

JOB No.: TCS00670/13

AGREEMENT NO. CE 45/2008 (CE)
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT
REPORT (NO.9) – APRIL 2014

PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
(CEDD)

Date	Reference No.	Prepared By	Certified By
15 May 2014	TCS00670/13/600/R0169v3	 Nicola Hon (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	12 May 2014	First Submission
2	14 May 2014	Amended against the IEC's comments on 13 May 2014
3	15 May 2014	Amended against the IEC's comments on 14 May 2014

15 May 2014

Our ref: 7076192/L16008/Ry/AB/AW/rw
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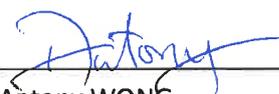
Dear Sirs

Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Monthly EM&A Report (No. 9) – April 2014

With reference to the Monthly EM&A Report No. 9 for March 2014 (Version 3) certified by the ET Leader we received on 15 May 2014, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-404/2011/A.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995 8120 or by email to antony.wong@smec.com; or our Ms Winnie MA on tel. 3995 8138 or by email to winnie.ma@smec.com.

Yours faithfully
For and on behalf of
SMEC Asia Limited



Antony WONG
Independent Environmental Checker

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	CW	-	Mr Daniel HO	by email
	AUES	-	Mr TW TAM	by email

EXECUTIVE SUMMARY

ES01 This is the 9th monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 30 April 2014** (hereinafter ‘the Reporting Period’).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES02 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 Monitoring Locations to undertake	Total Occasions
Air Quality	1-hour TSP	4	60
	24-hour TSP	4	24
Construction Noise	L _{eq(30min)} Daytime	5	25
Water Quality	Water sampling	5	12(*)
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 3	4
		Contract 5	5

(*) Monitoring day

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES03 In the Reporting Period, no exceedance of air quality and construction noise was registered. However, four (4) Limit Level exceedances for water quality monitoring were recorded. The summary of breach of environmental performance is shown below.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	-	-
	24-hour TSP	0	0	0	-	-
Construction Noise	L _{eq(30min)} Daytime	0	0	0	-	-
Water Quality	DO	0	0	0	-	-
	Turbidity	0	2	2	Not project related	NA
	SS	0	2	2	Not project related	NA

ENVIRONMENTAL COMPLAINT

ES04 In the Reporting Period, no environmental complaint was lodged for Contract 5. However, one (1) environmental complaint was received for Contract 3 on 16 April 2014 regarding to the construction dust. Measures have been taken to ensure regular wheel washing of vehicles leaving the construction sites, to ensure the maintenance of the wheel washing facilities, and the maintenance of the cleanliness of the public roads. Investigation report has been submitted to relevant parties.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES05 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES06 No reporting changes were made in the Reporting Period.

SITE INSPECTION

- ES07 In the Reporting Period, joint site inspection for Contract 3 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **7, 16, 22, and 28 April 2014**. No non-compliance was noted.
- ES08 In the Reporting Period, joint site inspection for Contract 5 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 17, 24, and 30 April 2014**. No non-compliance was noted.

FUTURE KEY ISSUES

- ES09 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.
- ES10 During wet season, muddy water or other water pollutants from site surface runoff into the local stream will be key environment issue. Water quality mitigation measures to prevent surface runoff into nearby water bodies should be paid on special attention.
- ES11 Special attention should also be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.
- ES12 In addition, the potential water quality impact at the nearby rivers should be highly alerted. The Contractors including Contract 3 and Contract 5 should prevent muddy water and other water pollutants via site surface water runoff get into the Kong Yiu Channel and Ma Wat Channel, water quality mitigation measures should be properly implemented.

Table of Contents

1	INTRODUCTION	1
1.1	PROJECT BACKGROUND	1
1.2	REPORT STRUCTURE	1
2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS	3
2.1	CONSTRUCTION CONTRACT PACKAGING	3
2.2	PROJECT ORGANIZATION	4
2.3	CONCURRENT PROJECTS	6
2.4	CONSTRUCTION PROGRESS	6
2.5	SUMMARY OF ENVIRONMENTAL SUBMISSIONS	7
3	SUMMARY OF IMPACT MONITORING REQUIREMENTS	8
3.1	GENERAL	8
3.2	MONITORING PARAMETERS	8
3.3	MONITORING LOCATIONS	8
3.4	MONITORING FREQUENCY AND PERIOD	10
3.5	MONITORING EQUIPMENT	10
3.6	MONITORING METHODOLOGY	12
3.7	EQUIPMENT CALIBRATION	14
3.8	DERIVATION OF ACTION/LIMIT (A/L) LEVELS	14
3.9	DATA MANAGEMENT AND DATA QA/QC CONTROL	15
4	AIR QUALITY MONITORING	16
4.1	GENERAL	16
4.2	AIR QUALITY MONITORING RESULTS IN REPORTING MONTH	16
5	CONSTRUCTION NOISE MONITORING	18
5.1	GENERAL	18
5.2	NOISE MONITORING RESULTS IN REPORTING MONTH	18
6	WATER QUALITY MONITORING	19
6.1	GENERAL	19
6.2	RESULTS OF WATER QUALITY MONITORING	19
7	WASTE MANAGEMENT	22
7.1	GENERAL WASTE MANAGEMENT	22
7.2	RECORDS OF WASTE QUANTITIES	22
8	SITE INSPECTION	23
8.1	REQUIREMENTS	23
8.2	FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH	23
9	ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE	26
9.1	ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION	26
10	IMPLEMENTATION STATUS OF MITIGATION MEASURES	28
10.1	GENERAL REQUIREMENTS	28
10.2	TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH	28
10.3	KEY ISSUES FOR THE COMING MONTH	29
11	CONCLUSIONS AND RECOMMENDATIONS	30
11.1	CONCLUSIONS	30
11.2	RECOMMENDATIONS	30

LIST OF TABLES

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	IMPACT MONITORING STATIONS - WATER QUALITY
TABLE 3-5	AIR QUALITY MONITORING EQUIPMENT
TABLE 3-6	CONSTRUCTION NOISE MONITORING EQUIPMENT
TABLE 3-7	WATER QUALITY MONITORING EQUIPMENT
TABLE 3-8	ACTION AND LIMIT LEVELS FOR AIR QUALITY MONITORING
TABLE 3-9	ACTION AND LIMIT LEVELS FOR CONSTRUCTION NOISE
TABLE 3-10	ACTION AND LIMIT LEVELS FOR WATER QUALITY
TABLE 4-1	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM1A
TABLE 4-2	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM2
TABLE 4-3	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM3
TABLE 4-4	SUMMARY OF 24-HOUR AND 1-HOUR TSP MONITORING RESULTS – AM9B
TABLE 5-1	SUMMARY OF CONSTRUCTION NOISE MONITORING RESULTS
TABLE 6-1	SUMMARY OF WATER QUALITY MONITORING RESULTS FOR CONTRACT 3
TABLE 6-2	SUMMARY OF WATER QUALITY MONITORING RESULTS FOR CONTRACT 5
TABLE 6-3	BREACHES OF WATER QUALITY MONITORING CRITERIA IN REPORTING PERIOD
TABLE 7-1	SUMMARY OF QUANTITIES OF INERT C&D MATERIALS
TABLE 7-2	SUMMARY OF QUANTITIES OF C&D WASTES
TABLE 8-1	SITE OBSERVATIONS FOR CONTRACT 3
TABLE 8-2	SITE OBSERVATIONS FOR CONTRACT 5
TABLE 9-1	STATISTICAL SUMMARY OF ENVIRONMENTAL COMPLAINTS
TABLE 9-2	STATISTICAL SUMMARY OF ENVIRONMENTAL SUMMONS
TABLE 9-3	STATISTICAL SUMMARY OF ENVIRONMENTAL PROSECUTION
TABLE 10-1	ENVIRONMENTAL MITIGATION MEASURES

