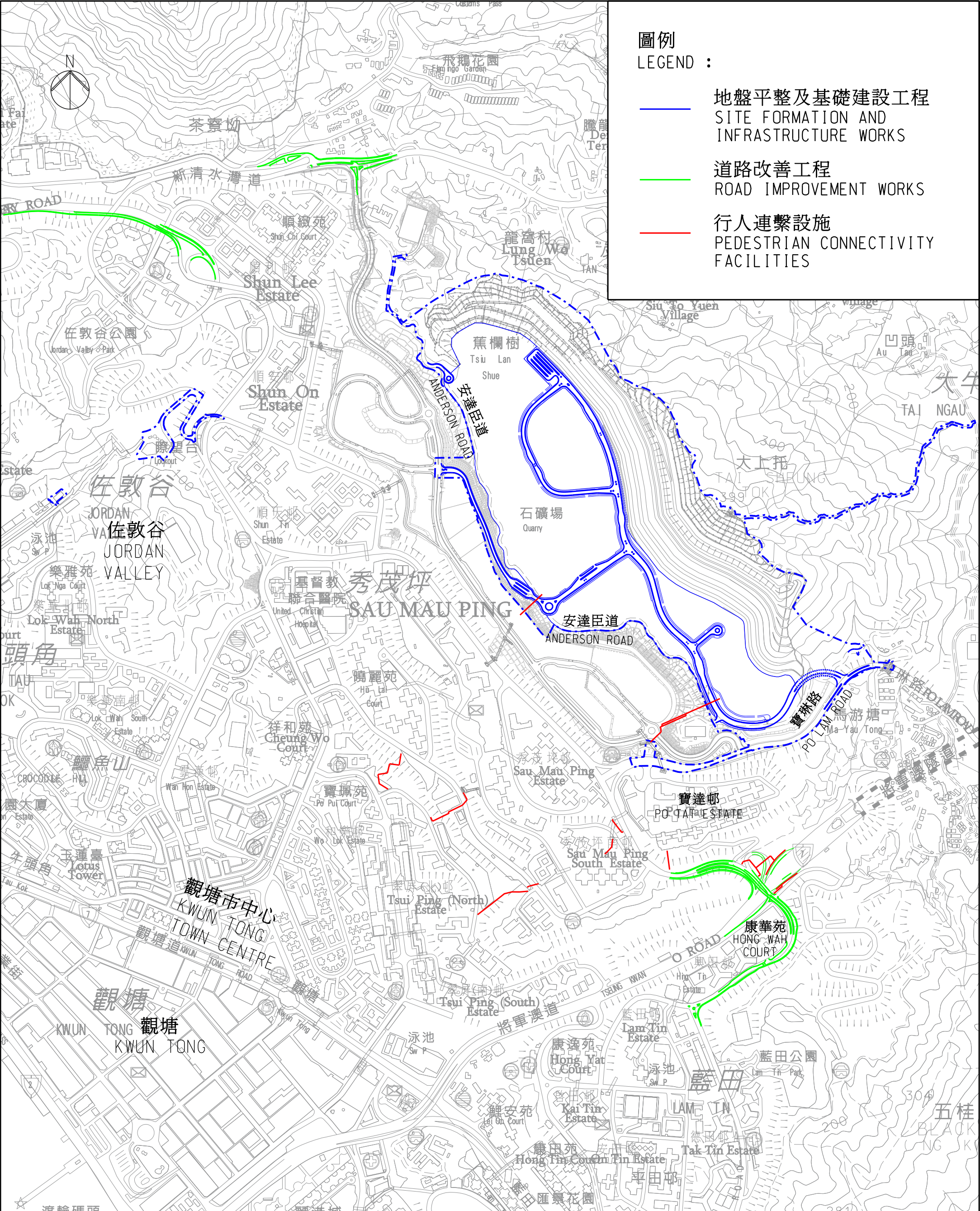
Drawing title  
**Recommended Outline  
Development Plan**

Drawing no.		Rev.	
227724/E/0003		C	
Drawn	Date	Checked	Approved
GL	03/14	TC	ST
Scale	AS SHOWN	Status	PRELIMINARY

COPYRIGHT RESERVED

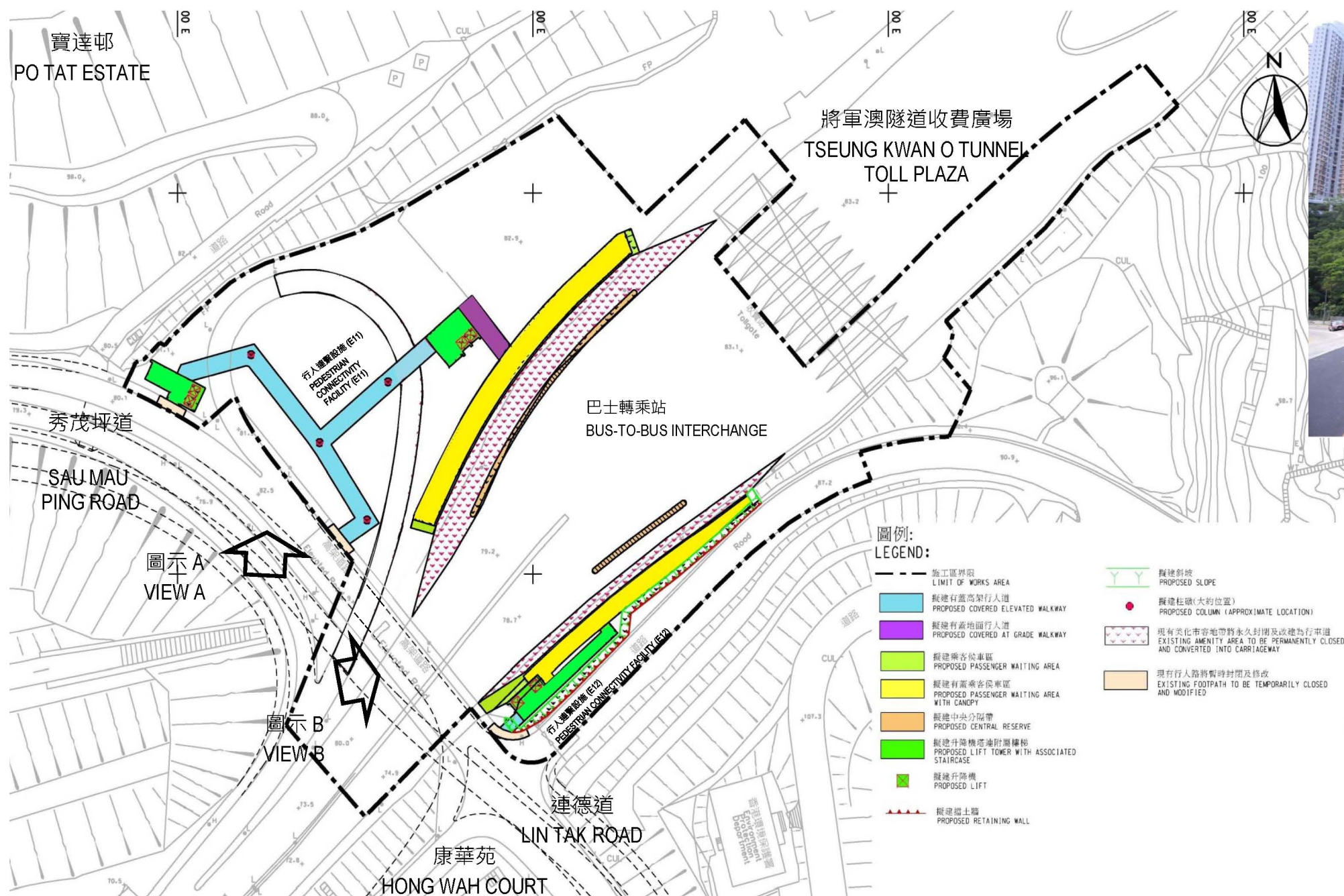
**CEDD** 土木工程拓展署  
Civil Engineering and  
Development Department





圖則名稱 drawing title 安達臣道石礦場發展工程位置圖 DEVELOPMENT OF ANDERSON ROAD QUARRY SITE PROJECT LOCATION PLAN	繪圖 drawn H K TSANG	簽署initial 日期date 23.3.16	項目編號 item no.	辦事處 office 新界東拓展處 NEW TERRITORIES EAST DEVELOPMENT OFFICE
	核對 checked L M CHAN	簽署initial 日期date 23.3.16	比例 scale 1:10 000 @ A3	
	核准 approved T S LI	簽署initial 日期date 23.3.16	圖則編號 drawing no. CDEARQZ0003	 土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT





圖示 A VIEW A



圖示 B VIEW B

圖則名稱 Drawing Title

行人連繫設施(巴士轉乘站、E11及E12) - 平面圖及構思圖  
Pedestrian Connectivity Facilities (Bus-to-Bus Interchange, E11 and E12)  
- Layout Plan and Artist's Impression

項目編號 Item No.

765CL

比例 Scale

圖則編號 Drawing No.