LIST OF APPENDICES

APPENDIX A	LAYOUT PLAN OF THE PROJECT
APPENDIX B	ORGANIZATION CHART
APPENDIX C	MASTER CONSTRUCTION PROGRAMME
APPENDIX D	DESIGNATED MONITORING LOCATIONS AS RECOMMENDED IN THE APPROVED EM&A MANUAL
APPENDIX E	MONITORING LOCATIONS FOR IMPACT MONITORING
APPENDIX F	CALIBRATION CERTIFICATE OF MONITORING EQUIPMENT AND HOKLAS-ACCREDITATION CERTIFICATE OF THE TESTING LABORATORY
APPENDIX G	EVENT AND ACTION PLAN
APPENDIX H	IMPACT MONITORING SCHEDULE
APPENDIX I	DATABASE OF MONITORING RESULT
APPENDIX J	GRAPHICAL PLOTS FOR MONITORING RESULT
APPENDIX K	METEOROLOGICAL DATA
APPENDIX L	WASTE FLOW TABLE
APPENDIX M	IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 Civil Engineering and Development Department is the Project Proponent and the Permit Holder of Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, which is a Designated Project to be implemented under Environmental Permit number EP-404/2011/A issued on 28 October 2013.
- 1.1.2 The Project consists of two main components: Construction of a Boundary Control Point (hereinafter referred as “BCP”); and Construction of a connecting road alignment. Layout plan of the Project is shown in *Appendix A*.
- 1.1.3 The proposed BCP is located at the boundary with Shenzhen near the existing Chuk Yuen Village, comprising a main passenger building with passenger and cargo processing facilities and the associated customs, transport and ancillary facilities. The connecting road alignment consists of six main sections:
- 1) Lin Ma Hang to Frontier Closed Area (FCA) Boundary – this section comprises at-grade and viaducts and includes the improvement works at Lin Ma Hang Road;
 - 2) Ping Yeung to Wo Keng Shan – this section stretches from the Frontier Closed Area Boundary to the tunnel portal at Cheung Shan and comprises at-grade and viaducts including an interchange at Ping Yeung;
 - 3) North Tunnel – this section comprises the tunnel segment at Cheung Shan and includes a ventilation building at the portals on either end of the tunnel;
 - 4) Sha Tau Kok Road – this section stretches from the tunnel portal at Wo Keng Shan to the tunnel portal south of Loi Tung and comprises at-grade and viaducts including an interchange at Sha Tau Kok and an administration building;
 - 5) South Tunnel – this section comprises a tunnel segment that stretches from Loi Tung to Fanling and includes a ventilation building at the portals on either end of the tunnel as well as a ventilation building in the middle of the tunnel near Lau Shui Heung;
 - 6) Fanling – this section comprises the at-grade, viaducts and interchange connection to the existing Fanling Highway.
- 1.1.4 Action-United Environmental Services & Consulting has been commissioned as an Independent ET to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. As part of the EM&A program, the baseline monitoring has carried out between **13 June 2013** and **12 July 2013** for all parameters including air quality, noise and water quality before construction work commencement. The Baseline Monitoring Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. Also, the Project baseline monitoring report which verified by the IEC has been submitted to EPD on **16 July 2013** for endorsement. The major construction works of the Project was commenced on **16 August 2013** in accordance with the EP Section 5.3 stipulation.
- 1.1.5 This is **9th** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **30 April 2014**.

1.2 REPORT STRUCTURE

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

- Section 1 Introduction*
Section 2 Project Organization and Construction Progress
Section 3 Summary of Impact Monitoring Requirements
Section 4 Air Quality Monitoring
Section 5 Construction Noise Monitoring
Section 6 Water Quality Monitoring
Section 7 Waste Management

<i>Section 8</i>	<i>Site Inspections</i>
<i>Section 9</i>	<i>Environmental Complaints and Non-Compliance</i>
<i>Section 10</i>	<i>Implementation Status of Mitigation Measures</i>
<i>Section 11</i>	<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 following contracts:

- Contract 2 (CV/2012/08)
- Contract 3 (CV/2012/09)
- Contract 4 (TCSS)
- Contract 5 (CV/2013/03)
- Contract 6 (CV/2013/08)

2.1.2 The details of each contracts is summarized below and the delineation of each contracts is shown in *Appendix A*.

Contract 2 (CV/2012/08)

2.1.3 Contract 2 has awarded in December 2013 and construction work will commence on 19 May 2014. Major Scope of Work of the Contract 2 is listed below:

- construction of an approximately 5.2km long dual two-lane connecting road (with about 0.4km of at-grade road and 4.8km of tunnel) connecting the Fanling Interchange with the proposed Sha Tau Kok Interchange;
- construction of a ventilation adit tunnel and the mid-ventilation building;
- construction of the north and south portal buildings of the Lung Shan Tunnel and their associated slope works;
- provision and installation of ventilation system, E&M works and building services works for Lung Shan tunnel and Cheung Shan tunnel and their portal buildings;
- construction of Tunnel Administration Building adjacent to Wo Keng Shan Road and the associated E&M and building services works; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 3 (CV/2012/09)

2.1.4 Contract 3 was awarded in July 2013 and construction work was commenced on 5 November 2013. Major Scope of Work of the Contract 3 is listed below:

- construction of four link roads connecting the existing Fanling Highway and the south portal of the Lung Shan Tunnel;
- realignment of the existing Tai Wo Service Road West and Tai Wo Service Road East;
- widening of the existing Fanling Highway (HyD's entrustment works);
- demolishing existing Kiu Tau vehicular bridge and Kiu Tau footbridge and reconstruction of the existing Kiu Tau Footbridge (HyD's entrustment works); and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 4 (Contract number to be assigned)

2.1.5 Contract 4 has not yet awarded. The work of the Contract 4 includes provision and installation of Traffic Control and Surveillance System and the associated electrical and mechanical works for the Project.

Contract 5 (CV/2013/03)

2.1.6 Contract 5 has awarded in April 2013 and construction work was commenced in August 2013. Major Scope of Work of the Contract 5 is listed below:

- site formation of about 23 hectares of land for the development of the BCP;
- construction of an approximately 1.6 km long perimeter road at the BCP including a 175m long depressed road;

- associated diversion/modification works at existing local roads and junctions including Lin Ma Hang Road;
- construction of pedestrian subway linking the BCP to Lin Ma Hang Road;
- provision of resite area with supporting infrastructure for reprovisioning of the affected village houses; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 6 (CV/2013/08)

- 2.1.7 Contract 6 has not yet awarded. Major Scope of Work of the Contract 6 will be included below:
- construction of an approximately 4.6km long dual two-lane connecting road (with about 0.6km of at-grade road, 3.3km of viaduct and 0.7km of tunnel) connecting the BCP with the proposed Sha Tau Kok Road Interchange and the associated ventilation buildings;
 - associated diversion/modification works at access roads to the resite of Chuk Yuen Village;
 - provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village;
 - construction of a pedestrian subway linking the BCP to Lin Ma Hang Road;
 - provisioning of the affected facilities including Wo Keng Shan Road garden; and
 - construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

2.2 PROJECT ORGANIZATION

- 2.2.1 The project organization is shown in **Appendix B**. The responsibilities of respective parties are:

Civil Engineering and Development Department (CEDD)

- 2.2.2 CEDD is the Project Proponent and the Permit Holder of the EP of the development of the Project and will assume overall responsibility for the project. An Independent Environmental Checker (IEC) shall be employed by CEDD to audit the results of the EM&A works carried out by the ET.

Environmental Protection Department (EPD)

- 2.2.3 EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

Engineer or Engineers Representative (ER)

- 2.2.4 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:
- Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
 - Monitor Contractors's, ET's and IEC's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
 - Facilitate ET's implementation of the EM&A programme
 - Participate in joint site inspection by the ET and IEC
 - Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
 - Adhere to the procedures for carrying out complaint investigation
 - Liaison with DSD, Engineer/Engineer's Representative, ET, IEC and the Contractor of the "Construction of the DSD's Regulation of Shenzhen River Stage 4 (RSR 4)" Project discussing regarding the cumulative impact issues.

The Contractor(s)

- 2.2.5 There will be one contractor for each individual works contract. The Contractor(s) should report

to the ER. The duties and responsibilities of the Contractor are:

- Comply with the relevant contract conditions and specifications on environmental protection
- Employ an Environmental Team (ET) to undertake monitoring, laboratory analysis and reporting of EM & A Facilitate ET's monitoring and site inspection activities
- Participate in the site inspections by the ET and IEC, and undertake any corrective actions
- Provide information / advice to the ET regarding works programme and activities which may contribute to the generation of adverse environmental impacts
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event / Action Plans
- Implement measures to reduce impact where Action and Limit levels are exceeded
- Adhere to the procedures for carrying out complaint investigation

Environmental Team (ET)

2.2.6 One ET will be employed for this Project. The ET shall not be in any way an associated body of the Contractor(s), and shall be employed by the Project Proponent/Contractor to conduct the EM&A programme. The ET should be managed by the ET Leader. The ET Leader shall be a person who has at least 7 years' experience in EM&A and has relevant professional qualifications. Suitably qualified staff should be included in the ET, and resources for the implementation of the EM&A programme should be allocated in time under the Contract(s), to enable fulfillment of the Project's EM&A requirements as specified in the EM&A Manual during construction of the Project. The ET shall report to the Project Proponent and the duties shall include:

- Monitor and audit various environmental parameters as required in this EM&A Manual
- Analyse the environmental monitoring and audit data, review the success of EM&A programme and the adequacy of mitigation measures implemented, confirm the validity of the EIA predictions and identify any adverse environmental impacts arising
- Carry out regular site inspection to investigate and audit the Contractors' site practice, equipment/plant and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems
- Monitor compliance with conditions in the EP, environmental protection, pollution prevention and control regulations and contract specifications
- Audit environmental conditions on site
- Report on the environmental monitoring and audit results to EPD, the ER, the IEC and Contractor(s) or their delegated representatives
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans
- Liaise with the IEC on all environmental performance matters and timely submit all relevant EM&A proforma for approval by IEC
- Advise the Contractor(s) on environmental improvement, awareness, enhancement measures etc., on site
- Adhere to the procedures for carrying out complaint investigation
- Liaison with the client departments, Engineer/Engineer's Representative, ET, IEC and the Contractor(s) of the concurrent projects as listed under Section 2.3 below regarding the cumulative impact issues.

Independent Environmental Checker (IEC)

2.2.7 One IEC will be employed for this Project. The Independent Environmental Checker (IEC) should not be in any way an associated body of the Contractor(s) or the ET for the Project. The IEC should be employed by the Permit Holder (i.e., CEDD) prior to the commencement of the construction of the Project. The IEC should have at least 10 years' experience in EM&A and have relevant professional qualifications. The duty of IEC should be:

- Provide proactive advice to the ER and the Project Proponent on EM&A matters related to the project, independent from the management of construction works, but empowered to audit the environmental performance of construction

- Review and audit all aspects of the EM&A programme implemented by the ET
- Review and verify the monitoring data and all submissions in connection with the EP and EM&A Manual submitted by the ET
- Arrange and conduct regular, at least monthly site inspections of the works during construction phase, and ad hoc inspections if significant environmental problems are identified
- Check compliance with the agreed Event / Action Plan in the event of any exceedance
- Check compliance with the procedures for carrying out complaint investigation
- Check the effectiveness of corrective measures
- Feedback audit results to ET by signing off relevant EM&A proforma
- Check that the mitigation measures are effectively implemented
- Report the works conducted, the findings, recommendation and improvement of the site inspections, after reviewing ET's and Contractor's works, and advices to the ER and Project Proponent on a monthly basis
- Liaison with the client departments, Engineer/Engineer's Representative, ET, IEC and the Contractor(s) of the concurrent projects as listed under Section 2.3 below regarding the cumulative impact issues.

2.3 CONCURRENT PROJECTS

2.3.1 The concurrent construction works that may be carried out include, but not limited to, the following:

- (a) Regulation of Shenzhen River Stage IV (Environmental Permit EP-430/2011);
- (b) Building works and road works by contractors of Architectural Services Department (ArchSD) (Environmental Permit EP-404/2011/A);
- (c) Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange – Contract No. HY/2012/06;
- (d) Construction of cross-boundary vehicular and pedestrian bridges (total 5 numbers) across the Shenzhen River; and
- (e) Construction of BCP facilities in Shenzhen.

2.4 CONSTRUCTION PROGRESS

2.4.1 In the Reporting Period, the major construction activity conducted under the Project is located in Contracts 3 and 5 and they are summarized in below. Moreover, the master construction program of both Contracts 3 and 5 is enclosed in **Appendix C**.

Contract 2 (CV/2012/08)

- The contract has not yet commenced.

Contract 3 (CV/2012/09)

The Contract commenced in November 2013. In this Reporting Period, construction activities conducted is listed below:

- Cable detection and trial trenches
- Tree Felling Works
- Pre-drilling works and piling works
- Extension of box culvert ID04, ID05 & BC01
- Bored pile and bored pile wall construction
- Construction of haul road and temporary soil platform for geotechnical works
- Slope upgrading works
- Noise barrier installation
- Waterworks

Contract 4 (Contract number to be assigned)

- The contract has not yet awarded.

Contract 5 (CV/2013/03)

The Contract awarded in April 2013 and commenced on August 2013. In this Reporting Period, construction activities conducted is listed below:

- Construction of Eastern pedestrian subway and pump room at LMH
- Construction of Western pedestrian subway at LMH
- Piling works at Bridge J
- Construction of retaining wall No.1
- Drainage works at LMH Road
- Water works at LMH Road
- Western Life shaft's construction
- Eastern Life shaft's construction
- Formation works at BCP Area
- Transplantation, Pruning/felling of existing tree

Contract 6 (CV/2013/08)

- The contract is still yet awarded

2.5 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.5.1 In according to the EP, the required documents have submitted to EPD for retention which listed in below:

- Project Layout Plans of Contracts 2, 3 and 5
- Landscape Plan
- Topsoil Management Plan
- Environmental Monitoring and Audit Programme
- Baseline Monitoring Report (TCS00690/13/600/R0030v3) for the Project
- Waste Management Plan of the Contracts 3 and 5
- Contamination Assessment Plan (CAP) for Po Kat Tsai and Loi Tung
- Vegetation Survey Report

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

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

Item	Description	License/Permit Status		
		Contract 3	Contract 5	Contract 2, 4 & 6
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 362101 Notification received by EPD on 17 Jul 2013	Ref. No: 359338 Notified EPD on 13 May 2013	--
2	Chemical Waste Producer Registration - Waste Producers Number	No.:5113-634-C3817-01 Valid form 7 Oct 2013 till the end of Contract	No.: 5213-642-S3735-01 Valid form 8 Jun 2013 till the end of Contract	--
3	Water Pollution Control Ordinance - Discharge License	No.:WT00016832 – 2013 Valid from 28 Aug 13 to 31 Aug 2018	No.: W5/1G44/1 Valid from 8 Jun 13 to 30 Jun 2018	--
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017914 Valid form 2 Aug 13 till the end of Contract	Account No. 7017351 Valid form 29 Apr 13 till the end of Contract	--
5	Construction Noise Permit	GW-RN0109-14 Valid on 24 Feb 2014 till 17 May 2014 GW-RN0136-14 Valid on 4 Mar 2014 till 22 Jun 2014	NA	--

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;
- Construction noise; and
- Water quality

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"> • 1-hour TSP by Real-Time Portable Dust Meter; and • 24-hour TSP by High Volume Air Sampler.
Noise	<ul style="list-style-type: none"> • $L_{eq(30min)}$ in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; and • 3 sets of consecutive $L_{eq(5min)}$ on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.
Water Quality	In-situ Measurements <ul style="list-style-type: none"> • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Water depth (m); and • Temperature (°C).
	Laboratory Analysis <ul style="list-style-type: none"> • Suspended Solids (mg/L)

3.3 MONITORING LOCATIONS

3.3.1 The designated monitoring locations as recommended in the *EM&A Manual* are shown in *Appendix D*. As the access to some of the designated monitoring locations was questionable due to safety reason or denied by the landlords, alternative locations therefore have had proposed. The proposed alternative monitoring locations has updated in the revised EM&A Programme which verified by IEC and certified by ET Leader prior submitted to EPD on 10 July 2013. *Table 3-2*, *Table 3-3* and *Table 3-4* are respectively listed the air quality, construction noise and water quality monitoring locations for the Project and a map showing these monitoring stations is presented in *Appendix E*.

Table 3-2 Impact Monitoring Stations - Air Quality

Station ID	Description	Works Area	Related to the Work Contract
AM1a*	Garden Farm, Tsung Yuen Ha Village	BCP	Contract 5
AM2	Village House near Lin Ma Hang Road	LMH to Frontier Closed Area	Contract 5, Contract 6
AM3	Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village.	LMH to Frontier Closed Area	Contract 5, Contract 6
AM4a	A village house located at about 160m east side	LMH to Frontier	Contract 6

Station ID	Description	Works Area	Related to the Work Contract
	of the original point AM4	Closed Area	
AM5	Ping Yeung Village House	Ping Yeung to Wo Keng Shan	Contract 6
AM6	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan	Contract 6
AM7a	Another village (nameless) aligns to Sha Tau Kok Road – Wo Hang Section proximity to Tai Tong Wu Village. The location is about 140m away from the original point AM7	Sha Tau Kok Road	Contract 2
AM8	Po Kat Tsai Village No. 4	Po Kat Tsai	Contract 2
AM9b#	Nam Wa Po Village House No. 80	Fanling	Contract 3

Proposal for the change of air quality monitoring location from AM9a to AM9b was submitted to EPD on 4 Nov 2013 after verified by the IEC and it was approved by EPD (EPD's ref.: (15) in EP 2/N7/A/52 Pt.10 dated 8 Nov 2013).

* Proposal for the change of air quality monitoring location from AM1 to AM1a was submitted to EPD on 24 March 2014 after verified by the IEC.