附件五 Appendix 5

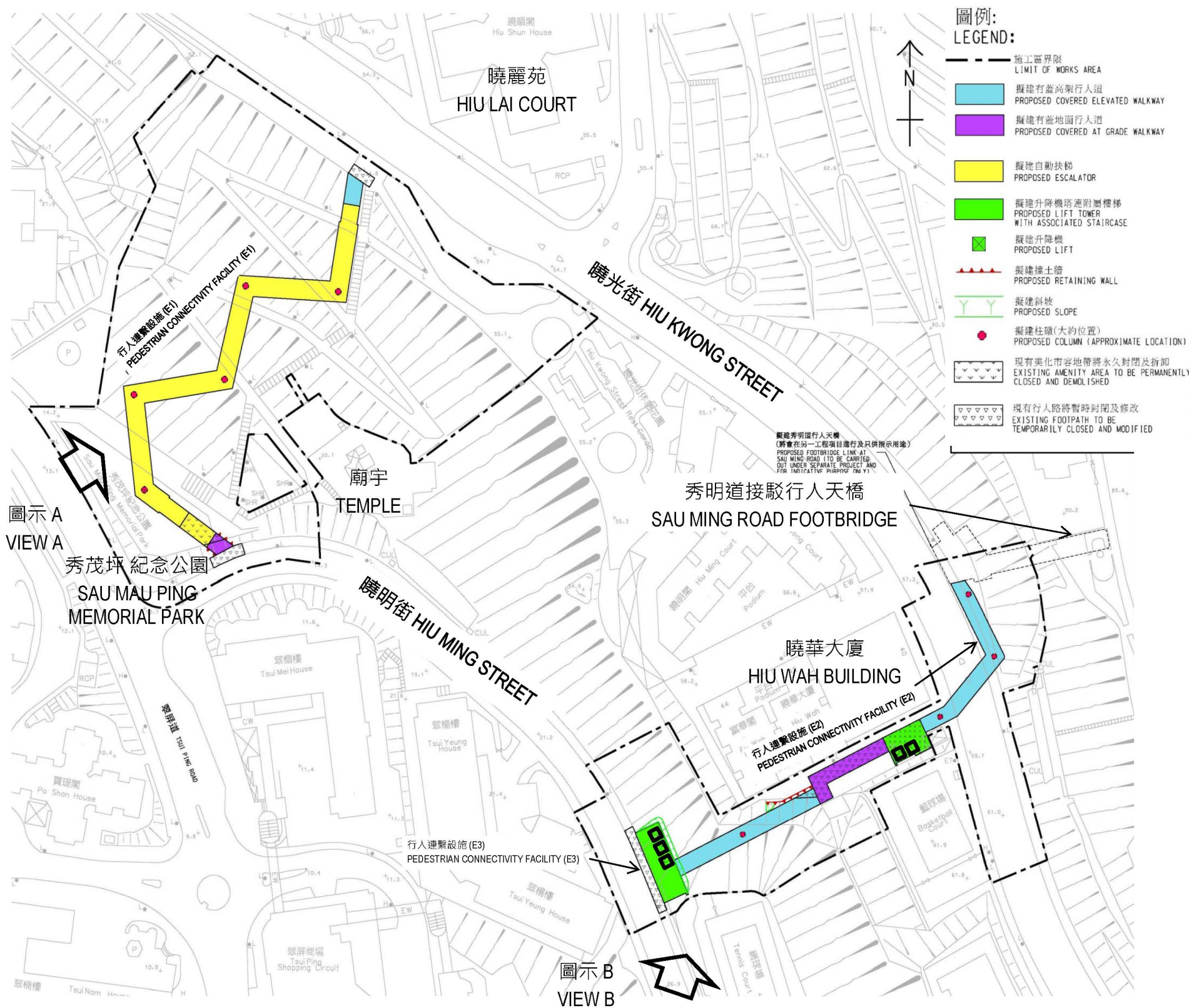
辦事處 Office

新界東拓展處  
NEW TERRITORIES EAST  
DEVELOPMENT OFFICE



土木工程拓展署  
CIVIL ENGINEERING  
AND DEVELOPMENT  
DEPARTMENT





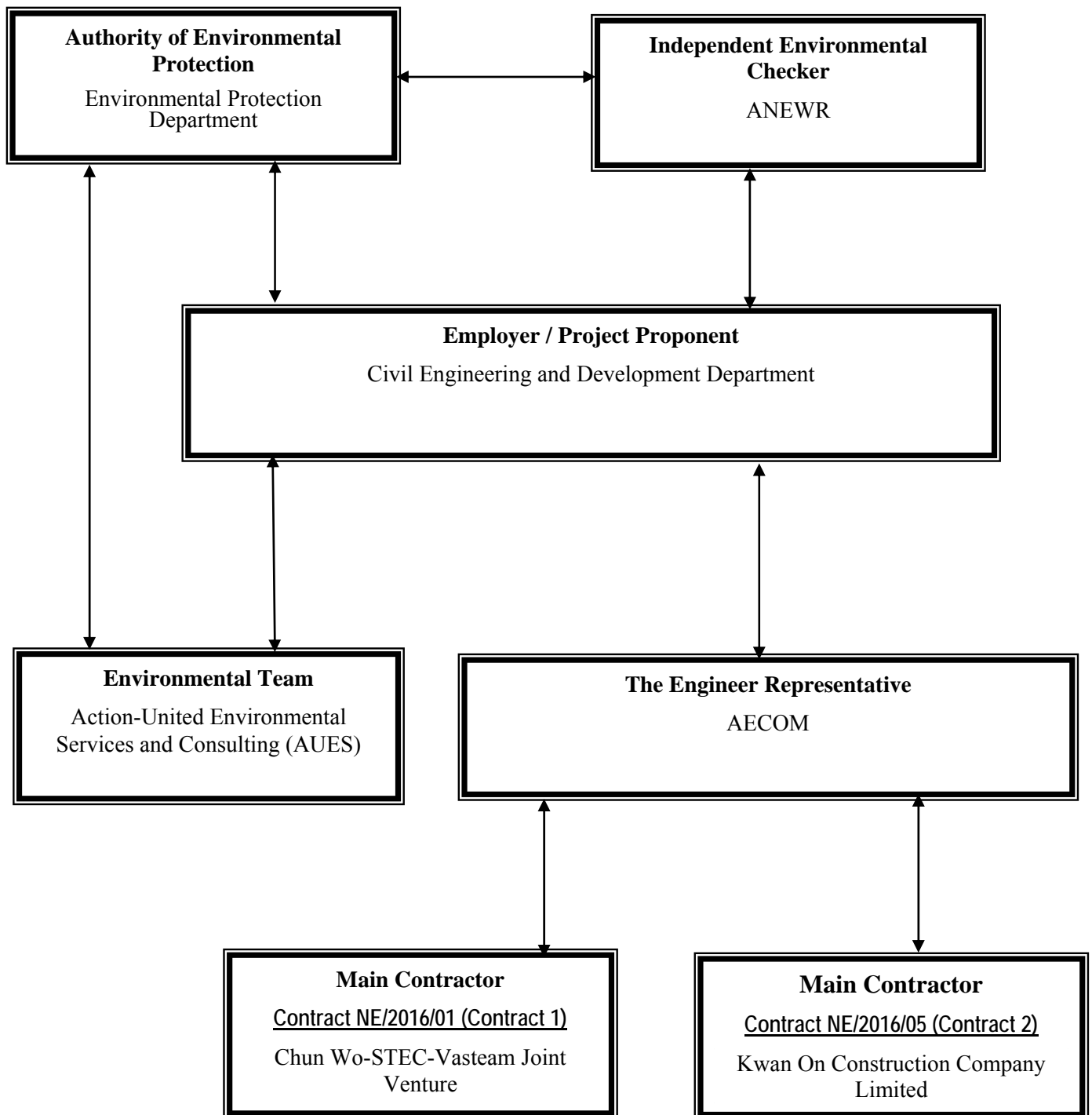
圖則名稱 Drawing Title  行人連繫設施(E1、E2及E3) - 平面圖及構思圖 Pedestrian Connectivity Facilities (E1, E2 and E3) - Layout Plan and Artist's Impression	項目編號 Item No. 765CL	辦事處 Office 新界東拓展處 NEW TERRITORIES EAST DEVELOPMENT OFFICE  土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
	比例 Scale	
	圖則編號 Drawing No. 附件二 Appendix 2	



## **Appendix B**

### **Organization Chart**

Project Organization Structure for





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

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No.</b>	<b>Fax No.</b>
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
ANWR	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-STECC-Vasteam Joint Venture*

*ANWR (IEC) – ANewR Consulting Limited*

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

**Contact Details of Key Personnel for Contract 2 – NE/2016/05**

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No.</b>	<b>Fax No.</b>
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
ANWR	Independent Environmental Checker	Adi Lee	2618 2836	3007 8648
KOCCL	Project Director	Ambrose Kwong	2889 2675	2558 6900
KOCCL	Site Agent	Antony Kwok	2898 8510	2558 6900
KOCCL	Safety and Environmental Manager	Joly C K Kwong	6111 5711	2558 6900
KOCCL	Environmental Officer	Fung Hiu Lam	6395 3685	2558 6900
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.*

*KOCCL (Main Contractor) –Kwan On Construction Company Limited*

*ANWR (IEC) –ANewR Consulting Limited*

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

## **Appendix C**

### **Construction Programme**


**(a) Contract 1 (NE/2016/01)**

**(b) Contract 2 (NE/2016/05)**

<div><div><div><div></div><div>TEC</div><div></div></div><div>順達股份</div></div><div>俊和-上隴-浩隆聯營</div><div>CHUN WO - STEC - VASTEAM JOINT VENTURE</div></div>		CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON ROAD QUARRY SITE 3 - MONTH ROLLING PROGRAMME (20 MAY TO 20 AUG 2017)				Page 1 of 6 Cut-Off Data Date: 20-May-17				
Activity ID	Activity Name	Original Duration	Start	Finish	% Complete	2017				
							May	Jun	Jul	Aug
Anderson Road Project - 3MRP (20 May 2017)										
Key Dates for Completion of Sections of the Works										
KD1480	KD18 - Completion of Section XIII of the Works (Entrusted Works at Shui Chuen O & Kau To in Portion B2)	0		17-Aug-17*	0%					◆
Possession Periods										
KD1130	Date for Possession of the Portion B8	0	20-May-17*		0%		20-May-17*			◆
KD1140	Date for Possession of the Portion B9	0	20-May-17*		0%		20-May-17*			◆
KD1160	Date for Possession of the Portion B11	0	20-May-17*		0%		20-May-17*			◆
KD1280	Date for Possession of the Portion E1	0	20-May-17*		0%		20-May-17*			◆
Preliminary										
PL1000RP31	Continue Pre-Construction condition Survey at Ma Yau Tong No.4 to 20 and WSD Tank	14	25-Apr-17 A	25-Apr-17 A	100%	I				
Permit / Consent Application & Approval										
Temporary Traffic Arrangement and Control										
On Sau Road										
PL1020RP03	3rd TMLG Meeting	0	16-May-17 A		100%		16-May-17 A	◆		
PL1020RP06	Implementation of TTA for Closure at Junction between Road L4 and On Sau Road (Under process of XP Application)	0	20-May-17		0%		20-May-17	◆		
Site Accommodation										
PL1050RP05	E&M works for CRE's Site Accommodation	14	18-Apr-17 A	24-May-17	70%					
PL1050RP06	BS Works for CRE's Site Accommodation	14	18-Apr-17 A	29-May-17	60%					
PL1050RP07	ABWF Works for CRE's Site Accommodation	14	18-Apr-17 A	29-May-17	60%					
PL1050RP082	Construction of Building Structure of JV's Site Accommodation	14	20-Apr-17 A	02-May-17 A	100%					
PL1050RP09	E&M works for JV's Site Accommodation	14	22-Apr-17 A	28-May-17	40%					
PL1050RP10	BS Works for JV's Site Accommodation	14	22-Apr-17 A	28-May-17	40%					
PL1050RP11	ABWF Works for JV's Site Accommodation	14	22-Apr-17 A	07-Jun-17	40%					
PL1050RP12	Construction of Parking Lot	14	24-Apr-17 A	06-May-17 A	100%					
PL1050RP13	Construction of Access to Site Accommodation	14	04-May-17 A	24-May-17	70%					
PL1050RP071	Mobilize Office Furnitures into the CRE's Site Accommodation	6	25-May-17	31-May-17	0%					
PL1050RP14	Mobilize Office Furnitures into the JV's Site Accommodation	6	03-Jun-17	09-Jun-17	0%					
Construction and Installation										
Safety Hoarding										
PL1100RP03	Placing Concrete Blocks for Pt.51 o 73	45	03-Mar-17 A	24-Apr-17 A	100%					
PL1100RP04	Bolt Fixing and Installation of Base Plates for Pt.51 o 73	41	09-Mar-17 A	25-Apr-17 A	100%					
PL1100RP05	Steel Works for Pt.51 o 73	42	13-Mar-17 A	29-Apr-17 A	100%					
PL1100RP06	Installation of Corrugated Sheets for Pt.51 o 73	2	16-Mar-17 A	29-Apr-17 A	100%					
PL1100RP07	Site Clearance for Pt.74 to 83	2	21-Apr-17 A	22-Apr-17 A	100%					
PL1100RP08	Placing Concrete Blocks for Pt.74 to 83	11	24-Apr-17 A	08-May-17 A	100%					
PL1100RP09	Bolt Fixing and Installation of Base Plates for Pt.74 to 83	11	25-Apr-17 A	09-May-17 A	100%					
<div><div><div><div></div><div>TEC</div><div></div></div><div>順達股份</div></div><div>俊和-上隴-浩隆聯營</div><div>CHUN WO - STEC - VASTEAM JOINT VENTURE</div></div>		<div><div>Actual Work</div><div>◆ Milestone</div><div>Forecast Work</div></div>		3 - MONTH ROLLING PROGRAMME		Date	Revision	Checked	Approved	
						20-May-17	3MRP Rev.0			

 <p>俊和 - 上隴 - 浩隆聯營 CHUN WO - STEC - VASTEAM JOINT VENTURE</p>	<p>Actual Work</p> <p>Milestone</p> <p>Forecast Work</p>	<p><b>3 - MONTH ROLLING PROGRAMME</b></p>	<table border="1"> <thead> <tr> <th>Date</th><th>Revision</th><th>Checked</th><th>Approved</th></tr> </thead> <tbody> <tr> <td>20-May-17</td><td>3MRP Rev.0</td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table>	Date	Revision	Checked	Approved	20-May-17	3MRP Rev.0														
Date	Revision	Checked	Approved																				
20-May-17	3MRP Rev.0																						

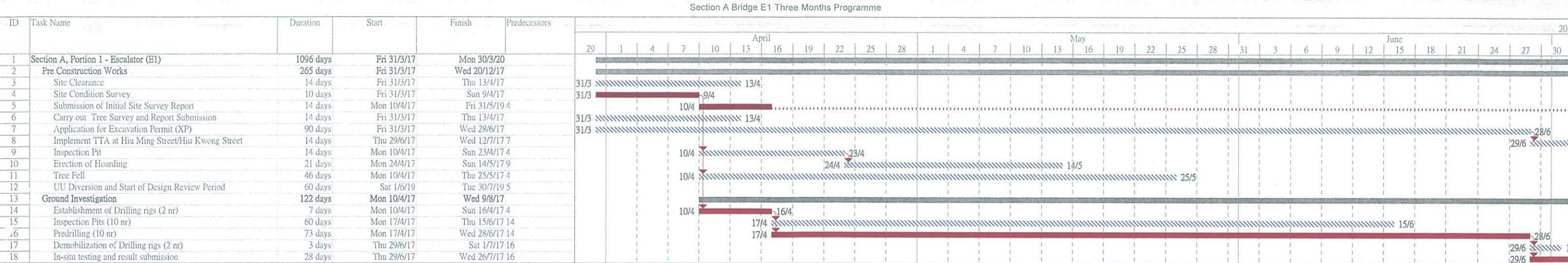
<div><p>俊和 - 上隴 - 浩隆聯營</p><p>CHUN WO - STEC - VASTEAM JOINT VENTURE</p></div> <div><div><div></div><div>Actual Work</div></div><div><div>◆</div><div>Milestone</div></div><div><div></div><div>Forecast Work</div></div></div>	<h3>3 - MONTH ROLLING PROGRAMME</h3>	Date	Revision	Checked	Approved
		20-May-17	3MRP Rev.0		

 <p>俊和 - 上隴 - 浩隆聯營 CHUN WO - STEC - VASTEAM JOINT VENTURE</p>	<p>Actual Work</p> <p>Milestone</p> <p>Forecast Work</p>	<p><b>3 - MONTH ROLLING PROGRAMME</b></p>	Date	Revision	Checked	Approved
			20-May-17	3MRP Rev.0		



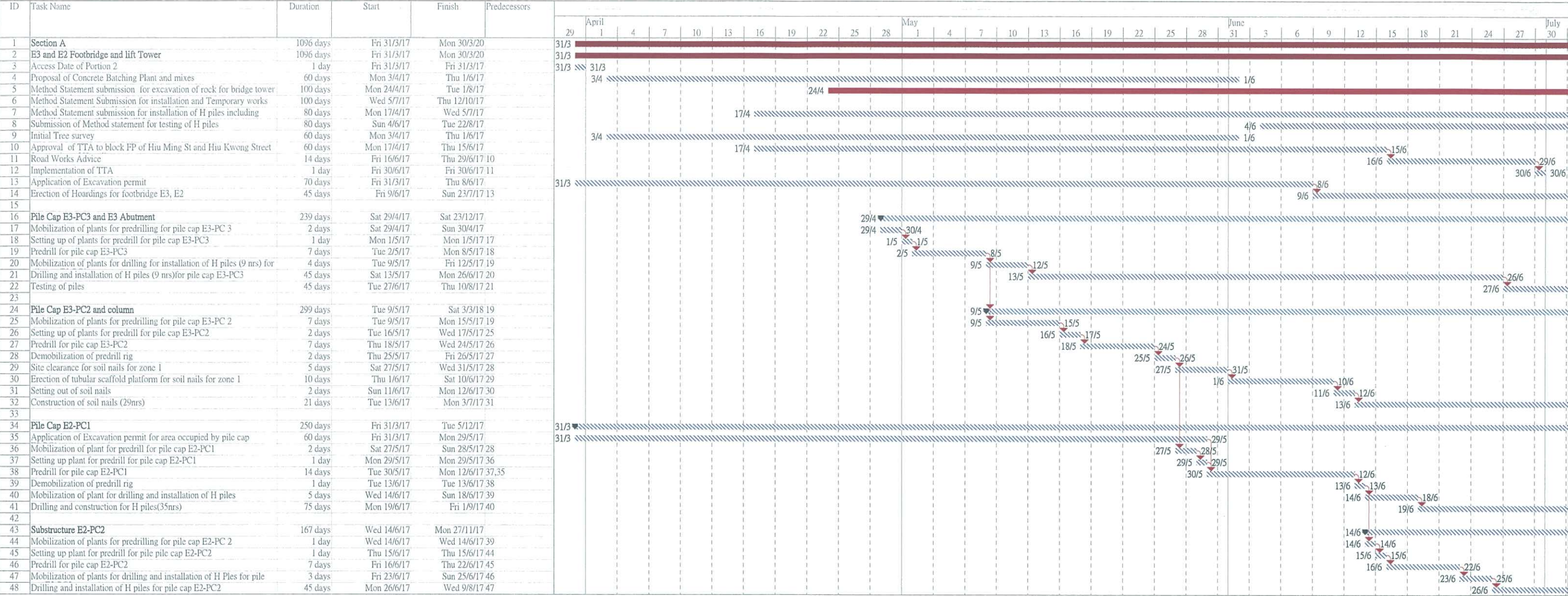
 <p>俊和 - 上隴 - 浩隆聯營 CHUN WO - STEC - VASTEAM JOINT VENTURE</p>	<p>Actual Work</p> <p>Milestone</p> <p>Forecast Work</p>	<p><b>3 - MONTH ROLLING PROGRAMME</b></p>	Date	Revision	Checked	Approved
			20-May-17	3MRP Rev.0		

<div><div><div><div><div></div><div>俊和 - 上隴 - 浩隆聯營</div><div>CHUN WO - STEC - VASTEAM JOINT VENTURE</div></div><div><div><div>TEC</div><div>捷通股份</div></div><div><div><div></div><div></div></div></div></div></div></div></div>			CONTRACT NO. NE/2016/01 SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT OF ANDERSON ROAD QUARRY SITE 3 - MONTH ROLLING PROGRAMME (20 MAY TO 20 AUG 2017)					Page 6 of 6 Cut-Off Data Date: 20-May-17			
Activity ID	Activity Name	Original Duration	Start	Finish	% Complete	2017					
							May	Jun	Jul	Aug	
CN1180RP45	Handover Inspection for Slope 7NE-C/C207	2	20-May-17	22-May-17	0%		<div></div>				
CN1180RP55	Rectification for Slope Slope No.7NE-C/R117 and 7NE-C/R145	14	20-May-17	06-Jun-17	0%		<div></div>				
CN1180RP75	Installation of Staircase and Bollards at Slope 7NE-C/C499	40	20-May-17	07-Jul-17	0%		<div></div>				
CN1180RP65	Handover Inspection for Slope 7NE-C/R117 and 7NE-C/R145	2	07-Jun-17	08-Jun-17	0%			<div></div>			
CN1180RP08	Landscape Works for Slope 7SE-C/CR309 and 7SE-C/C673	20	09-Jun-17	03-Jul-17	0%			<div></div>			
CN1180RP09	Establishment Works for Slope 7SE-C/CR309 and 7SE-C/C673	365	04-Jul-17	03-Jul-18	0%				<div></div>		
CN1180RP10	Landscape Works for Slope 7SE-C/C240 and 7SE-C/F239	30	04-Jul-17	07-Aug-17	0%				<div></div>		
CN1180RP11	Landscape Works for Slope 7SE-A/C604 and 7SE-A/C605	30	08-Aug-17	11-Sep-17	0%					<div></div>	
CN1180RP12	Establishment Works for Slope 7SE-C/C240 and 7SE-C/F239	365	08-Aug-17	07-Aug-18	0%					<div></div>	
CN1180RP13	Landscape Works and Installation Wire Mesh on Slope Surface 7Ne-C/C218	90	10-Aug-17	25-Nov-17	0%					<div></div>	





Section A Bridge E2-E3 Three months Programme



关键拆分

.....