Table 3-3 Impact Monitoring Stations - Construction Noise

Station ID	Description	Works Area	Related to the Work Contract
NM1	Tsung Yuen Ha Village House No. 63	BCP	Contract 5
NM2	Village House near Lin Ma Hang Road	Lin Ma Hang to Frontier Closed Area	Contract 5, Contract 6
NM3	Ping Yeung Village House (facade facing northeast)	Ping Yeung to Wo Keng Shan	Contract 6
NM4	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan	Contract 6
NM5	Village House, Loi Tung	Sha Tau Kok Road	Contract 2, Contract 6
NM6	Tai Tong Wu Village House 2	Sha Tau Kok Rpad	Contract 2, Contract 6
NM7	Po Kat Tsai Village	Po Kat Tsai	Contract 2
NM8	Village House, Tong Hang	Fanling	Contract 2 Contract 3
NM9	Village House, Kiu Tau Village	Fanling	Contract 3
NM10	Nam Wa Po Village House No. 80	Fanling	Contract 3

Table 3-4 Impact Monitoring Stations - Water Quality

Station ID	Description	Designated / Alternative Location		Nature of the location	Related to the Work Contract
		Coordinates			
		Easting	Northing		
WM1	Downstream of Kong Yiu Channel	833679	845421	Alternative location located at upstream 51m of the designated location	Contract 5
WM1-Control	Upstream of Kong Yiu Channel	834185	845917	NA	Contract 5
WM2A	Downstream of River Ganges	834204	844471	Alternative location located at downstream 81m of the designated location	Contract 6
WM2A-Control	Upstream of River Ganges	835270	844243	Alternative location located at upstream 78m of the designated location	Contract 6
WM2B	Downstream of River Ganges	835433	843397	NA	Contract 6
WM2B-Control	Upstream of River Ganges	835835	843351	Alternative location located at downstream 31m of the	Contract 6

Station ID	Description	Designated / Alternative Location		Nature of the location	Related to the Work Contract
		Coordinates			
		Eastings	Northing		
				designated location	
WM3	Downstream of River Indus	836324	842407	NA	Contract 6
WM3-Control	Upstream of River Indus	836763	842400	Alternative location located at downstream 26m of the designated location	Contract 6
WM4	Downstream of Ma Wat Channel	833850	838338	Alternative location located at upstream 11m of the designated location	Contract 3
WM4-Control A	Kau Lung Hang Stream	834028	837695	Alternative location located at downstream 28m of the designated location	Contract 3
WM4-Control B	Upstream of Ma Wat Channel	833760	837395	Alternative location located at upstream 15m of the designated location	Contract 3

3.4 MONITORING FREQUENCY AND PERIOD

The requirements of impact monitoring are stipulated in *Sections 2.1.6, 3.1.5 and 4.1.6* of the approved *EM&A Manual* and presented as follows.

Air Quality Monitoring

3.4.1 Frequency of impact air quality monitoring is as follows:

- 1-hour TSP 3 times every six days during course of works
- 24-hour TSP Once every 6 days during course of works.

Noise Monitoring

3.4.2 One set of $L_{eq(30min)}$ as 6 consecutive $L_{eq(5min)}$ between 0700-1900 hours on normal weekdays and once every week during course of works. If construction work necessary to carry out at other time periods, i.e. restricted time period (19:00 to 07:00 the next morning and whole day on public holidays) (hereinafter referred as “the restricted hours”), 3 consecutive $L_{eq(5min)}$ measurement will depended CNP requirements to undertake. Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

Water Quality Monitoring

3.4.3 The water quality monitoring frequency shall be 3 days per week during course of works. The interval between two sets of monitoring shall not be less than 36 hours.

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve.

3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

3.5.3 All equipment to be used for air quality monitoring is listed in **Table 3-5**.

Table 3-5 Air Quality Monitoring Equipment

Equipment	Model
24-Hr TSP	

Equipment	Model
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
<i>1-Hour TSP</i>	
Portable Dust Meter	Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter

Wind Data Monitoring Equipment

- 3.5.4 According to the approved EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:
- 1) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
 - 2) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
 - 3) The wind data monitoring equipment should be re-calibrated at least once every six months.
 - 4) Wind direction should be divided into 16 sectors of 22.5 degrees each.
- 3.5.5 ET has liaised with the landlords of the successful granted HVS installation premises. However, the owners rejected to provide premises for wind data monitoring equipment installation.
- 3.5.6 Under this situation, the ET proposed alternative methods to obtain representative wind data. Meteorological information as extracted from “the Hong Kong Observatory Ta Kwu Ling Station” is alternative method to obtain representative wind data. For Ta Kwu Ling Station, it is located nearby the Project site. Moreover, this station is located at 15m above mean sea level while its anemometer is located at 13m above the existing ground which in compliance with the general setting up requirement. Furthermore, this station also can be to provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In Hong Kong of a lot development projects, weather information extracted from Hong Kong Observatory is common alternative method if weather station installation not allowed.

Noise Monitoring

- 3.5.7 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s⁻¹.
- 3.5.8 Noise monitoring equipment to be used for monitoring is listed in *Table 3-6*.

Table 3-6 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-14 or Rion NL-31
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

- 3.5.9 Sound level meters listed above comply with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications, as recommended in TM issued under the NCO. The acoustic calibrator and sound level meter to be used in the impact monitoring will be calibrated yearly.

Water Quality Monitoring

- 3.5.10 DO and water temperature should be measured in-situ by a DO/temperature meter. The

instrument should be portable and weatherproof using a DC power source. It should have a membrane electrode with automatic temperature compensation complete with a cable. The equipment should be capable of measuring:

- a DO level in the range of 0-20 mg/l and 0-200% saturation; and
- a temperature of between 0 and 45 degree Celsius.

3.5.11 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions accordingly to the APHA Standard Methods.

3.5.12 The instrument should be portable and weatherproof using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.

3.5.13 A portable, battery-operated echo sounder or tape measure will be used for the determination of water depth at each designated monitoring station as appropriate.

3.5.14 A water sampler e.g. Kahlsico Water Sampler, which is a transparent PVC cylinder with capacity not less than 2 litres, will be used for water sampling if water depth over than 0.5m. For sampling from very shallow water depths e.g. <0.5 m, water sample collection will be directly from water surface below 100mm use sampling plastic bottle to avoid inclusion of bottom sediment or humus. Moreover, Teflon/stainless steel bailer or self-made sampling buckets maybe used for water sampling. The equipment used for sampling will be depended the sampling location and depth situations.

3.5.15 Water samples for laboratory measurement of SS will be collected in high density polythene bottles, packed in ice (cooled to 4 °C without being frozen), and delivered to the laboratory in the same day as the samples were collected.

3.5.16 Analysis of suspended solids should be carried out in a HOKLAS or other accredited laboratory. Water samples of about 1L should be collected at the monitoring stations for carrying out the laboratory suspended solids determination. The SS determination work should start within 24 hours after collection of the water samples. The SS analyses should follow the *APHA Standard Methods 2540D* with Limit of Reporting of 2 mg/L.

3.5.17 Water quality monitoring equipment used in the impact monitoring is listed in **Table 3-7**. Suspended solids (SS) analysis is carried out by a local HOKLAS-accredited laboratory, namely *ALS Technichem (HK) Pty Ltd*.

Table 3-7 Water Quality Monitoring Equipment

Equipment	Model
Water Depth Detector	Eagle Sonar or tape measures
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends or teflon/stainless steel bailer or self-made sampling bucket
Thermometer & DO meter	YSI PRO20 Handheld Dissolved Oxygen Instrument
pH meter	The EcoSense [®] pH10A pen-style instrument
Turbidimeter	Hach 2100Q
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-liter plastic cool box with Ice pad

3.6 MONITORING METHODOLOGY

1-hour TSP Monitoring

3.6.1 The 1-hour TSP monitor was a brand named “Sibata LD-3B 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 is used within the valid period as follow manufacturer's Operation and Service Manual.

24-hour TSP Monitoring

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 The HVS is operated and calibrated on a regular basis in accordance with the manufacturer's instruction using Tisch Calibration Kit Model TE-5025A. Calibration would carry out in two month interval.

3.6.5 24-hour TSP is collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keep all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% RH (Relative Humidity) and 25°C, for six months prior to disposal.

Noise Monitoring

3.6.6 Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (L_{eq}) measured in decibels dB(A). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.

3.6.7 During the monitoring, all noise measurements would be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30min)}$ in six consecutive $L_{eq(5min)}$ measurements will use as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $L_{eq(15min)}$ in three consecutive $L_{eq(5min)}$ measurements would be used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.