Non-critical Tasks

.....

Inactive Milestone

.....

Manual Task

.....

Manual Summary Rollup

.....

Start-only

.....

External Tasks

.....

关键

.....

Critical tasks

.....

Working days

.....

Inactive Summary

.....

Duration-only

.....

Manual Summary

.....

Finish-only

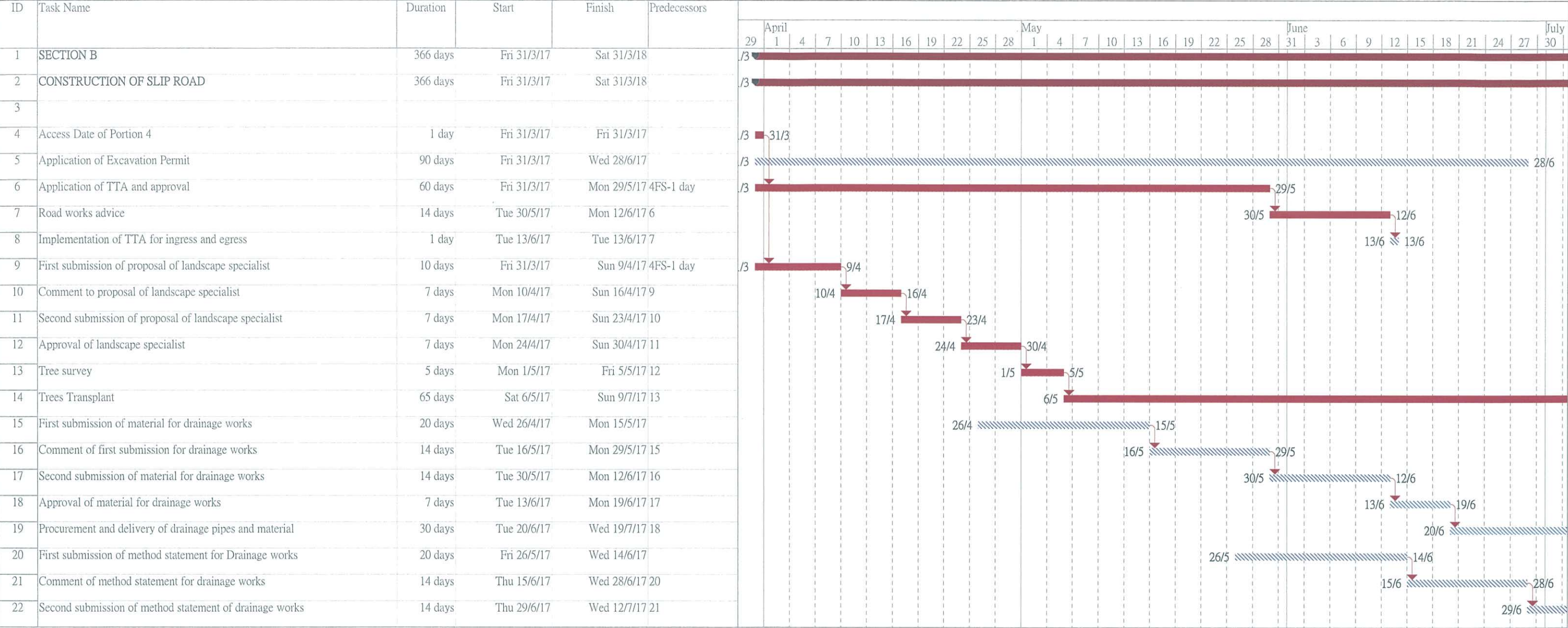
.....

External Milestone

.....



Section B Three months Programme



关键拆分	Working days	Manual Task	Manual Summary	External Tasks
Critical tasks	Inactive Milestone	Duration-only	Start-only	External Milestone
Non-critical Tasks	Inactive Summary	Manual Summary Rollup	Finish-only	关键



[illegible]

关键拆分		Working days		Manual Task		Manual Summary		External Tasks	
Critical tasks		Inactive Milestone		Duration-only		Start-only		External Milestone	
Non-critical Tasks		Inactive Summary		Manual Summary Rollup		Finish-only		关键	



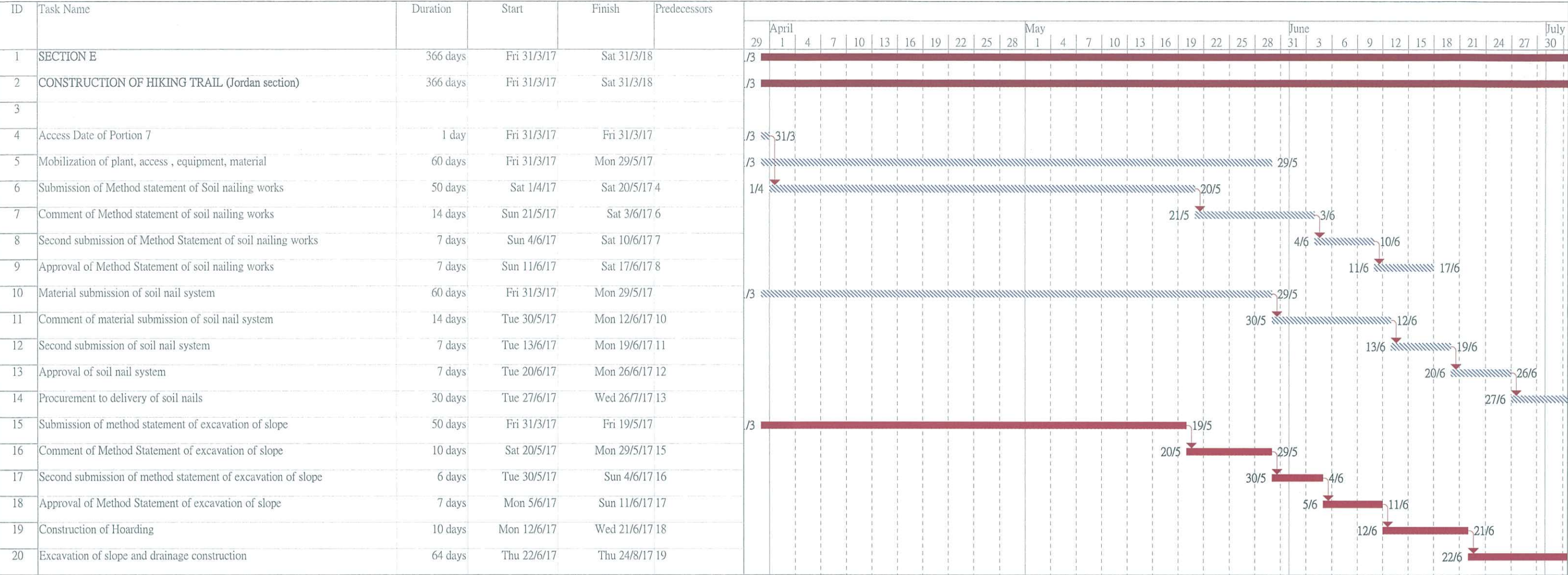
Section D Three Months Programme

ID	Task Name	Duration	Start	Finish	Predecessors				
						12	End March	16	Beginning August
1									
2	Section D	1006 days	Fri 31/3/17	Tue 31/12/19			31/3		
3	Construction E12 Footbridge and Lift Tower	1006 days	Fri 31/3/17	Tue 31/12/19			31/3		
4									
5	Access Date for Portion 6	1 day	Fri 31/3/17	Fri 31/3/17			31/3	31/3	
6	Tree survey	74 days	Sat 1/4/17	Tue 13/6/17 5			1/4		13/6
7	Excavation Permit	74 days	Sat 1/4/17	Tue 13/6/17 5			1/4		13/6
8	Erection of hoarding	10 days	Wed 14/6/17	Fri 23/6/17 6,7				14/6	23/6
9	Site Clearance and Tree felling	20 days	Sat 24/6/17	Thu 13/7/17 8				24/6	13/7
10									
11	Works in TKOT carriageway	377 days	Thu 18/5/17	Tue 29/5/18				18/5	
12	Excavation Permit for drainage works in TKOT carriageway	90 days	Thu 18/5/17	Tue 15/8/17				18/5	15/8
13	Application of TTA for drainage works in TKOT carrigeway	60 days	Wed 21/6/17	Sat 19/8/17				21/6	

关键拆分	.....	Working days	————	Manual Task	◇	Manual Summary	◆	External Tasks	◇
Critical tasks		Inactive Milestone		Duration-only	.....	Start-only	————	External Milestone	■
Non-critical Tasks		Inactive Summary	.....	Manual Summary Rollup	◆	Finish-only	————	关键	■



Section E Three Months Programme



关键拆分

.....

Working days

————

Manual Task

◇

Manual Summary

◆

External Tasks

◇

External Milestone

————

Critical tasks

|||||

Inactive Milestone

.....

Duration-only

————

Start-only

————

External Milestone

///////

Non-critical Tasks

|||||

Inactive Summary

.....

Manual Summary Rollup

◆

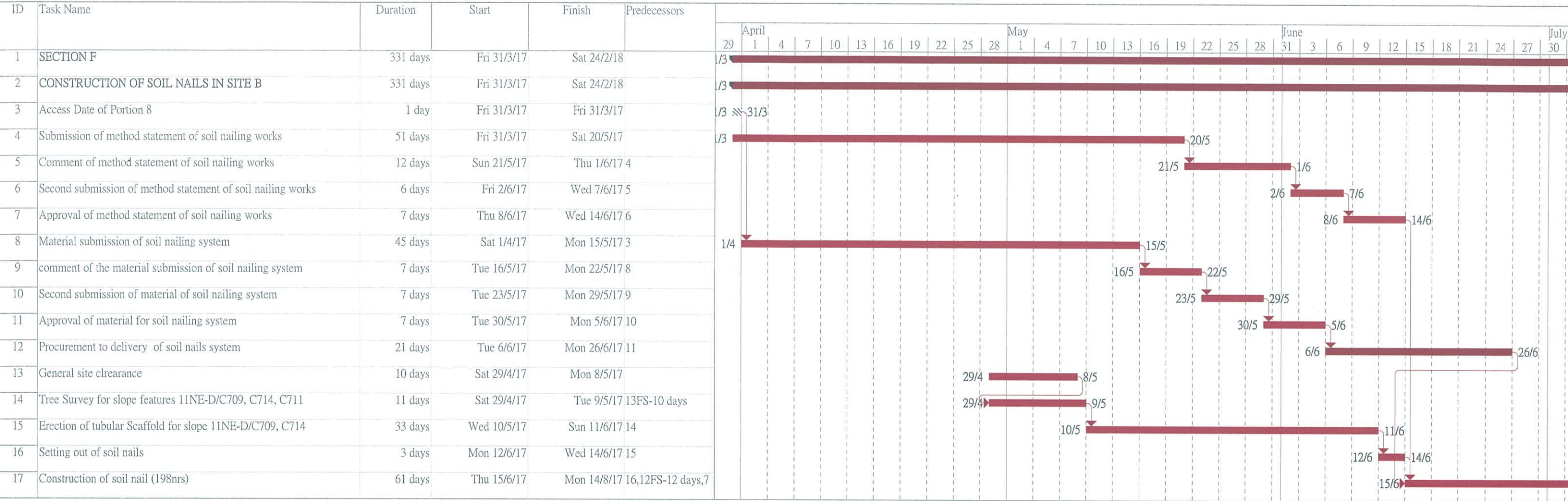
Finish-only

————

关键



Section F Three Months Programme



关键拆分	Working days	Manual Task	Manual Summary	External Tasks
Critical tasks	Inactive Milestone	Duration-only	Start-only	External Milestone
Non-critical Tasks	Inactive Summary	Manual Summary Rollup	Finish-only	关键

Section F1 Three Months Programme

ID	Task Name	Duration	Start	Finish	Predecessors																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
						29	April	1	4	7	10	13	16	19	22	25	28	May	1	4	7	10	13	16	19	22	25	28	June	31	3	6	9	12	15	18	21	24	27	July	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1	SECTION F1	481 days	Fri 31/3/17	Tue 24/7/18		1/3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

	关键拆分	.....	Working days	—————	Manual Task	◇	Manual Summary	◆	External Tasks	◆
	Critical tasks		Inactive Milestone	.....	Duration-only	.....	Start-only	—————	External Milestone	—————
	Non-critical Tasks		Inactive Summary	.....	Manual Summary Rollup	◆	Finish-only	—————	关键	—————

## **Appendix D**

### **Monitoring Locations for Impact Monitoring**




DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED  
© DYE ARUP



HVS in AMS-1 for 24-Hour TSP



- Legend
- Study Area
  - 500m Assessment Area
  - Dust Monitoring Locations

B	SECOND ISSUE	GL	03/14
A	FIRST ISSUE	GL	10/13
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title			
Agreement No. CE 18/2012(CE)			
Development of Anderson Road Quarry - Investigation			
Drawing title			
Locations of Construction Dust Monitoring (Sheet 1 of 3)			
Drawing no.		Rev.	
227724/E/1045		B	
Drawn	Date	Checked	Approved
GL	03/14	TC	ST
Scale	Status		
1:5000	PRELIMINARY		
COPYRIGHT RESERVED			
			
土木工程拓展署 Civil Engineering and Development Department			



DO NOT SCALE DRAWING/ CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© DVE ARUP & PARTNERS HONG KONG LIMITED

- Legend
- Study Area
  - 500m Assessment Area
  - Dust Monitoring Locations



HVS in AMS-5 for 24-Hour TSP



HVS in AMS-6 for 24-Hour TSP



B	SECOND ISSUE	GL	03/14
A	FIRST ISSUE	GL	10/13
Rev	Description	By	Date
Consultant			
ARUP			
Contract No. and Title			
Agreement No. CE 18/2012(CE)			
Development of Anderson Road Quarry - Investigation			
Drawing title			
Locations of Construction Dust Monitoring (Sheet 2 of 3)			
Drawing no.		Rev.	
227724/E/1046		B	
Drawn	Date	Checked	Approved
GL	03/14	TC	ST
Scale	1:5000 (M3)	Status	PRELIMINARY

COPYRIGHT RESERVED






Printed by : 4/8/2014  
Filename : G:\env\project\227724-50\13 Drawing Deliverables\08 EIMA\02 Revised draft\227724-E-047-B - Locations of Construction Dust Monitoring (Sheet 3 of 3).dgn

ON NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
BY THE ARUP PARTNERS HONG KONG LIMITED.



- Legend
- Study Area
  - 500m Assessment Area
  - Dust Monitoring Locations



B	SECOND ISSUE	GL	03/14
A	FIRST ISSUE	GL	10/13
Rev	Description	By	Date
Consultant			
<div>ARUP</div>			
Contract No. and Title			
Agreement No. CE 18/2012(CE)			
Development of Anderson Road Quarry - Investigation			
Drawing title			
Locations of Construction Dust Monitoring (Sheet 3 of 3)			
Drawing no.		Rev.	
227724/E/1047		B	
Drawn GL	Date 03/14	Checked TC	Approved ST
Scale 1:5000 @3		Status PRELIMINARY	
COPYRIGHT RESERVED			
		土木工程拓展署 Civil Engineering and Development Department	



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.  
ALL RIGHTS RESERVED.  
© THE ARUP & PARTNERS HONG KONG LIMITED

Legend

- Study Area
- Construction Noise Monitoring Location
- Construction and Operational Road Traffic Noise Monitoring Location



Building layout is assumed for assessment purpose



NMS-3  
(Site C2 - R102)

Building layout is assumed for assessment purpose

NMS-1  
(Site C2 + School 05)



Proposed NMS-4 (On Tat House)

NMS-2  
(Site E - School)

Building layout is assumed for assessment purpose

0 25 50 75 100 125  
METRES  
1:5000

C	THIRD ISSUE	GL	05/14
B	SECOND ISSUE	GL	03/14
A	FIRST ISSUE	GL	10/13
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title

Agreement No. CE 18/2012(CE)

Development of  
Anderson Road Quarry -  
Investigation

Drawing title

Locations of Noise  
Monitoring

Drawing no.	227724/E/2400	Rev.	C
Drawn	Date	Checked	Approved
GL	05/14	TC	ST
Scale	1:5000 RA3	Status	PRELIMINARY

COPYRIGHT RESERVED



土木工程拓展署  
Civil Engineering and  
Development Department

## **Appendix E**

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



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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)				1009.1	Corrected Pressure (mm Hg)		756.825
Temperature (°C)				26.7	Temperature (K)		300

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

CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.652	53	52.74	Slope = 34.5668 Intercept = -3.1911 Corr. coeff. = 0.9968
13	4.8	4.8	9.6	1.467	49	48.76	
10	3.7	3.7	7.4	1.290	42	41.79	
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 =  $1/m[\text{Sqrt}(\text{H2O}(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})) - b]$

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

**For subsequent calculation of sampler flow:**

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

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.826	24.88
1.041	32.84
1.290	41.79
1.467	48.76
1.652	52.74

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Oi Tat House

Location ID : AMS5

Date of Calibration: 25-Mar-17

Next Calibration Date: 25-May-17

Technician: Chan Hong Sung

### CONDITIONS

Sea Level Pressure (hPa)

1017.2

Temperature (°C)

20.2

Corrected Pressure (mm Hg)

762.9

Temperature (K)

293

### CALIBRATION ORIFICE

Make-> TISCH

Model-> 5025A

Serial # -> 1941

Qstd Slope ->

2.11965

Qstd Intercept ->

-0.02696

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR 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 :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

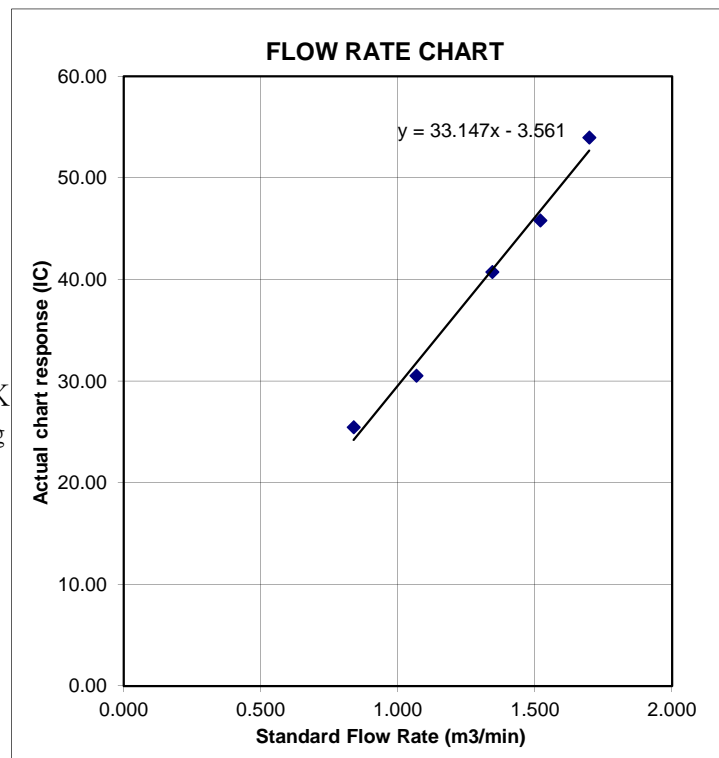
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Oi Tat House	Date of Calibration: 23-May-17
Location ID : AMS 5	Next Calibration Date: 23-Jul-17
Technician: .	

CONDITIONS			
Sea Level Pressure (hPa)	1007.8	Corrected Pressure (mm Hg)	755.85
Temperature (°C)	26.1	Temperature (K)	299

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

CALIBRATION							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.3	6.3	12.6	1.680	52	51.76	Slope = 31.4580 Intercept = -2.4072 Corr. coeff. = 0.9943
13	5	5	10	1.498	44	43.80	
10	3.9	3.9	7.8	1.324	39	38.82	
7	2.5	2.5	5	1.063	30	29.86	
5	1.4	1.4	2.8	0.799	24	23.89	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

**For subsequent calculation of sampler flow:**

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

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**

Standard Flow Rate (m3/min)	Actual chart response (IC)
0.799	23.89
1.063	29.86
1.324	38.82
1.498	43.80
1.680	51.76

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Hau Tat House

Location ID : AMS6

Date of Calibration: 25-Mar-17

Next Calibration Date: 25-May-17

Technician: Chan Hong Sung

### CONDITIONS

Sea Level Pressure (hPa)

1017.2

Temperature (°C)

20.2

Corrected Pressure (mm Hg)

762.9

Temperature (K)

293

### CALIBRATION ORIFICE

Make-> TISCH

Model-> 5025A

Serial # -> 1941

Qstd Slope ->

2.11965

Qstd Intercept ->

-0.02696

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR 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	
5	1.50	1.50	3.0	0.838	28	28.51	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

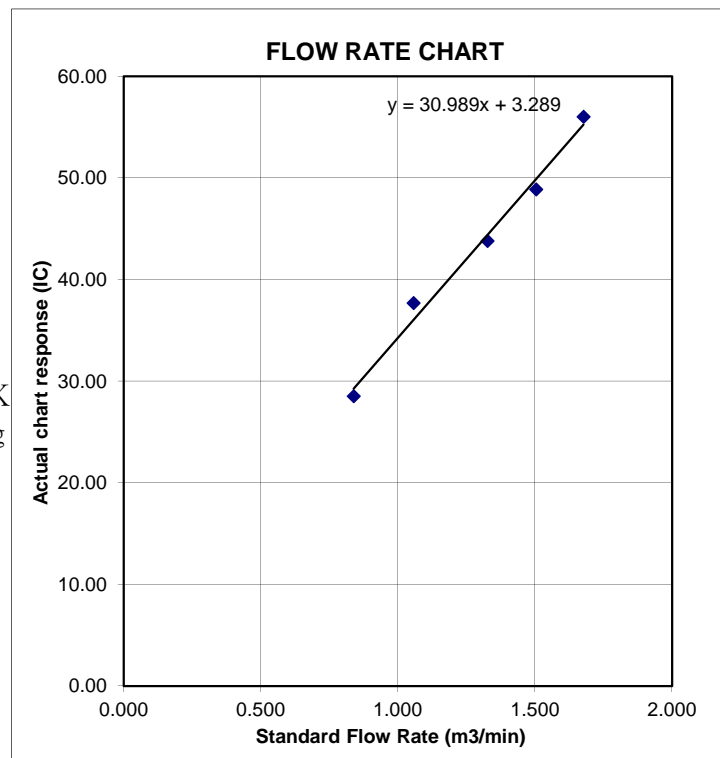
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Hau Tat House  
Location ID : AMS 6

Date of Calibration: 23-May-17  
Next Calibration Date: 23-Jul-17  
Technician: Mr. Ip Ka Hing

### CONDITIONS

Sea Level Pressure (hPa)  
Temperature (°C)

1007.8
26.1

Corrected Pressure (mm Hg)  
Temperature (K)

755.85
299

### CALIBRATION ORIFICE

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

Qstd Slope ->  
Qstd Intercept ->

2.11965
-0.02696

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.653	56	55.74	Slope = 32.6359 Intercept = 1.1019 Corr. coeff. = 0.9980
13	4.9	4.9	9.8	1.483	49	48.78	
10	3.9	3.9	7.8	1.324	44	43.80	
7	2.4	2.4	4.8	1.042	36	35.84	
5	1.5	1.5	3	0.826	28	27.87	

#### Calculations :

$$Q_{std} = 1/m[\sqrt{H2O(P_a/P_{std})(T_{std}/T_a)}] - b]$$

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

m = sampler slope

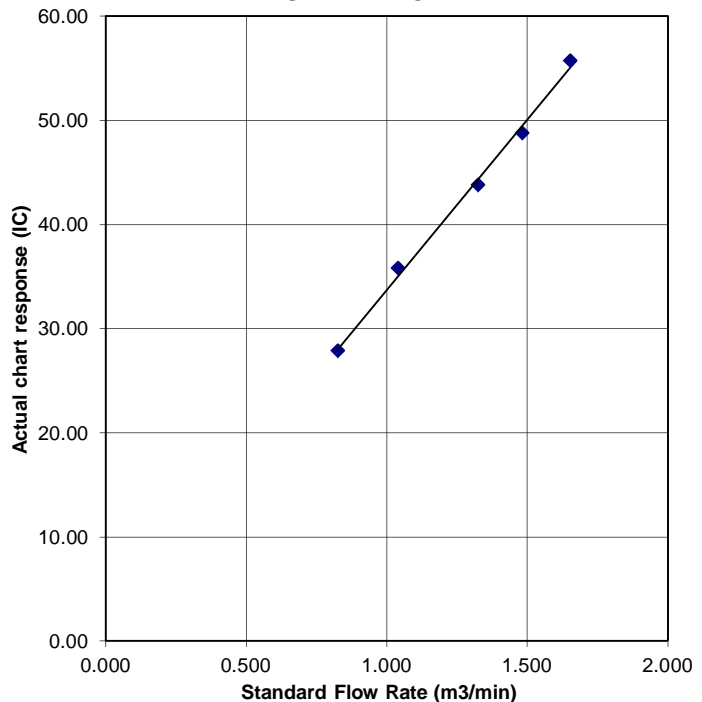
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**





## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ma Yau Tong Village  
Location ID : AMS 7

Date of Calibration: 17-Apr-17  
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 No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.615	51	50.85	Slope = 37.0402 Intercept = -9.0774 Corr. coeff. = 0.9948
13	4.6	4.6	9.2	1.440	45	44.87	
10	3.6	3.6	7.2	1.275	38	37.89	
7	2.3	2.3	4.6	1.022	27	26.92	
5	1.5	1.5	3	0.828	23	22.93	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

#### For subsequent calculation of sampler flow:

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

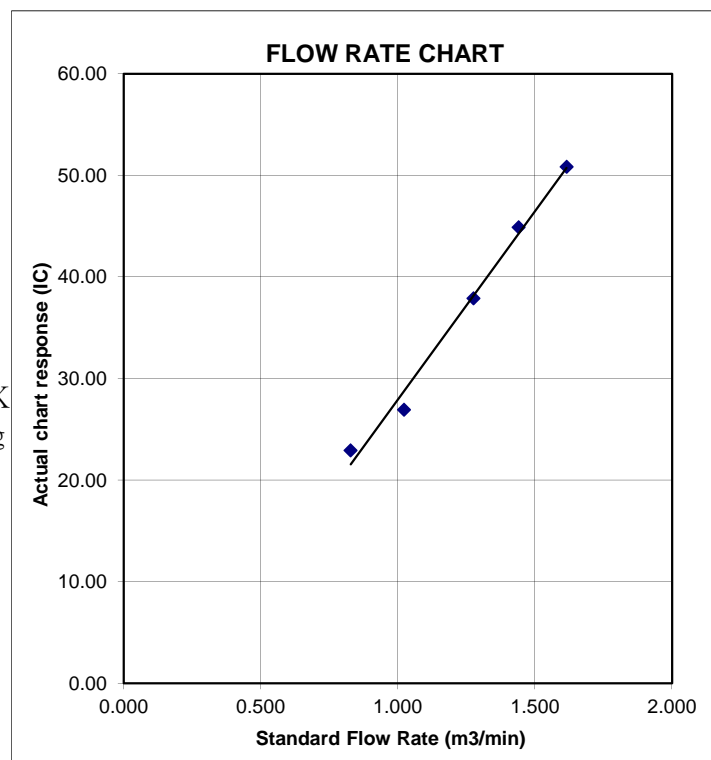
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

CALCULATIONS

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

$$Qstd = Vstd/Time$$

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

$$Qa = Va/Time$$

For subsequent flow rate calculations:

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

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



## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1716578
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 20-APR-2017
		DATE OF ISSUE	: 25-APR-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