3.6.8 Prior of noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The checking is performed before and after the noise measurement.

Water Quality

3.6.9 Water quality monitoring is conducted at the designated locations. The sampling produce with the in-situ monitoring are presented as below:

Sampling Procedure

3.6.10 A Digital Global Positioning System (GPS) is used to identify the designated monitoring stations prior to water sampling. A portable, battery-operated echo sounder is used for the determination of water depth at each station. At each station, water sample would be collected from 0.1m below water surface or the water surface to prevent the river bed sediment for stirring.

- 3.6.11 The sample container will be rinsed with a portion of the water sample. The water sample then will be transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.
- 3.6.12 Before sampling, general information such as the date and time of sampling, weather condition as well as the personnel responsible for the monitoring would be recorded on the field data sheet.
- 3.6.13 A ‘Willow’ 33-liter plastic cool box packed with ice will be used to preserve the water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box is maintained at a temperature as close to 4⁰C as possible without being frozen. Samples collected are delivered to the laboratory upon collection.

In-situ Measurement

- 3.6.14 YSI PRO20 Handheld Dissolved Oxygen Instrument is used for water in-situ measures, which automates the measurements and data logging of temperature, dissolved oxygen and dissolved oxygen saturation.
- 3.6.15 A portable EcoSense[®] pH10A pen-style instrument is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1.
- 3.6.16 A portable Hach 2100Q Turbidimeter is used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU.
- 3.6.17 All in-situ measurement equipment are calibrated by HOKLAS accredited laboratory of three month interval.

Laboratory Analysis

- 3.6.18 All water samples analyzed Suspended Solids (SS) will be carried out by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS determination using *APHA Standard Methods 2540D* as specified in the *EM&A Manual* will start within 48 hours of water sample receipt.

3.7 EQUIPMENT CALIBRATION

- 3.7.1 Calibration of the HVS is performed upon installation and thereafter at bimonthly intervals in accordance with the manufacturer’s instruction using the certified standard calibrator (TISCH Model TE-5025A). Moreover, the Calibration Kit would be calibrated annually. The calibration data are properly documented and the records are maintained by ET for future reference.
- 3.7.2 The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment would be checked before and after each monitoring event. Annually calibration with the High Volume Sampler (HVS) in same condition would be undertaken by the Laboratory.
- 3.7.3 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.
- 3.7.4 All water quality monitoring equipment would be calibrated by HOKLAS accredited laboratory of three month intervals.
- 3.7.5 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 F**.

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

- 3.8.1 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 and water quality criteria were set up, namely Action and Limit

levels are listed in *Tables 3-8, 3-9 and 3-10*.

Table 3-8 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
AM1a	265	143	500	260
AM2	268	149		
AM3	269	145		
AM4a	267	148		
AM5	268	143		
AM6	269	148		
AM7a	275	156		
AM8	269	144		
AM9b	271	151		

Table 3-9 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A) ^{Note 1 & Note 2}

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and 65 dB(A) during examination period

Note 2: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

Table 3-10 Action and Limit Levels for Water Quality

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*)4.23	(**)4.00	(*)4.74	(**)4.00	(*)4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
	Limit Level	AND 120% of upstream control station of the same day				
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
	Limit Level	AND 120% of upstream control station of the same day				
		64.9	17.3	12.4	12.9	45.5
		AND 130% of upstream control station of the same day				

Remarks:

(*) The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data

(**) The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L

(#) The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data

3.8.2 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 G**.

3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

3.9.1 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 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.

3.9.2 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, construction works under the project have been commenced in Contracts 3 and 5 and air quality monitoring was performed at 4 relevant designated locations as below:

- AM1a - Garden Farm, Tsung Yuen Ha Village;
- AM2 - Village House near Lin Ma Hang Road;
- AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village; and
- AM9b - Nam Wa Po Village House No. 80

4.1.2 The air quality monitoring schedule is presented in *Appendix H* and the monitoring results are summarized in the following sub-sections.

4.2 AIR QUALITY MONITORING RESULTS IN REPORTING MONTH

4.2.1 In the Reporting Period, a total of **60** events of 1-hour TSP and **24** events of 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 I* and the relevant graphical plots are shown in *Appendix J*.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – AM1a

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st reading	2 nd reading	3 rd reading
2-Apr-14	50	3-Apr-14	11:02	124	78	206
8-Apr-14	49	9-Apr-14	10:34	89	47	39
14-Apr-14	69	15-Apr-14	11:31	95	90	90
17-Apr-14	47	22-Apr-14	11:31	125	125	124
23-Apr-14	34	26-Apr-14	10:06	101	95	54
29-Apr-14	64	Average (Range)		99 (39 – 206)		
Average (Range)	52 (34 – 69)					

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – AM2

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st reading	2 nd reading	3 rd reading
2-Apr-14	75	3-Apr-14	11:34	72	111	159
8-Apr-14	43	9-Apr-14	11:10	33	31	40
14-Apr-14	103	15-Apr-14	11:37	99	88	88
17-Apr-14	66	22-Apr-14	11:19	103	93	96
23-Apr-14	71	26-Apr-14	10:53	98	104	81
29-Apr-14	97	Average (Range)		86 (31 - 159)		
Average (Range)	76 (43 – 103)					

Table 4-3 Summary of 24-hour and 1-hour TSP Monitoring Results – AM3

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st reading	2 nd reading	3 rd reading
2-Apr-14	56	3-Apr-14	11:39	83	163	185
8-Apr-14	32	9-Apr-14	11:10	33	31	40
14-Apr-14	65	15-Apr-14	11:45	102	94	123
17-Apr-14	43	22-Apr-14	11:15	107	105	100
23-Apr-14	42	26-Apr-14	10:45	76	68	67

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st reading	2 nd reading	3 rd reading
29-Apr-14	66	Average (Range)			92 (31 – 185)	
Average (Range)	51 (32 – 66)					

Table 4-4 Summary of 24-hour and 1-hour TSP Monitoring Results – AM9b

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)	1-hour TSP ($\mu\text{g}/\text{m}^3$)				
		Date	Start Time	1 st reading	2 nd reading	3 rd reading
2-Apr-14	37	3-Apr-14	10:21	186	132	181
8-Apr-14	29	9-Apr-14	11:26	42	25	27
14-Apr-14	69	15-Apr-14	10:54	96	83	84
17-Apr-14	26	22-Apr-14	10:35	115	96	98
23-Apr-14	53	26-Apr-14	11:08	73	75	117
29-Apr-14	60	Average (Range)			95 (25 - 186)	
Average (Range)	46 (26 – 69)					

- 4.2.2 As shown in *Tables 4-1 to 4-4*, the 24-hour and 1-hour TSP monitoring results were below the Action/ Limit Level. No Notification of Exceedances (NOE) of air quality criteria or corrective action was therefore required.
- 4.2.3 Two months interval calibration were carried out at AM1a, AM2, AM3 and AM9b in accordance with the EM&A Manual requirements. The updated calibration certificates are attached in *Appendix F*.
- 4.2.4 The meteorological data during the impact monitoring days are summarized in *Appendix K*.

5 CONSTRUCTION NOISE MONITORING

5.1 GENERAL

5.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 3 and 5 and noise monitoring was performed at 5 relevant designated locations as below:

- NM1 - Tsung Yuen Ha Village House No. 63;
- NM2 - Village House near Lin Ma Hang Road;
- NM8 - Village House, Tong Hang;
- NM9 - Village House, Kiu Tau Village; and
- NM10 - Nam Wa Po Village House No. 80

5.1.2 The noise monitoring schedule is presented in *Appendix H* 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 **25** event noise measurements were carried out at the designated locations. The sound level meter was set in 1m from the exterior of the building façade including noise monitoring locations NM1, NM2, NM8 and NM9. Therefore, no façade correction (+3 dB(A) is added according to acoustical principles and EPD guidelines. However, free-field status was performed at NM10. So, 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 I* and the relevant graphical plots are shown in *Appendix J*.

Table 5-1 Summary of Construction Noise Monitoring Results

Date	NM1 ($L_{eq30min}$)	NM2 ($L_{eq30min}$)	NM8 ($L_{eq30min}$)	NM9 ($L_{eq30min}$)	(*) NM10 ($L_{eq30min}$)
3-Apr-14	52	58	68	68	61
9-Apr-14	53	59	63	60	70
15-Apr-14	57	66	65	59	72
22-Apr-14	50	60	57	58	61
26-Apr-14	53	58	65	61	65
Limit Level	75 dB(A)				

Remarks

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

5.2.2 As shown in *Table 5-1*, the noise level measured at five (5) designated monitoring locations were below 75dB(A). Furthermore, there were no noise complaints (Action Level exceedance) received by the RE, Contractor or CEDD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.

6 WATER QUALITY MONITORING

6.1 GENERAL

6.1.1 In the Reporting Period, construction works under the project has been commenced in Contracts 3 and 5 and water quality monitoring was performed at 5 relevant designated locations as below:

- WM1 – Contract 5 working site downstream at Kong Yiu Channel;
- WM1-Control – Contract 5 working site upstream at Kong Yiu Channel;
- WM4 - Contract 3 working site Downstream of Ma Wat Channel
- WM4–Control A - Contract 3 working site Kau Lung Hang Stream
- WM4–Control B - Contract 3 working site Upstream of Ma Wat Channel

6.1.2 The water quality monitoring schedule is presented in *Appendix H*. The monitoring results are summarized in the following sub-sections.

6.2 RESULTS OF WATER QUALITY MONITORING

6.2.1 In the Reporting Period, a total of 12 sampling days were performed for water quality monitoring at Contracts 3 and 5. The key monitoring parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in *Tables 6-1 and 6-2*. Breaches of water quality monitoring criteria are shown in *Table 6-3*. Detailed monitoring database including in-situ measurements and laboratory analysis data are shown in *Appendix I* and the relevant graphical plot are shown in *Appendix J*.

Table 6-1 Summary of Water Quality Monitoring Results for Contract 3

Date	Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB
2-Apr-14	7.52	8.40	6.87	<u>136.0</u>	25.8	63.3	<u>65.5</u>	18.0	41.0
4-Apr-14	7.10	7.75	7.25	9.5	4.9	8.9	4.5	2.0	5.0
7-Apr-14	8.54	8.27	6.58	10.0	4.3	8.0	11.0	2.0	6.5
9-Apr-14	7.54	8.10	6.99	34.5	4.2	13.2	28.0	3.0	8.5
11-Apr-14	8.48	8.21	7.70	11.5	4.3	7.9	11.0	4.5	6.5
15-Apr-14	8.79	8.60	10.27	8.7	7.8	5.5	9.0	10.0	4.5
17-Apr-14	8.97	7.61	7.68	12.5	4.2	5.4	7.0	3.0	2.5
22-Apr-14	4.82	6.64	2.49	11.2	4.2	4.9	11.5	2.0	2.0
24-Apr-14	7.11	7.69	6.12	12.2	4.8	6.2	15.5	6.0	9.0
26-Apr-14	4.82	6.29	6.52	15.7	12.4	12.2	17.0	10.0	7.5
28-Apr-14	7.04	6.86	6.75	9.4	4.7	4.9	11.5	3.0	4.5
30-Apr-14	6.87	6.94	4.67	11.8	8.5	7.1	9.5	3.0	9.5

Table 6-2 Summary of Water Quality Monitoring Results for Contract 5

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
2-Apr-14	7.15	7.53	<u>941.5</u>	800.0	<u>749.5</u>	399.0
4-Apr-14	7.47	7.60	48.8	9.1	44.5	2.0
7-Apr-14	7.52	8.12	45.0	10.7	31.0	5.5
9-Apr-14	6.46	7.39	38.0	8.4	20.0	4.5
11-Apr-14	8.95	8.54	37.0	8.4	47.5	5.0
15-Apr-14	9.30	9.54	31.6	13.6	51.5	9.5
17-Apr-14	9.60	8.13	22.3	12.7	21.0	11.0
22-Apr-14	8.33	8.17	23.4	8.0	24.0	3.5
24-Apr-14	8.60	8.33	20.2	15.1	25.0	7.0
26-Apr-14	7.72	7.34	15.4	8.2	16.0	3.0
28-Apr-14	8.18	8.67	13.2	9.9	8.5	2.0
30-Apr-14	8.13	6.72	35.9	18.7	30.5	7.0

*Remark: bold and underlined indicated Limit Level exceedance.
bold and italic indicated Action Level exceedance.*

Table 6-3 Breaches of Water Quality Monitoring Criteria in Reporting Period

Location	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
WM1	0	0	0	1	0	1	0	2
WM4	0	0	0	1	0	1	0	2
No of Exceedance	0	0	0	2	0	2	0	4

6.2.2 In view of the monitoring results of Dissolved Oxygen (DO) at W1 and W4, all the measured results were higher than Action Level.

6.2.3 For turbidity and SS, no Action Level and four (4) Limit Level exceedances were recorded at WM4 and WM1 on 2 April 2014. The Notification on Exceedances (NOEs) were issued to all relevant parties upon the results confirmed. The investigation for the cause of exceedance was completed and submitted to relevant parties.

Investigation for Exceedance at WM4 on 2 April 2014

6.2.4 According to the site information provided by Chun Wo, only site cleaning and maintenance works were carried out on 2 April 2014 due to inclement weather. Photo records taken by out monitoring staff during the course of monitoring show that the muddy water was coming from upstream of the river at Nam Wah Po.

6.2.5 Having reviewed the baseline monitoring data, it was noted that there is abnormally high turbidity and suspended solids after rainfall. This implies that the condition of the river is highly influenced by rainfall due to soil runoff. This situation already existed before the commencement of the Project.

6.2.6 During regular site inspection, it was observed that Chun Wo has implemented water quality mitigation measures, such as the erection of a sand bag barrier along the edge of the river adjacent to the works area to prevent the storm runoff into the existing river.

6.2.7 In view of the subsequent monitoring results, there were no exceedances recorded on 4 and 7 April, which implied that the water quality was back to normal after rainfall. Chun Wo was reminded to fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

6.2.8 Based on the above investigation, it is considered that the exceedances were due to rainfall and not related to the works under the Project.

Investigation for Exceedance at WM1 on 2 April 2014

6.2.9 According to the site information provided by SRJV, no construction activity was carried out on 2 April 2014 due to inclement weather. It was observed during site inspection conducted by SRJV on 2 April 2014 that there was muddy water and severe flooding throughout the Kong Yiu Channel. Moreover, a large amount of refuse was flushed from upstream and accumulated at the monitoring point WM1.

6.2.10 Photo records taken by our monitoring staff during the course of monitoring also showed that muddy water was also observed at upstream control station WM1-C. Moreover, pollutant was found discharged from a pipe into the existing stream by others.

6.2.11 According to the record by Hong Kong Observatory, continuous heavy rain was recorded on 30 March 2014 to 2 April 2014. The severe flooding may be the result of the continuous heavy rain and backflow from Shenzhen River.

- 6.2.12 Having reviewed the baseline monitoring data, it was noted that abnormally high turbidity and suspended solids results were obtained after rainfall. This implies that the condition of the river is highly influenced by the rainfall due to soil runoff. This situation already existed before the commencement of the Project.
- 6.2.13 SRJV is reminded to fully implement the water mitigation measures as recommended in the implementation schedule for the environmental mitigation measures in the EM&A Manual. Based on above investigation, it is considered that the exceedances on 2 April 2014 were not related to the works under the Project.

7 WASTE MANAGEMENT

7.1 GENERAL WASTE MANAGEMENT

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

7.2 RECORDS OF WASTE QUANTITIES

7.2.1 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.

7.2.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 7-1* and *7-2* and the Monthly Summary Waste Flow Table is shown in *Appendix L*. Whenever possible, materials were reused on-site as far as practicable.

Table 7-1 Summary of Quantities of Inert C&D Materials for the Project

Type of Waste	Contract 3		Contract 5		Total Quantity for the Project
	Quantity	Disposal Location	Quantity	Disposal Location	
C&D Materials (Inert) (in '000m ³)	1.600	-	0	--	1.600
Reused in this Project (Inert) (in '000 m ³)	0.672	-	0	--	0.672
Reused in other Projects (Inert) (in '000 m ³)	0	-	0	--	0
Disposal as Public Fill (Inert) (in '000 m ³)	0.928	Tuen Mun 38	0	--	0.928

Table 7-2 Summary of Quantities of C&D Wastes for the Project

Type of Waste	Contract 3		Contract 5		Total Quantity for the Project
	Quantity	Disposal Location	Quantity	Disposal Location	
Recycled Metal (in '000m ³)	0	-	0.87	License collector	0.87
Recycled Paper / Cardboard Packing (in '000m ³)	0	-	0	--	0
Recycled Plastic (in '000m ³)	0	-	0	--	0
Chemical Wastes (in '000m ³)	0.020	License collector	0	--	0
General Refuses (in '000m ³)	0.135	NENT	0.245	NENT	0.38

8 SITE INSPECTION

8.1 REQUIREMENTS

8.1.1 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.

8.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

The Contract 3

8.2.1 In the Reporting Period, joint site inspection for Contract 3 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **7, 16, 22, and 28 April 2014**. No non-compliance was noted.