### General Comments

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

### Signatories

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

Signatories

Position

Richard Fung

General Manager

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

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

11/F, Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong  
Tel. +852 2610 1044 Fax. +852 2610 2021 [www.alsglobal.com](http://www.alsglobal.com)

WORK ORDER : HK1716578  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
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/m <sup>3</sup> (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)

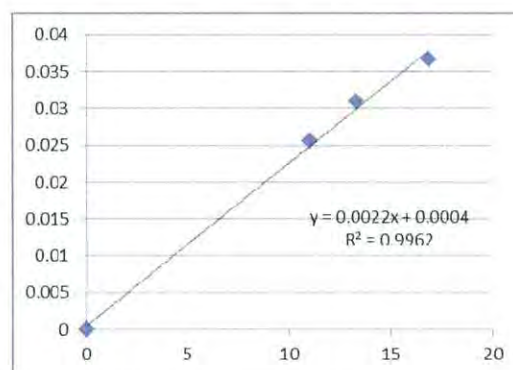
Sensitivity Adjustment Scale Setting (After Calibration) 681 (CPM)

### 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

Operator : Martin Li Signature :  Date : 20 March 2017

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

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung  
 Location ID : Calibration Room

Date of Calibration: 23-Feb-17  
 Next Calibration Date: 23-May-17

### CONDITIONS

Sea Level Pressure (hPa) 1017.4  
 Temperature (°C) 17.9

Corrected Pressure (mm Hg) 763.05  
 Temperature (K) 291

### CALIBRATION ORIFICE

Make-> TISCH  
 Model-> 5025A  
 Calibration Date-> 14-Mar-16

Qstd Slope -> 2.00411  
 Qstd Intercept -> -0.03059  
 Expiry Date-> 14-Mar-17

### CALIBRATION

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

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

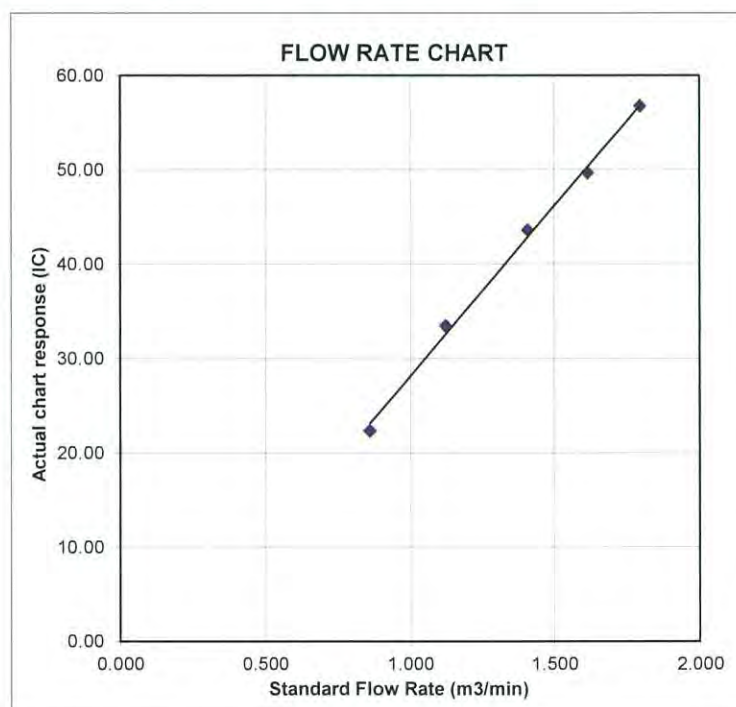
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure







## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1716577
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 20-APR-2017
		DATE OF ISSUE	: 25-APR-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

### General Comments

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

### Signatories

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

Signatories

Position

Richard Fung

General Manager

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

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

11/F, Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong  
Tel. +852 2610 1044 Fax. +852 2610 2021 [www.alsglobal.com](http://www.alsglobal.com)



WORK ORDER : HK1716577  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
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 <sup>3</sup> (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)

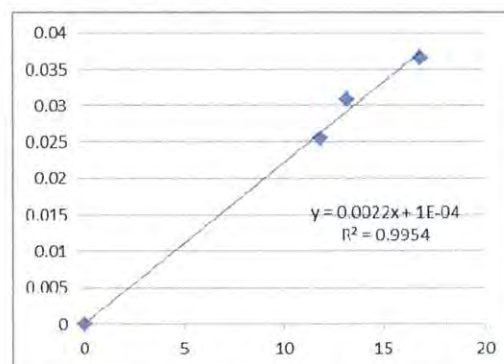
Sensitivity Adjustment Scale Setting (After Calibration) 569 (CPM)

### 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

Operator : Martin Li Signature :  Date : 20 March 2017

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

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

### CONDITIONS

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

### CALIBRATION ORIFICE

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

### CALIBRATION

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

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

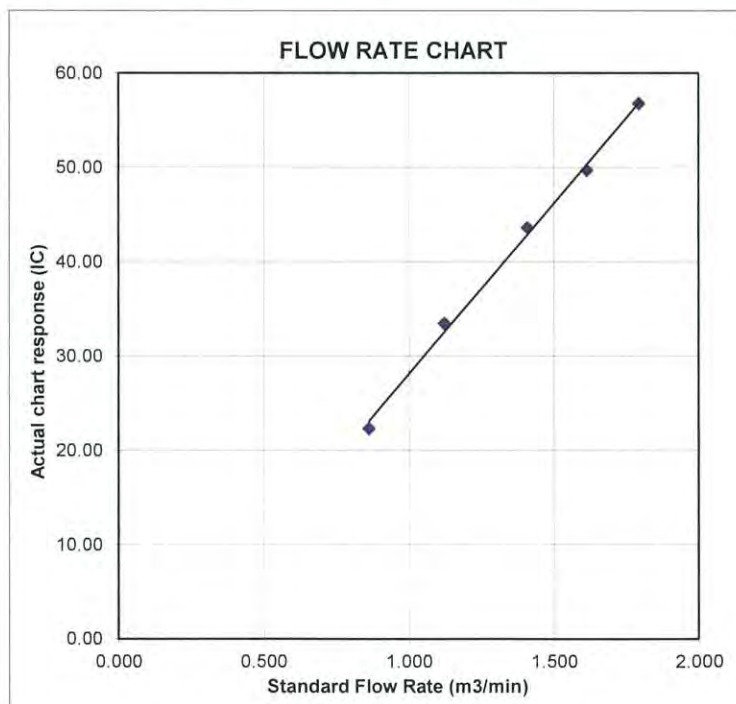
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure







### 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, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 19-JAN-2017
		DATE OF ISSUE	: 23-JAN-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

### General Comments

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

### Signatories

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

Signatories

Position

Richard Fung

General Manager

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

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

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong  
Tel. +852 2610 1044 Fax. +852 2610 2021 [www.alsglobal.com](http://www.alsglobal.com)

WORK ORDER : HK1703460  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
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  
Equipment Ref: EQ110  
Job Order HK1703460

### 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 <sup>3</sup> (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

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

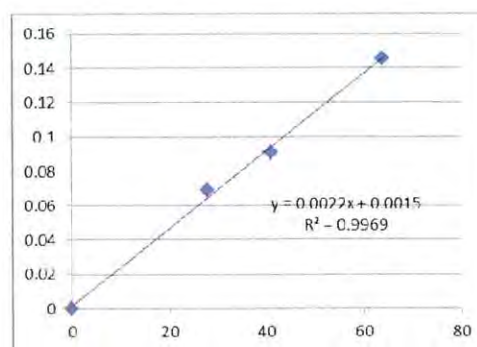
Sensitivity Adjustment Scale Setting (After Calibration) 675 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9984

Date of Issue 11 January 2017



### 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



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung  
 Location ID : Calibration Room

Date of Calibration: 25-Nov-16  
 Next Calibration Date: 25-Feb-17

### CONDITIONS

Sea Level Pressure (hPa) 1016.4  
 Temperature (°C) 20.0

Corrected Pressure (mm Hg) 762.3  
 Temperature (K) 293

### CALIBRATION ORIFICE

Make-> TISCH  
 Model-> 5025A  
 Calibration Date-> 14-Mar-16

Qstd Slope -> 2.00411  
 Qstd Intercept -> -0.03059  
 Expiry Date-> 14-Mar-17

### CALIBRATION

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

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

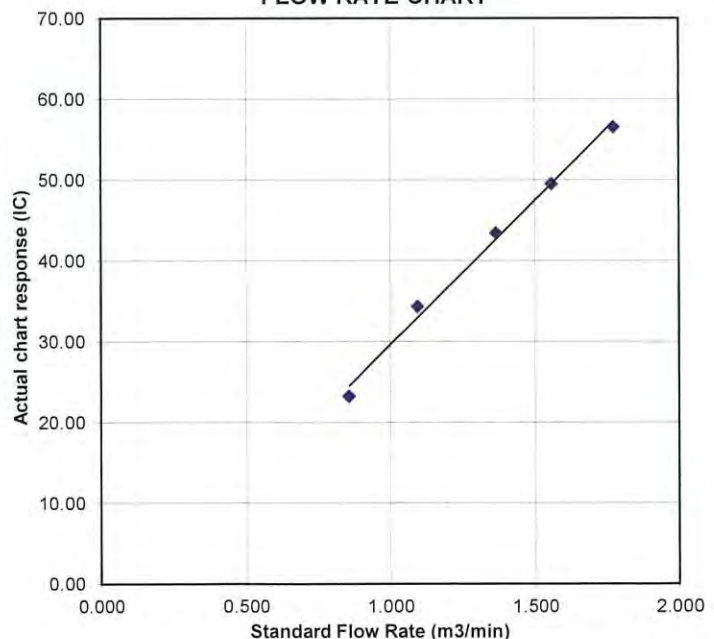
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**





## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: HK1703455
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 19-JAN-2017
		DATE OF ISSUE	: 23-JAN-2017
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

### General Comments

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

### Signatories

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

Signatories

Position

Richard Fung

General Manager

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

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

11/F, Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong  
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1703455  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
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 <sup>3</sup> (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)

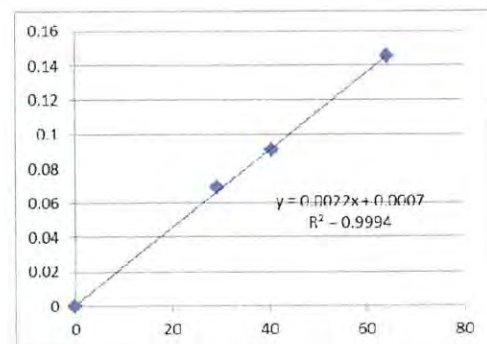
Sensitivity Adjustment Scale Setting (After Calibration) 525 (CPM)

### 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

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

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

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

### CONDITIONS

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

### CALIBRATION ORIFICE

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

### CALIBRATION

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

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

#### For subsequent calculation of sampler flow:

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

m = sampler slope

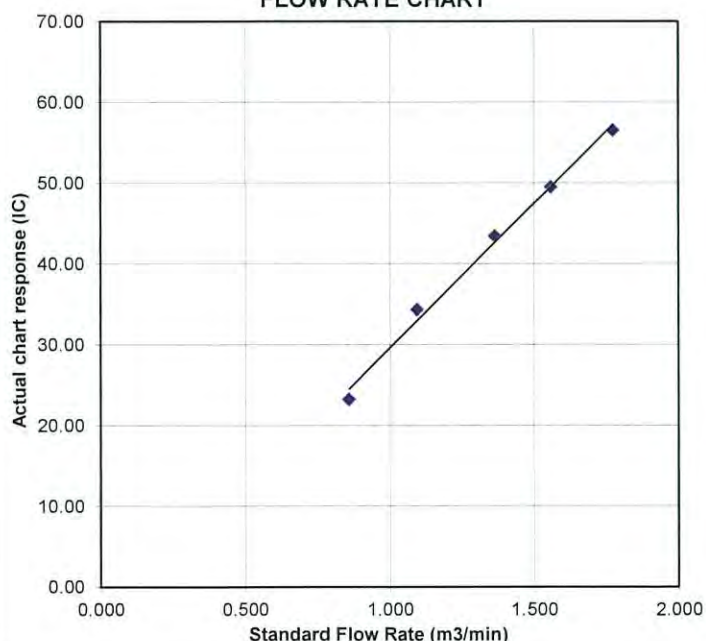
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**





# 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 :  $(23 \pm 2)^{\circ}\text{C}$   
Line Voltage / 電壓 : ---

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

### 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  
Technical Officer

Certified By  
核證

  
K C Lee  
Project Engineer

Date of Issue  
簽發日期

5 July 2016

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

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



# Certificate of Calibration

## 校正證書

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

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

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Self-calibration

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

##### 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading	IEC 60651 Type 1 Spec.
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	(dB)	(dB)
50 - 130	$L_{AEP}$	A	F	94.00	1	94.0	$\pm 0.7$

##### 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	(dB)
50 - 130	$L_{AEP}$	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溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory  
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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

# Certificate of Calibration

## 校正證書

Certificate No. : C163603  
證書編號

### 6.2 Time Weighting

#### 6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.0	Ref.
	L <sub>ASP</sub>		S			94.0	± 0.1
	L <sub>AIP</sub>		I			94.0	± 0.1

#### 6.2.2 Tone Burst Signal (2 kHz)

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

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L <sub>AFP</sub>	A	F	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

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

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



# Certificate of Calibration

## 校正證書

Certificate No. : C163603  
證書編號

### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L <sub>CFP</sub>	C	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 Reading (dB)	IEC 60804 Type 1 Spec. (dB)	
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)			
30 - 110	L <sub>Aeq</sub>	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5	
			60 sec.			1/10 <sup>2</sup>		90	89.8	± 0.5	
						5 min.		1/10 <sup>3</sup>	80	79.8	± 1.0
								1/10 <sup>4</sup>	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
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

#### Note :

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

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

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



# Certificate of Calibration

## 校正證書

Certificate No. : C164113  
證書編號

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

Date of Receipt / 收件日期 : 15 July 2016

Description / 儀器名稱 : Integrating Sound Level Meter (EQ009)  
Manufacturer / 製造商 : Brüel & Kjær  
Model No. / 型號 : 2238  
Serial No. / 編號 : 2285722  
Supplied By / 委託者 : Action-United Environmental Services and Consulting  
Unit A, 20/F., Gold King Industrial Building,  
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

### TEST CONDITIONS / 測試條件

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

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

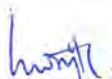
### TEST RESULTS / 測試結果

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

  
K C Lee  
Project Engineer

Date of Issue  
簽發日期

29 July 2016

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C164113  
證書編號

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

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

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Self-calibration

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

##### 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	$L_{AEP}$	A	F	94.00	1	94.1	$\pm 0.7$

##### 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	$L_{AEP}$	A	F	94.00	1	94.1 (Ref.)
				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室書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



# Certificate of Calibration

## 校正證書

Certificate No. : C164113  
證書編號

### 6.2 Time Weighting

#### 6.2.1 Continuous Signal

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

#### 6.2.2 Tone Burst Signal (2 kHz)

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

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

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

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

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



# Certificate of Calibration

## 校正證書

Certificate No. : C164113  
證書編號

### 6.3.2 C-Weighting

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

### 6.4 Time Averaging

UUT Setting				Applied Value					UUT	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	L <sub>Aeq</sub>	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
								90	89.7	± 0.5
			60 sec.					80	79.2	± 1.0
			5 min.					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
1 kHz	: ± 0.20 dB
2 kHz - 4 kHz	: ± 0.35 dB
8 kHz	: ± 0.45 dB
12.5 kHz	: ± 0.70 dB
104 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level	: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

#### Note :

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

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



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



## **Appendix F**

### **Event and Action Plan**



## 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.

Limit Level exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform ER, Contractor, IEC and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET, ER and Contractor on possible remedial measures;</li> <li>4. Advise the ER and ET on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor; and</li> <li>3. Supervise and ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification;</li> <li>4. Implement the agreed proposals; and</li> <li>5. Amend proposal if appropriate.</li> </ol>
Limit Level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and</li> <li>5. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise and ensure remedial measures properly implemented; and</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated</li> </ol>

**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	1. Submit noise mitigation proposals to IEC and ER; 2. 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.