8.2.2 The findings / deficiencies of **Contract 3** that observed during the weekly site inspection are listed in **Table 8-1**.

Table 8-1 Site Observations for Contract 3

Date	Findings / Deficiencies	Follow-Up Status
7 April 2014	<ul style="list-style-type: none"> The Contractor was reminded to ensure that no obstacle is placed on the tree root at BC02 (SA14). 	<ul style="list-style-type: none"> The concerned trees at BC02 (SA12) were being felled.
16 April 2014	<ul style="list-style-type: none"> The Contractor was reminded to provide wheel washing facilities at the site entrance/exit of SA3. 	<ul style="list-style-type: none"> Wheel washing facilities has been provided to minimize dust impact.
22 April 2014	<ul style="list-style-type: none"> No adverse environmental issues observed. 	<ul style="list-style-type: none"> NA
28 April 2014	<ul style="list-style-type: none"> The Contractor should provide wheel washing facilities at the entrance/exit of SA3. The Contractor should modify the drilling method and prevent muddy water from being released into the river body near AM9b. The Contractor was reminded to prevent loss of soil and release to the public road near SA11. 	<ul style="list-style-type: none"> Wheel washing facilities has been provided to minimize dust impact. The Contractor has modified the drilling method and use form as the fluid media instead of water to avoid generation of muddy water. The loose soil has been cleaned.

8.2.3 Moreover, the general housekeeping such as tidiness of weekly and cleanliness of daily should be maintained in accordance with the PS requirements.

The Contract 5

8.2.4 In the Reporting Period, joint site inspection for Contract 5 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 17, 24, and 30 April 2014**. No non-compliance was noted.

8.2.5 The findings / deficiencies of **Contract 5** that observed during the weekly site inspection are listed in **Table 8-2**.

Table 8-2 Site Observations for Contract 5

Date	Findings / Deficiencies	Follow-Up Status
3 April 2014	<ul style="list-style-type: none"> Due to the heavy rain and thunderstorms, no major construction activities were conducted. 	<ul style="list-style-type: none"> NA

Date	Findings / Deficiencies	Follow-Up Status
10 April 2014	<ul style="list-style-type: none"> • The Contractor should ensure that the water discharging system should comply with the WPCO requirement. • The Contractor was reminded to remove construction rock materials that were left in the Kung Yui Channel. • The Contractor was reminded to provide water spraying regularly on dry haul road. 	<ul style="list-style-type: none"> • The Contractor is noted. • The construction rock materials left on the Kung Yui Channel were removed. • Regular water spraying was maintained to prevent fugitive dust on dry haul road.
17 April 2014	<ul style="list-style-type: none"> • The Contractor was reminded to clean up loose sand on resident access road near site office. The Contractor was reminded to provide continuous improvement and to ensure public road cleanliness. • An oil stain was observed on pipe jack area. The Contractor was reminded that the contaminated soil shall be cleaned up immediately and was required to report the situation. • At site exit of retaining wall (Lin Ma Hang), labour shall be provided when any vehicles are leaving the Project site. • All drip trips are required to be checked on a regular basis and the Contractor was reminded to plug the plughole of the drip tray to prevent leakage from it. • Chemical storage requirement is recommended to be included in the tool-box for staff knowledge and awareness. 	<ul style="list-style-type: none"> • Clean public access road was observed, no loose soil observed on public areas (close on 30 April 2014). • The Contractor treated and removed the contaminated soil as chemical waste. • Labour was provided for vehicle washing. • The drip trip was plugged to prevent potential leakage. • Chemical storage requirement was included in the tool-box.
24 April 2014	<ul style="list-style-type: none"> • Refer to previous observation Item 3 dated 17 April 2014, labour was provided for vehicle washing, however the Contractor was reminded to provide a noticeboard to enhance the vehicle washing system. • The contractor should review the wastewater treatment system to ensure the quality of treated water is in accordance with the license criteria. • Loose soil was observed at the discharge outlet, the Contractor was reminded to provide mitigation measures to prevent potential surface runoff into the river. • At the material storage area (LMH), stagnant water accumulated should be drained away or applied with larvicidal oil to prevent mosquitoes breeding. 	<ul style="list-style-type: none"> • Noticeboard was provided at the entrance (Close on 30 April 2014). • No obvious muddy water was discharged at the outlet. • Loose soil was removed and also covered by concrete to prevent surface runoff. • Larvicidal oil was provided to prevent mosquitoes from breeding.
30 April 2014	<ul style="list-style-type: none"> • The Contractor was reminded to check and maintain the mitigation measure 	<ul style="list-style-type: none"> • The Contractor was noted.

Date	Findings / Deficiencies	Follow-Up Status
	for the prevention of surface runoff into river. • The Contractor was reminded to improve the site staff environmental awareness and knowledge, in particular the vehicle washing management site.	• The Contractor was noted.

8.2.6 Moreover, the general housekeeping such as tidiness of weekly and cleanliness of daily should be maintained in accordance with the PS requirements. Addition, regular basis cleaning the wheel washing bay is reminded. Furthermore, works at Bridge J Area, tree protected fences should be provided to protect all retained tree. Moreover, the Contractor was reminded setting up storage area as for all chemical waste dispose on site.

Other Contracts

8.2.7 Since the construction works at the Contract 2 and Contract 4 and Contract 6 are not yet commenced, no site inspection is performed for these Contracts.

9 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

9.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

Contract 3 and 5

- 9.1.1 In the Reporting Period, no complaint, summons and prosecution under the EM&A Programme was lodged for Contracts 5. However, one environmental complaint was received for Contract 3 on 16 April 2014.
- 9.1.2 Village representatives (VRs) of Yuen Leng Village complained wheels of some construction vehicles leaving the site of Chun Wo were not thoroughly washed.
- 9.1.3 Weekly site inspection was carried out by the ET on 22 April 2014 subsequently to check the environmental performance of the construction site as well as the complaint regarding the wheel washing facilities. It was observed that wheel washing facilities including wheel washing bays or water jets were provided at all gates along the Tai Wo Service Road East, and adjacent roads to the gates. Watering at site exit/ entrance was observed and the cleanliness was satisfactory.
- 9.1.4 Immediate actions were taken out by Chun Wo and the following arrangements have been made for each gate:
- Chun Wo has provided wheel washing facilities and deployed necessary man powers to perform the wheel washing;
 - The wheel washing bay will be desilted by specialist contractor regularly to maintain the wheel washing performance;
 - Water spraying was arranged to wash the public road regularly;
 - Road Sweeping was arranged to sweep the public road regularly to maintain the tidiness of the road
- 9.1.5 Regard to complaint, Chun Wo will tighten up the wheel washing operation to maintain the cleanliness of public roads in the future. Also, ET will regular check for the cleanliness of the site' exit/ entrance during weekly environmental site inspection.
- 9.1.6 The statistical summary table of environmental complaint is presented in *Tables 9-1, 9-2 and 9-3*.

Table 9-1 Statistical Summary of Environmental Complaints

Reporting Period	Contract No	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
06 Nov 2013 - 31 Mar 2014	Contract 3	0	0	NA
16 Aug 2013 - 31 Mar 2014	Contract 5	1	1	(1) Construction Dust
1 – 30 Apr 2014	Contract 3	1	1	(1) Construction Dust
	Contract 5	0	1	NA

Table 9-2 Statistical Summary of Environmental Summons

Reporting Period	Contract No	Environmental Summons Statistics		
		Frequency	Cumulative	Complaint Nature
06 Nov 2013 - 31 Mar 2014	Contract 3	0	0	NA
16 Aug 2013 - 31 Mar 2014	Contract 5	0	0	NA
1 – 30 Apr 2014	Contract 3	0	0	NA
	Contract 5	0	0	NA

Table 9-3 Statistical Summary of Environmental Prosecution

Reporting Period	Contract No	Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
06 Nov 2013 - 31 Mar 2014	Contract 3	0	0	NA
16 Aug 2013 - 31 Mar 2014	Contract 5	0	0	NA
1 – 30 Apr 2014	Contract 3	0	0	NA
	Contract 5	0	0	NA

The Other Contracts

- 9.1.7 Since the construction works at the Contract 2, Contract 4 and Contract 6 are not yet commenced, no environmental complaint, summons and prosecution under the EM&A Programme are registered in the Reporting Period.

10 IMPLEMENTATION STATUS OF MITIGATION MEASURES

10.1 GENERAL REQUIREMENTS

- 10.1.1 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 M*.
- 10.1.2 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 by Contracts 3 and 5 in this Reporting Period are summarized in *Table 10-1*.