## **Appendix G**

### **Impact Monitoring Schedule**

**Impact Monitoring Schedule for the Reporting Period**

Date		Noise Monitoring (0700 – 1900)	Air Quality Monitoring	
			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

**Impact Monitoring Schedule for next Reporting Period**

Date		NOISE MONITORING (0700 – 1900)	AIR QUALITY MONITORING	
			1-HOUR TSP	24-HOUR TSP
THU	1-JUN-17			
FRI	2-JUN-17			✓
SAT	3-JUN-17		✓	
SUN	4-JUN-17			
MON	5-JUN-17			
TUE	6-JUN-17			
WED	7-JUN-17			
THU	8-JUN-17			✓
FRI	9-JUN-17	✓	✓	
SAT	10-JUN-17			
SUN	11-JUN-17			
MON	12-JUN-17			
TUE	13-JUN-17			
WED	14-JUN-17			✓
THU	15-JUN-17	✓	✓	
FRI	16-JUN-17			
SAT	17-JUN-17			
SUN	18-JUN-17			
MON	19-JUN-17			
TUE	20-JUN-17			✓
WED	21-JUN-17	✓	✓	
THU	22-JUN-17			
FRI	23-JUN-17			
SAT	24-JUN-17			
SUN	25-JUN-17			
MON	26-JUN-17			✓
TUE	27-JUN-17	✓	✓	
WED	28-JUN-17			
THU	29-JUN-17			
FRI	30-JUN-17			✓

✓	Monitoring Day
	Sunday or Public Holiday



## **Appendix H**

### **Database of Monitoring Result**

**24-hour TSP Monitoring Data for AMS-1**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
4-May-17	20976	17971.11	17994.87	1425.60	35	37	36.0	24.7	1010.7	1.13	1615	2.7448	2.8066	0.0618	39
10-May-17	20833	17994.87	18018.94	1444.20	36	38	37.0	25.8	1010.2	1.16	1675	2.7854	2.8611	0.0757	46
16-May-17	20876	18018.94	18042.95	1440.60	38	40	39.0	26.1	1009.1	1.22	1752	2.7980	2.8413	0.0433	25
22-May-17	21040	18042.95	18066.95	1440.00	36	38	37.0	26.2	1008.2	1.16	1667	2.7708	2.8657	0.0949	57
27-May-17	21081	18066.95	18090.96	1440.60	38	40	39.0	26.6	1008.6	1.21	1750	2.7910	2.8634	0.0724	41

**24-hour TSP Monitoring Data for AMS-5**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
4-May-17	20935	4249.88	4273.62	1424.40	35	37	36.0	24.7	1010.7	1.20	1716	2.8009	2.8446	0.0437	26
10-May-17	20986	4273.62	4297.52	1434.00	34	36	35.0	25.7	1010.3	1.17	1681	2.7788	2.9669	0.1881	112
16-May-17	20878	4297.52	4321.46	1436.40	36	39	37.5	26.1	1009.1	1.25	1791	2.8178	2.8705	0.0527	29
22-May-17	21039	4321.46	4345.43	1438.20	37	39	38.0	26.2	1008.2	1.26	1814	2.7657	2.8057	0.0400	22
27-May-17	21082	4345.43	4369.22	1427.40	37	38	37.5	26.6	1008.2	1.26	1802	2.7933	2.8476	0.0543	30

**24-hour TSP Monitoring Data for AMS-6**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	( $^{\circ}\text{C}$ )	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
4-May-17	20947	9391.41	9415.55	1448.40	36	37	36.5	24.7	1010.7	1.08	1565	2.793	2.8407	0.0477	31
10-May-17	20987	9415.55	9439.95	1464.00	38	39	38.5	25.7	1010.3	1.14	1673	2.7686	2.9683	0.1997	120
16-May-17	20877	9439.95	9464.05	1446.00	37	39	38.0	26.1	1009.1	1.13	1627	2.8199	2.8780	0.0581	36
22-May-17	21038	9464.05	9488.34	1457.40	32	32	32.0	26.2	1008.2	0.93	1356	2.7656	2.8334	0.0678	50
27-May-17	21063	9488.34	9512.18	1430.40	28	28	28.0	26.6	1008.6	0.82	1173	2.8022	2.8122	0.0100	9

**24-hour TSP Monitoring Data for AMS-7**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(°C)	(hPa)	( $\text{m}^3/\text{min}$ )	(std $\text{m}^3$ )	INITIAL	FINAL	(g)	
4-May-17	20450	4992.29	5016.05	1425.60	35	37	36.0	24.7	1010.7	1.22	1734	2.7777	2.833	0.0553	32
10-May-17	20988	5016.05	5039.69	1418.40	36	38	37.0	25.7	1010.3	1.24	1761	2.7603	2.9134	0.1531	87
16-May-17	20875	5039.69	5063.49	1428.00	36	38	37.0	26.1	1009.1	1.24	1771	2.8243	2.9144	0.0901	51
22-May-17	21041	5063.49	5087.35	1431.60	38	39	38.5	26.2	1008.2	1.28	1832	2.7549	2.8293	0.0744	41
27-May-17	21083	5087.35	5111.13	1426.80	36	38	37.0	26.6	1008.2	1.24	1768	2.7973	2.8630	0.0657	37

**Noise Measurement Results (dB) of NMS2**

Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)	Corrected Noise Level*, 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)	Leq, dB(A)	L10, dB(A)	L90, dB(A)		
5-May-17	10:29	57.6	59.9	54.2	58.3	61.0	55.5	58.5	61.5	56.2	57.5	60.9	54.3	57.0	61.0	54.5	58.9	62.5	55.0	58	61
11-May-17	13:06	55.5	57.0	53.0	54.5	56.0	52.5	53.7	55.0	51.5	53.9	55.5	51.5	54.1	56.0	51.5	54.1	55.5	51.5	54	57
17-May-17	9:21	56.5	58.9	52.7	57.0	59.2	53.6	57.2	59.0	53.6	56.5	58.0	52.7	56.5	58.7	52.5	56.0	58.0	52.5	57	60
23-May-17	10:32	61.2	64.5	57.3	61.0	64.2	57.3	62.5	65.0	58.7	62.0	65.5	58.7	61.7	64.0	57.5	61.0	64.0	57.0	62	65
29-May-17	9:59	57.2	58.9	52.7	60.0	62.2	56.0	60.5	62.5	57.0	61.7	64.7	57.2	61.0	63.6	57.2	61.5	63.3	57.0	61	64

**Noise Measurement Results (dB) of NMS4**

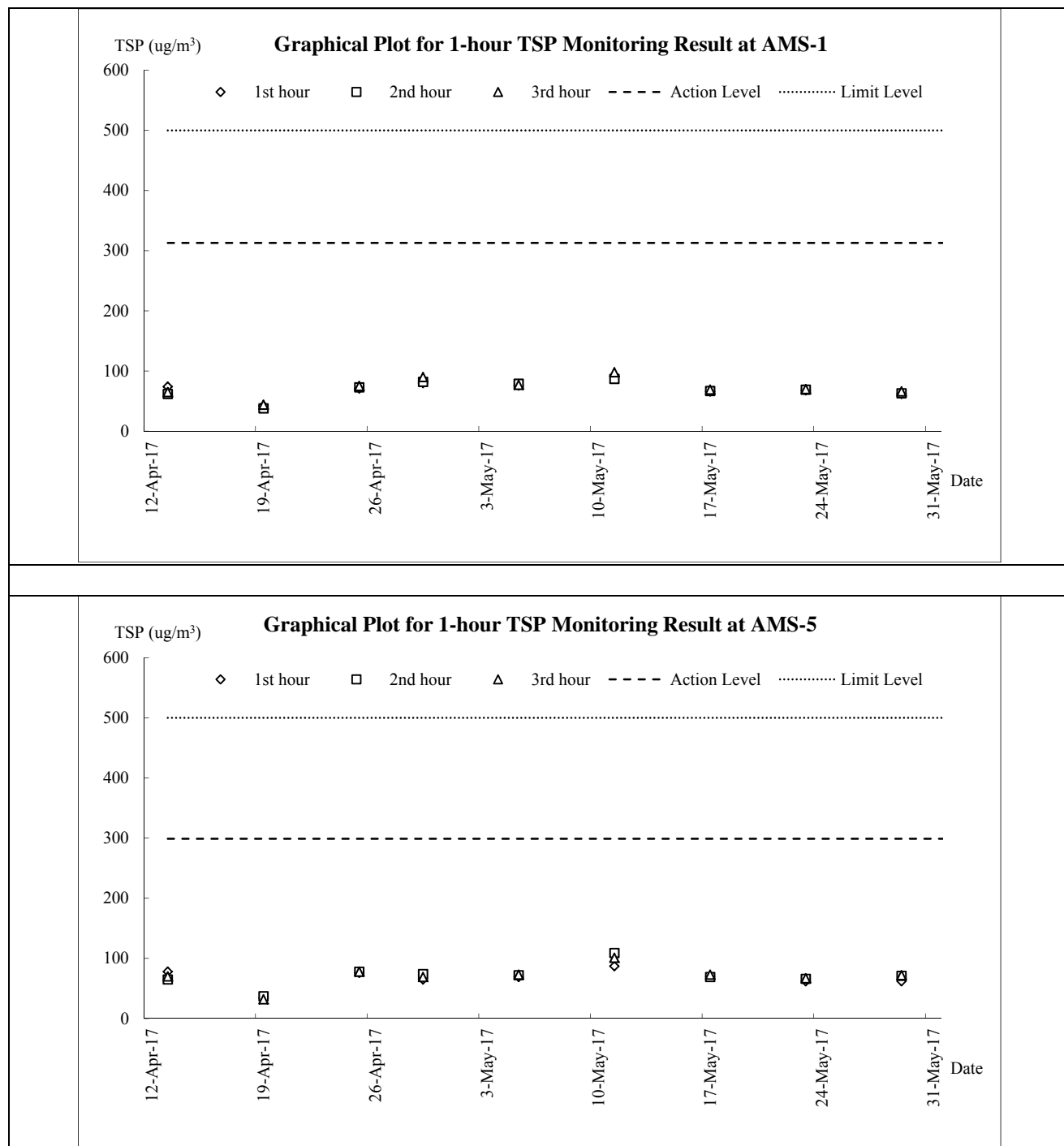
Date	Start Time	1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)			4th Leq (5min)			5th Leq (5min)			6th Leq (5min)			Leq30min, dB(A)
		Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	
5-May-17	9:36	58.6	61.7	55.4	59.5	62.8	57.1	59.2	63.0	57.0	61.2	63.7	58.5	60.0	62.7	57.5	59.5	62.5	57.0	60
11-May-17	13:47	58.4	60.5	51.5	57.6	61.0	51.5	62.7	63.5	51.0	60.6	61.5	52.0	55.9	57.0	50.0	55.1	58.0	48.5	59
17-May-17	10:32	59.7	62.3	57.0	59.0	62.5	57.0	61.2	63.0	57.5	61.5	64.2	58.0	61.7	64.5	58.5	62.0	65.0	58.9	61
23-May-17	9:37	60.5	63.7	57.2	60.7	63.5	57.0	62.2	65.5	58.3	63.0	66.0	58.9	62.5	65.0	58.5	62.0	65.0	57.7	62
29-May-17	11:02	61.2	64.5	57.0	61.7	64.2	57.0	62.0	64.9	57.5	61.0	63.6	57.5	60.5	63.6	57.0	61.0	64.0	57.5	61

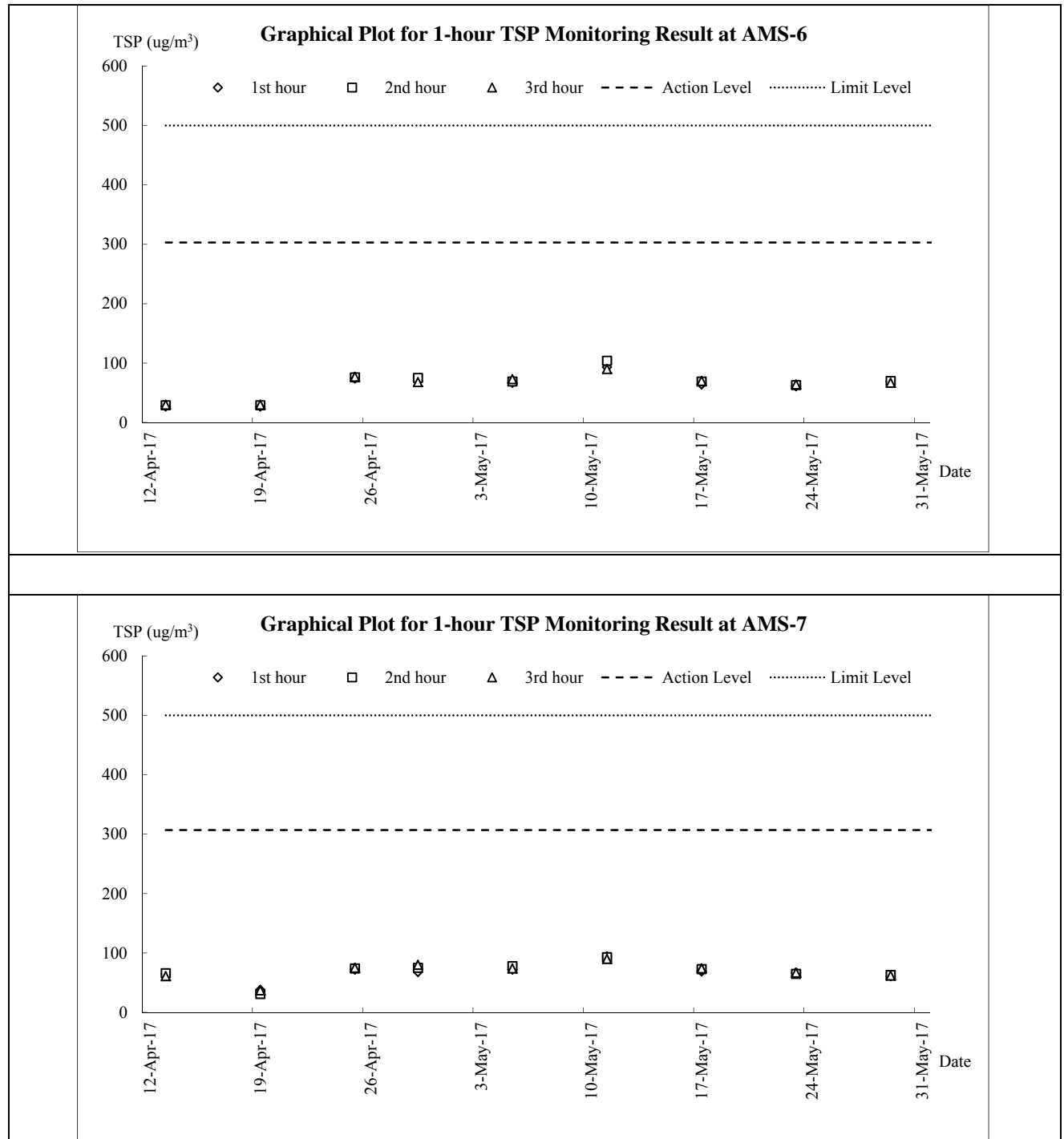


## **Appendix I**

### **Graphical Plots for Monitoring Result**

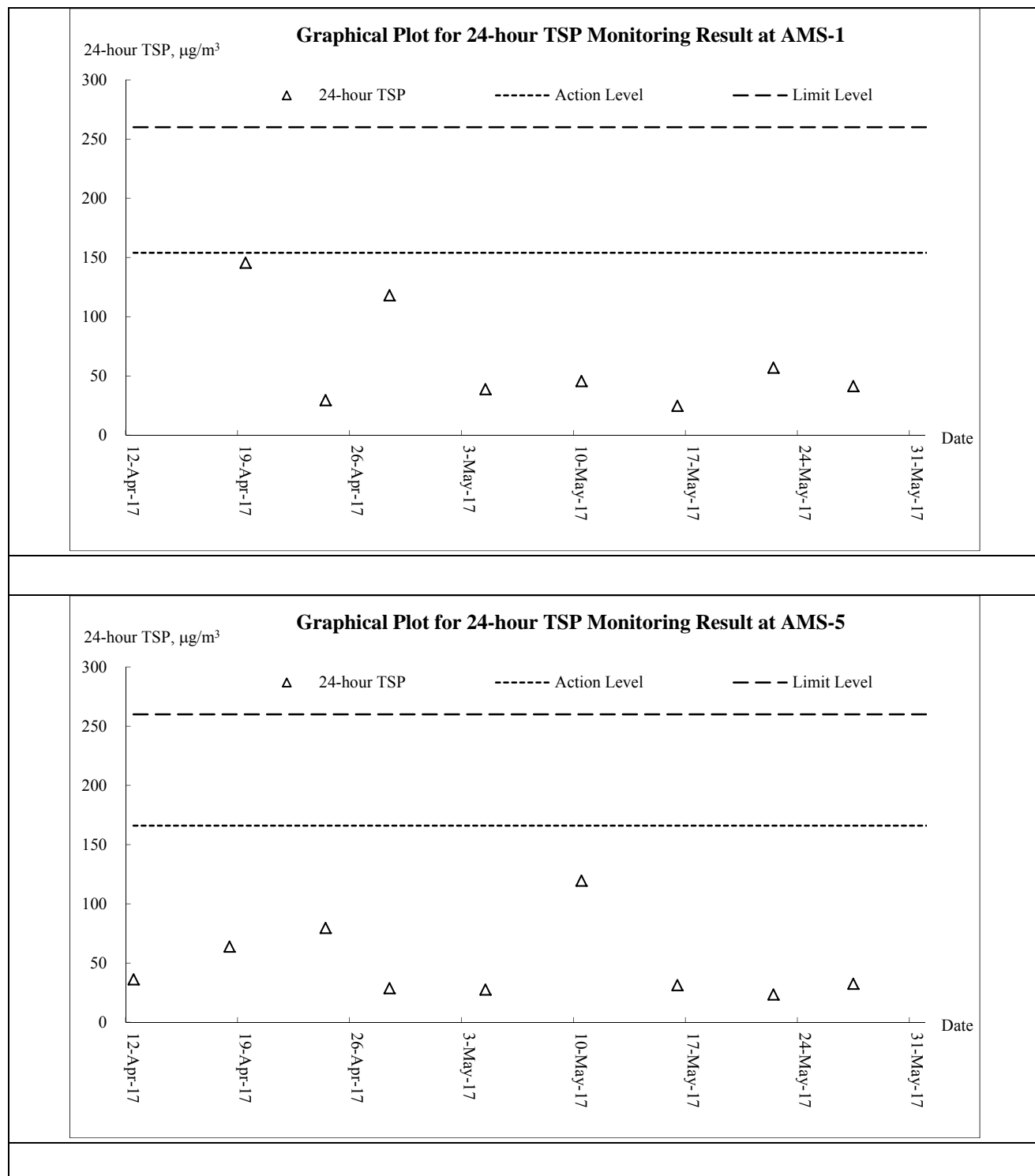
## Air Quality – 1-hour TSP

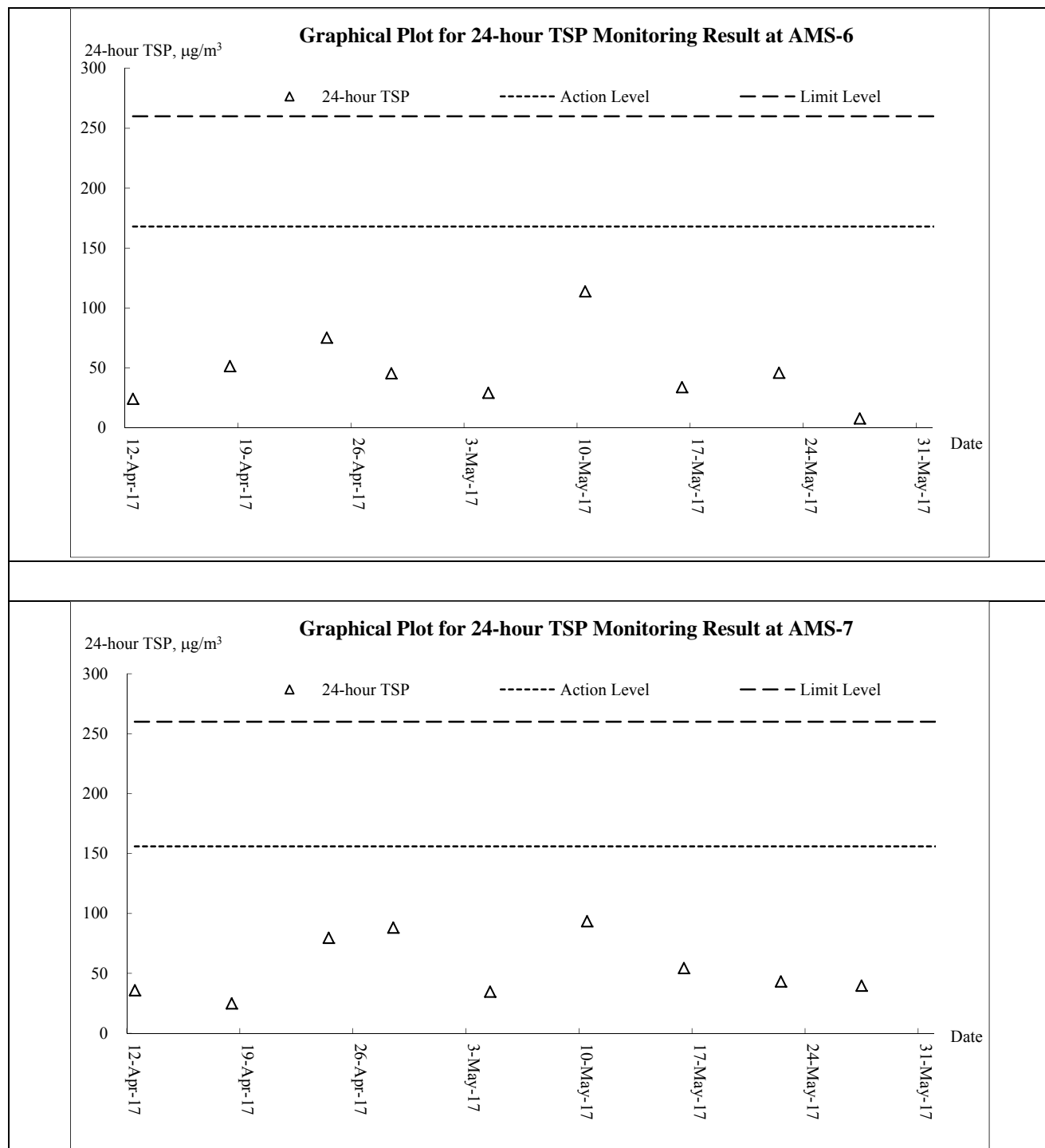




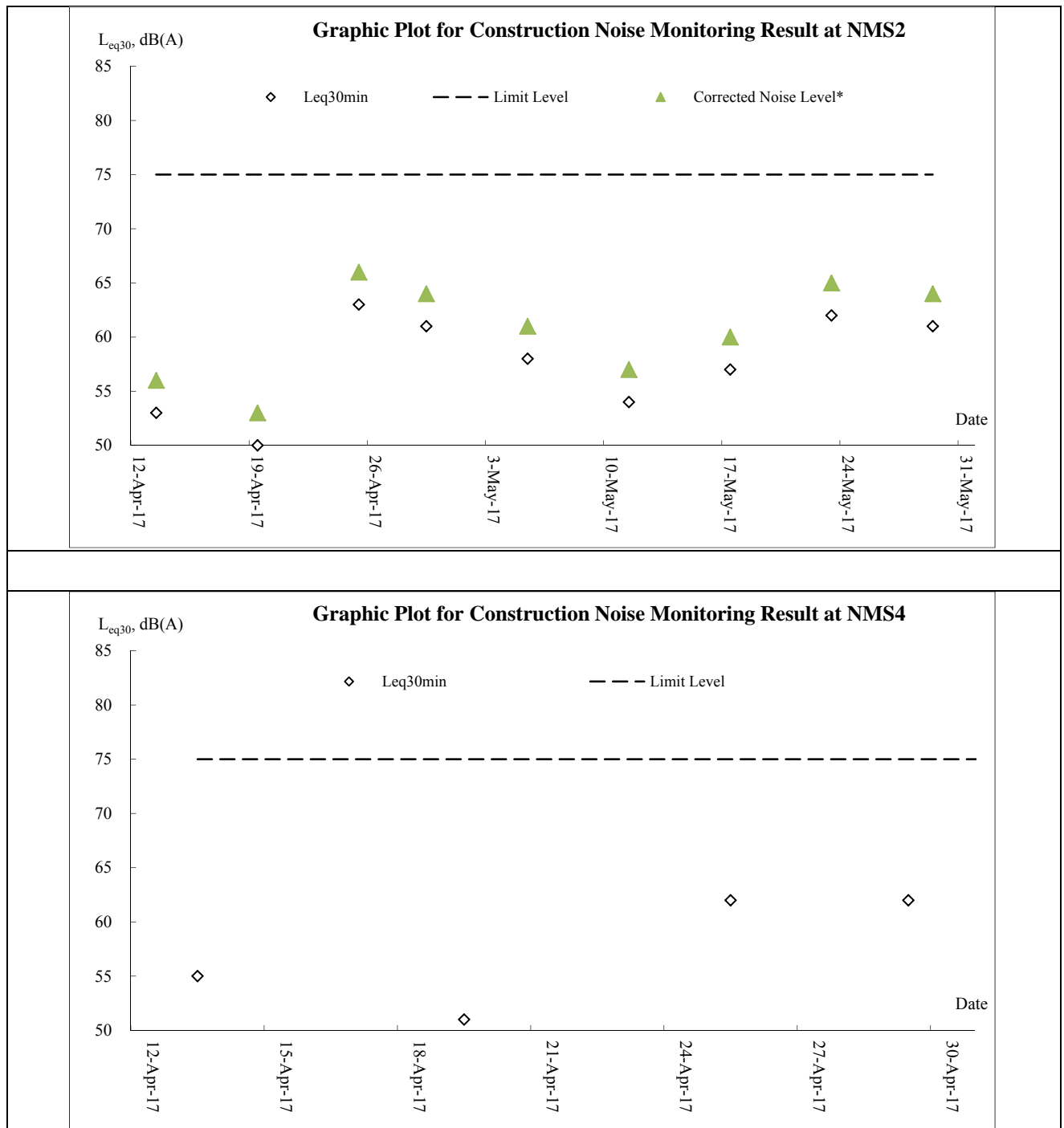


## Air Quality – 24-hour TSP





## Noise





## **Appendix J**

### **Meteorological Data**

Date		Weather	Total Rainfall (mm)	Kwun Tong Station	Kai Tak Station		King's Park Station
				Mean Air Temp. (°C)	Wind Speed (km/h)	Wind Direction	Mean Relative Humidity (%)
1-May-17	Mon	Moderate easterly winds.	0	25.2	11.7	E/SE	76.5
2-May-17	Tue	Moderate easterly winds.	0	26	10.1	E/SE	81
3-May-17	Wed	Sunny intervals in the afternoon	Trace	27.7	12.4	E/SE	74.7
4-May-17	Thu	Mainly cloudy with a few showers.	42.5	24.8	11.2	E/SE	87.6
5-May-17	Fri	Moderate easterly winds.	0	26.7	4.5	SE	80.5
6-May-17	Sat	Moderate easterly winds.	Trace	28.3	11.5	E	78.6
7-May-17	Sun	Sunny intervals in the afternoon	1.8	25.2	15.6	E	79.5
8-May-17	Mon	Mainly cloudy with a few showers.	9.2	24.8	12.6	E	81.2
9-May-17	Tue	Mainly cloudy with haze.	10.8	26.3	6.7	SE	80.5
10-May-17	Wed	Mainly cloudy with haze.	0	28.3	7.5	SE	79.2
11-May-17	Thu	Mainly cloudy with haze.	0	27.9	10.8	SE	75
12-May-17	Fri	Sunny intervals in the afternoon	Trace	28.9	10.8	W/SW	76.7
13-May-17	Sat	Mainly cloudy with a few showers.	4.7	26.2	7.8	W/SW	68.9
14-May-17	Sun	Mainly cloudy with haze.	Trace	27.2	12	E/SE	79.2
15-May-17	Mon	Mainly cloudy with haze.	38.5	25.6	11.1	E/SE	91.2
16-May-17	Tue	Cloudy with a few showers. Moderate to fresh easterly winds.	3	25.1	9	JNE	83.5
17-May-17	Wed	Moderate to fresh easterly winds.	0	25.9	9.3	SE	74.7
18-May-17	Thu	Cloudy with a few showers. Moderate to fresh easterly winds.	0.1	25.4	15.8	E	70.5
19-May-17	Fri	Mainly cloudy with a few showers.	0.7	24.6	12.5	E	78.7
20-May-17	Sat	Mainly cloudy with haze.	0.3	23.4	10.8	E/SE	78.6
21-May-17	Sun	Cloudy with a few showers. Moderate to fresh easterly winds.	4.4	23.7	18.3	E/SE	87.5
22-May-17	Mon	Cloudy with a few showers. Moderate to fresh easterly winds.	5.6	24.2	16	E	91.7
23-May-17	Tue	Mainly cloudy tonight. Moderate northeasterly winds.	4.1	27.1	9.7	E	87.5
24-May-17	Wed	Mainly cloudy tonight. Moderate northeasterly winds.	273.6	25.3	11	W/NW	95.7
25-May-17	Thu	Sunny intervals in the afternoon.	0	26.3	9.7	W/NW	71.2
26-May-17	Fri	Mainly cloudy with a few showers.	0	24.5	9.7	E/SE	71.5
27-May-17	Sat	Mainly cloudy with haze.	Trace	26.3	7.8	E/SE	68.5
28-May-17	Sun	Cloudy with a few showers. Moderate to fresh easterly winds.	0	26.8	8.9	E	65.4
29-May-17	Mon	Cloudy with a few showers. Moderate to fresh easterly winds.	0	26.6	15.9	E	69.7
30-May-17	Tue	Mainly cloudy. Moderate northeasterly winds.	Trace	26.7	11.3	SE	79.5
31-May-17	Wed	Moderate to fresh southwesterly winds	0	29	8.5	W/SW	77.7

## **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 2017 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
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	0.3880	0	0	0	0.0326
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0.3880	0	0	0	0.03402
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	0.3880	0	0	0	0.03402

Contract No.: NE/2016/01

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

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the 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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
15.000	0	0	0	15.000	0	100.000	2.000	0.300	10.000	3.500

Notes:

- (1) The performance targets are given in PS Clause 1.119 (14).
- (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and waste will be collected by recycler for recycling.
- (4) Use the conversion factor, density of general refuse (1 t/m<sup>3</sup>) and inert C&D materials (2 t/m<sup>3</sup>).
- (5) Use the conversion factor for chemical waste (0.88kg/L).
- (6) Assume a dump truck delivers 7.5 m<sup>3</sup> material in 1 trip.
- (7) The cut-off date of this summary is 20<sup>th</sup> of each month.

Name of Department: CEDDContract No. : NE/2016/05**Monthly Summary Waste Flow Table for 2017** (year)**[PS Clause 1.129]**

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m <sup>3</sup> )	(in '000 m <sup>3</sup> )	(in '000 m <sup>3</sup> )	(in '000 m <sup>3</sup> )	(in '000 m <sup>3</sup> )	(in '000 m <sup>3</sup> )	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m <sup>3</sup> )
Jan											
Feb											
Mar											
Apr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total											

- Notes:
- (1) The performance targets are given in PS Clause 6.14
  - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
  - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
  - (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works. Together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m<sup>3</sup>.



## **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
<b>Dust Impact (Contraction Phase)</b>					
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/m <sup>2</sup> 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 (Construction Dust) Regulation.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	V
S4.7.6	<p>Following dust suppression measures should also be incorporated by the Contractor to control the dust nuisance throughout the construction phase:</p> <ul style="list-style-type: none"> <li>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;</li> <li>Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>A stockpile of dusty material should not extend beyond the pedestrian barriers, fencing or traffic cones;</li> <li>The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;</li> <li>When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period.</li> <li>The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;</li> <li>Surfaces where any pneumatic or power-driven drilling, cutting, polishing</li> </ul>	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
	<p>or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</p> <ul style="list-style-type: none"> <li>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 ;</li> <li>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;</li> <li>Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>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;</li> <li>Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; and</li> <li>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.</li> </ul>				
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
<b>Noise Impact (Contraction Phase)</b>					
S5.6.9	<p>Implement the following good site management practices:</p> <ul style="list-style-type: none"> <li>only well-maintained plant should be operated on-site and plant should be serviced regularly during the construct ion programme;</li> <li>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;</li> <li>plant known to emit noise strongly in one direct ion, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>silencers or mufflers on construct ion equipment should be properly fit ted</li> </ul>	Control construct ion airborne noise	Contractor	All construction sites where practicable	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
	<ul style="list-style-type: none"> <li>and maintained during the construction works;</li> <li>mobile plant should be sited as far away from NSRs as possible and practicable; and</li> <li>material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>				
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 construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction 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 construction sites	Contractor	All construction sites where practicable	V
S5.6.19	Sequencing operation of construction plants equipment.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	V
S5.6.34	Implement temporary noise barrier along Road L4.	Further reduce the construction airborne noise	Contractor	Road L4 of ARQ	N/A
S5.6.35	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected Representative Noise monitoring stations	V
<b>Water Quality Impact (Contraction Phase)</b>					
S6.6.3	<u>Construction Runoff</u> In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection 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
	<p>practicable as below:</p> <ul style="list-style-type: none"> <li>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 stormwater to silt removal facilities.</li> <li>Diversion of natural stormwater 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 m<sup>3</sup> 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.</li> <li>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.</li> <li>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.</li> <li>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 should be covered by tarpaulin or other means.</li> <li>All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</li> <li>Measures should be taken to minimise the ingress of site drainage into</li> </ul>				

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
	<p>excavations. If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.</p> <ul style="list-style-type: none"> <li>• All open stockpiles of construction materials (for example, aggregates, sand and fill material) should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.</li> <li>• Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</li> <li>• Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions 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.</li> <li>• All vehicles and plant should be cleaned before leaving a construction 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 construction 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 section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and rains.</li> <li>• 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.</li> <li>• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.</li> <li>• All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds 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.</li> </ul>				



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
	<ul style="list-style-type: none"> <li>Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the rivers.</li> </ul>				
S6.6.6 and 6.6.7	<p><u>Sewage from Workforce</u></p> <ul style="list-style-type: none"> <li>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 0.4m<sup>3</sup> 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 m<sup>3</sup>/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.</li> <li>Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measure</li> </ul>	Handling of site sewage	Contractor	All construction sites	V
S6.6.8 and 6.6.9	<p><u>Accidental Spillage</u></p> <p>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 construction activities. Storage of chemical waste arising from the construction 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)</p>	Prevention 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	<p><u>Groundwater from Contaminated Area</u></p> <p>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.</p> <p>If wastewater treatment is deployed, the wastewater treatment unit shall deploy 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.</p> <p>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 Section 2.3 of TM-DSS. The baseline groundwater quality shall be determined prior to the selection 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) to EPD for agreement. Pollution 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 such as PCRs should be removed as necessary by installing the petrol interceptor.</p>	Minimize contaminated groundwater impacts	Contractor	All construction sites	NA
<b>Waste Management (Contraction Phase)</b>					
S8.5.2	<p><u>Good Site Practice</u></p> <p>The following good site practices are recommended throughout the construction activities:</p> <ul style="list-style-type: none"> <li>nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for</li> </ul>	Minimize waste during generation 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
	<p>collect ion and effective disposal to an appropriate facility, of all wastes generated at the site;</p> <ul style="list-style-type: none"> <li>• training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;</li> <li>• provision of sufficient waste disposal points and regular collect ion for disposal;</li> <li>• appropriate measures to minimize windblown litter and dust during transportation of waste by either covering t rucks or by transporting wastes in enclosed containers;</li> <li>• regular cleaning an d maintenance programme for drainage systems, sumps and oil interceptors;</li> </ul>				
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 <b>ETWB TC(W) No. 19/2005</b> 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	<p><u>Waste Reduction Measures</u></p> <p>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:</p> <ul style="list-style-type: none"> <li>• segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling o materials and their proper disposal;</li> <li>• proper storage and site practices to minimize the potential for damage and contamination of construct ion materials;</li> <li>• plan and stock construct ion materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;</li> <li>• sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable port ions (i.e. soil, broken concrete, metal etc.);</li> <li>• provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.</li> </ul>	Reduce waste generation	Contractor	All construction sites where practicable	V
S8.5.5	<p><u>Storage of Waste</u></p> <p>The following recommendation should be implemented to minimize the impacts:</p> <ul style="list-style-type: none"> <li>• waste such as soil should be handled an d stored well to ensure secure containment ;</li> <li>• stockpiling area should be provided with covers and water spraying system</li> </ul>	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
	<ul style="list-style-type: none"> <li>to prevent materials from wind-blown or being washed away;</li> <li>different locations should be designated to stockpile each material to enhance reuse;</li> </ul>				
S8.5.6	<u>Collection and Transportation of Waste</u> The following recommendation should be implemented to minimize the impacts: <ul style="list-style-type: none"> <li>remove waste in timely manner;</li> <li>employ the trucks with cover or enclosed containers for waste transportation;</li> <li>obtain relevant waste disposal permits from the appropriate authorities; and</li> <li>disposal of waste should be done at licensed waste disposal facilities.</li> </ul>	Minimize waste impacts from storage	Contractor	All construction sites	V
S8.5.8	<u>Excavated and C&amp;D Material</u> 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: <ul style="list-style-type: none"> <li>maintain temporary stockpiles and reuse excavated fill material for backfilling;</li> <li>carry out on-site sorting;</li> <li>make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>implement a recording system for the amount of waste generated, recycled and disposed of for checking;</li> </ul> The recommended C&D materials handling should include: <ul style="list-style-type: none"> <li>On-site sorting of C&amp;D materials</li> <li>Reuse of C&amp;D materials</li> <li>Use of Standard Formwork and Planning of Construction Materials purchasing</li> <li>Provision of wheel wash facilities</li> </ul>	Minimize waste impacts from excavated and C&D materials	Contractor	All construction sites	V
S8.5.15	<u>Contaminated Soil</u> As a precaution, it is recommended that standard good site practice should be implemented during the construction 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	<u>Chemical Waste</u> <ul style="list-style-type: none"> <li>If chemical wastes are produced at the construction site, the Contractors</li> </ul>	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 Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	storage, handling and disposal.		sites	
S8.5.18	<u>General Waste</u> <ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling.</li> <li>Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean.</li> <li>A reputable waste collector should be employed to remove general refuse on a daily basis.</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	V
S8.5.19	<u>Sewage</u> <ul style="list-style-type: none"> <li>The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities.</li> <li>Regularly collection by licensed collectors should be arranged to minimize potential environmental impacts.</li> </ul>	Minimize production of sewage impacts	Contractor	All construction sites	V
<b>Ecology (Contraction Phase)</b>					
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: <ul style="list-style-type: none"> <li>Temporary sewerage and drainage will be designed and installed to collect wastewater and prevent it from entering nearby watercourses;</li> </ul>	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
	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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 bottom 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;</li> <li>• Stockpiling of construction materials, if necessary, will be properly covered and located away from nearby watercourses;</li> <li>• Erection of temporary geotextile silt fences will be carried out around earth-moving works to trap any sediments and prevent them from entering watercourses;</li> <li>• Construction debris and spoil will be covered and/or properly disposed as soon as possible to avoid being washed into nearby watercourses;</li> <li>• Exposed soil will be covered as quickly as possible following formation works, followed, where appropriate, by covering with biodegradable geotextile blanket for erosion control purposes;</li> <li>• Where appropriate, earth-bundling 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;</li> <li>• Construction effluent, site run-off and sewage will be probably collected and/or treated. Wastewater from any construction site will be minimised via the following in descending order: reuse, recycling and treatment;</li> <li>• Proper locations for discharge outlets of wastewater treatment facilities well away from sensitive receivers will be identified and used;</li> <li>• Silt traps will be installed at points where drainage from the site enters local watercourses;</li> <li>• Appropriate sanitary facilities for on-site workers will be provided;</li> <li>• The site boundary will be clearly marked and any works beyond the boundary strictly prohibited, and</li> <li>• Regular water monitoring and site audit will be carried out at suitable points. If the monitoring and audit results show that pollution occurs, adequate measures including temporary cessation of works will be considered.</li> </ul>				
S.10.7.11	Implement an emergency contingency plan during the construction phase and the	Minimize 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: <ul style="list-style-type: none"> <li>• Potential emergency situations;</li> <li>• Chemicals or hazardous materials used on-site (and their location);</li> <li>• Emergency response team;</li> <li>• Emergency response procedures;</li> <li>• List of emergency telephone hot lines;</li> <li>• Locations and types of emergency response equipment , and</li> <li>• Training plan and testing for effectiveness.</li> </ul>	Hydrological condition and water quality of hillside watercourses.		construction sites	
<b>Landscape and visual (Contraction Phase)</b>					
S11.14.23, Table 11.9, CM1 [4]	All existing trees to be retained shall be carefully protected during construction.	Avoid disturbance and protection of the existing trees	Detailed Design Consultant /	The whole project area where applicable	V
S11.14.23, Table 11.9, CM2 [3]	Tree Transplantation - Should removal of trees be unavoidable due to construction impacts, trees will be transplanted or felled. Detailed transplanting proposal will be submit ted to relevant government departments for approval in accordance with <u>LAO GN No. 7/2007</u> , <u>ETWB TCW No. 29/2004</u> and <u>10/2013</u> . Final locations of transplanted trees shall be agreed prior to commencement of the work.	Minimize landscape impact and retention of landscape resources	Detailed Design Consultant /	Onsite where possible. Otherwise consider offsite locations	*
S11.14.23, Table 11.9, CM3 [4]	Control of operation night -time glare with well-planned light ing operation system to minimize potential glare impact to adjacent VSRs	Minimize glare impact to adjacent VSRs	Contractor/ CEDD	The whole project area where applicable	N/A
S11.14.23, Table 11.9, CM [4]	Erection of decorative screen hoarding.	Minimize visual impact	Contractor/ CEDD	The whole project area where applicable	N/A
S11.14.23, Table 11.9, CM5 [2]	Minimise disturbance and limitation of run-off – temporary structures and construction works should be planned with care to minimize disturbance to adjacent landscape, vegetation, natural stream habitats.	Minimize visual impact	Contractor/ CEDD	The whole project area where applicable	V

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