Table 10-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	<ul style="list-style-type: none"> Wastewater to be treated by the filtration systems i.e. sedimentation tank or AquaSed before to discharge.
Air Quality	<ul style="list-style-type: none"> Maintain damp / wet surface on access road Keep slow speed in the sites All vehicles must use wheel washing facility before off site Sprayed water during breaking works A cleaning truck was regularly performed on the public road to prevent fugitive dust emission
Noise	<ul style="list-style-type: none"> Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. Keep good maintenance of plants Place noisy plants away from residence or school Provide noise barriers or hoarding to enclose the noisy plants or works Shut down the plants when not in used.
Waste and Chemical Management	<ul style="list-style-type: none"> On-site sorting prior to disposal Follow requirements and procedures of the “Trip-ticket System” Predict required quantity of concrete accurately Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	<ul style="list-style-type: none"> The site was generally kept tidy and clean.

10.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

- 10.2.1 Construction activities as undertaken in the coming month for the Project lists below:

Contract 3

- Cable detection and trial trenches
- Pre-drilling works and piling works
- Tree felling and transplanting works
- Pile cap works
- Waterworks
- Slope upgrading works
- Noise barrier footing
- Laying of concrete pipe works
- Bored pile wall construction
- Pier Construction
- Piling works for Bridge E
- Site formation demolition
- Demolition
- Diversion of DN600 & DN1400

Contract 5

- Construction of retaining wall No.1
- Construction of Village House at RS4
- Piling works at footbridge
- Construction of Western pedestrian subway at LMH
- Pipe jacking across Kong Yuen River
- Transplantation, Pruning/felling of existing tree
- Drainage works at proposed and existing LMH Road
- Formation Works at BCP Area
- Construction of Depressed Road at BCP3
- Filing Works for ArcHD permanent office
- Construction of substructure and superstructure of Bridge J
- Water works at proposed and existing LMH Road
- Water works at proposed and existing LMH Road
- Construction of footbridge and staircase at RS4
- Construction of Eastern pedestrian subway and pump room at LMH.

10.3 KEY ISSUES FOR THE COMING MONTH

10.3.1 Key issues to be considered in the coming month for Contracts 3 and 5 include:

- Implementation of control measures for rainstorm;
- Regular clearance of stagnant water during wet season;
- 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

10.3.2 For other Contracts, no environmental issue is considered due to these contracts still yet to commence.

11 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

- 11.1.1 This is 9th monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 30 April 2014.
- 11.1.2 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.
- 11.1.3 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.
- 11.1.4 For water quality monitoring, no Action Limit and four (4) Limit Level exceedances of the parameters turbidity and SS were recorded at WM4 and WM1. The Notification on Exceedances (NOEs) was issued to all relevant parties. Investigation findings concluded that that the exceedances on 2 April 2014 were not due to the Project works.
- 11.1.5 In the Reporting Period, one environmental complaint was received for Contract 3 on 16 April 2014 regarding to the construction dust. Measures have been taken to ensure regular wheel washing of vehicles leaving the construction sites, to ensure the maintenance of the wheel washing facilities, and the maintenance of the cleanliness of the public roads. Investigation report has been submitted to relevant parties.
- 11.1.6 No environmental complaint, notification of summons or successful prosecution under the EM&A Programme of the Liantang/Heung Yuen Wai Boundary Control Point and Associated Works was received in the reporting period for Contract 5.
- 11.1.7 During the Reporting Period, four (4) and five (5) events of Joint site inspection by the RE, IEC, ET and Main-contractor were carried out for Contract 3 and Contract 5 respectively in accordance with the EM&A Manual stipulation. No non-compliance observed during the site inspection. During dry season, air quality mitigation measures such as increase the water spray frequency (at least eight times per day) in haul road to prevent construction dust emission is reminded. The environmental performance of the Project of Contracts 3 and 5 was therefore considered as satisfactory.

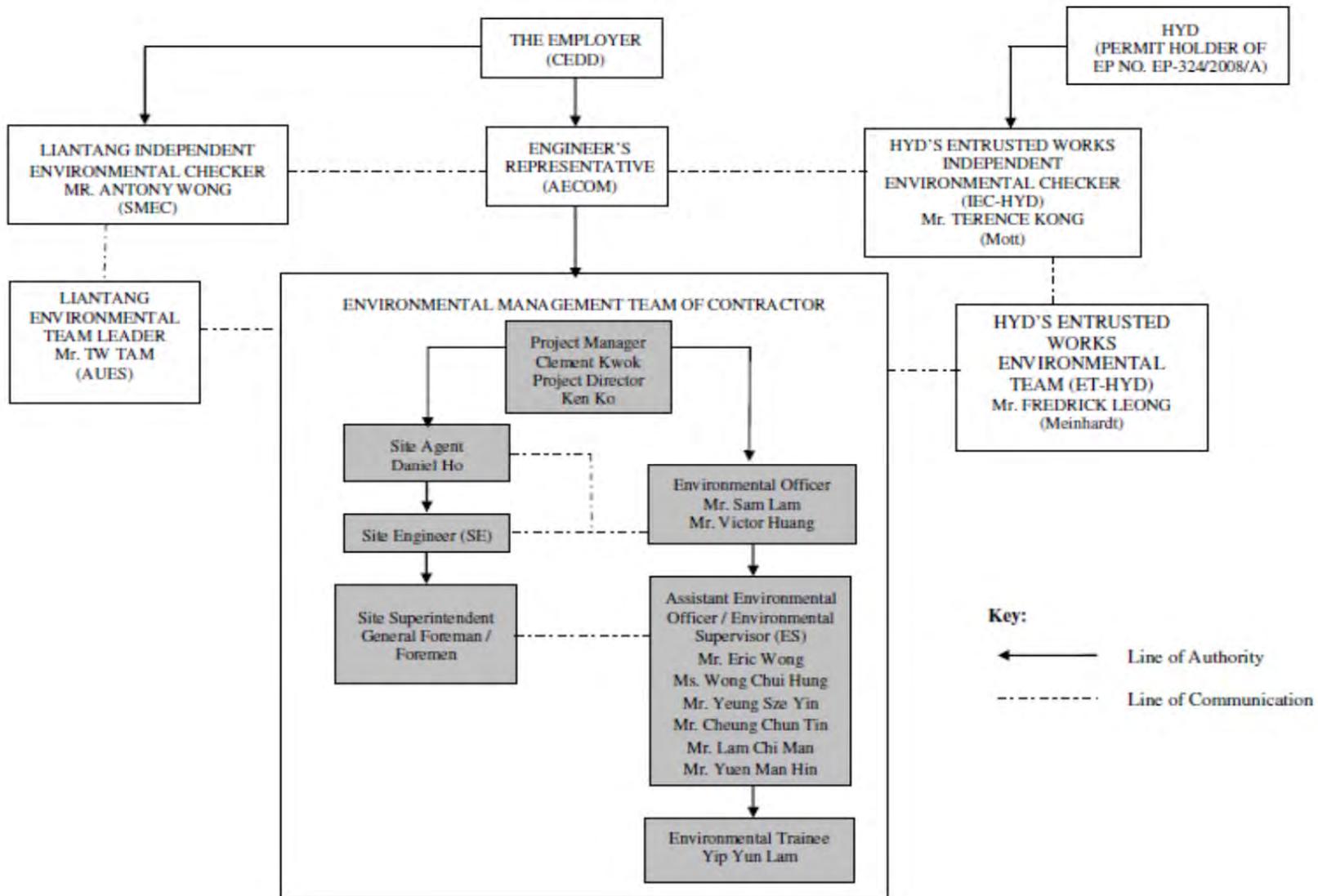
11.2 RECOMMENDATIONS

- 11.2.1 During wet season, muddy water or other water pollutants from site surface runoff into Kong Yiu Channel and Ma Wat Channel will be key environment issue. Water quality mitigation measures to prevent surface runoff into nearby water bodies should be paid on special attention.
- 11.2.2 During dry season, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.
- 11.2.3 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.

Appendix A
Layout plan of the Project

Appendix B

Organization Chart



Environmental Management Organization for Contract 3 - CV/2012/09

Contact Details of Key Personnel for Contract 3 - CV/2012/09

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
AECOM	Engineer's Representative	Alan Lee	2472 0212	2472 0132
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
Chun Wo	Project Director	Ken Ko	3758 8735	2638 7077
Chun Wo	Project Manager	Clement Kwok	2638 6136	2638 7077
Chun Wo	Site Agent	Daniel Ho	2638 6144	2638 7077
Chun Wo	Environmental Officer	Victor Huang	2638 6115	2638 7077
Chun Wo	Environmental Supervisor	Wong Chui Hing	2638 6125	2638 7077
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:

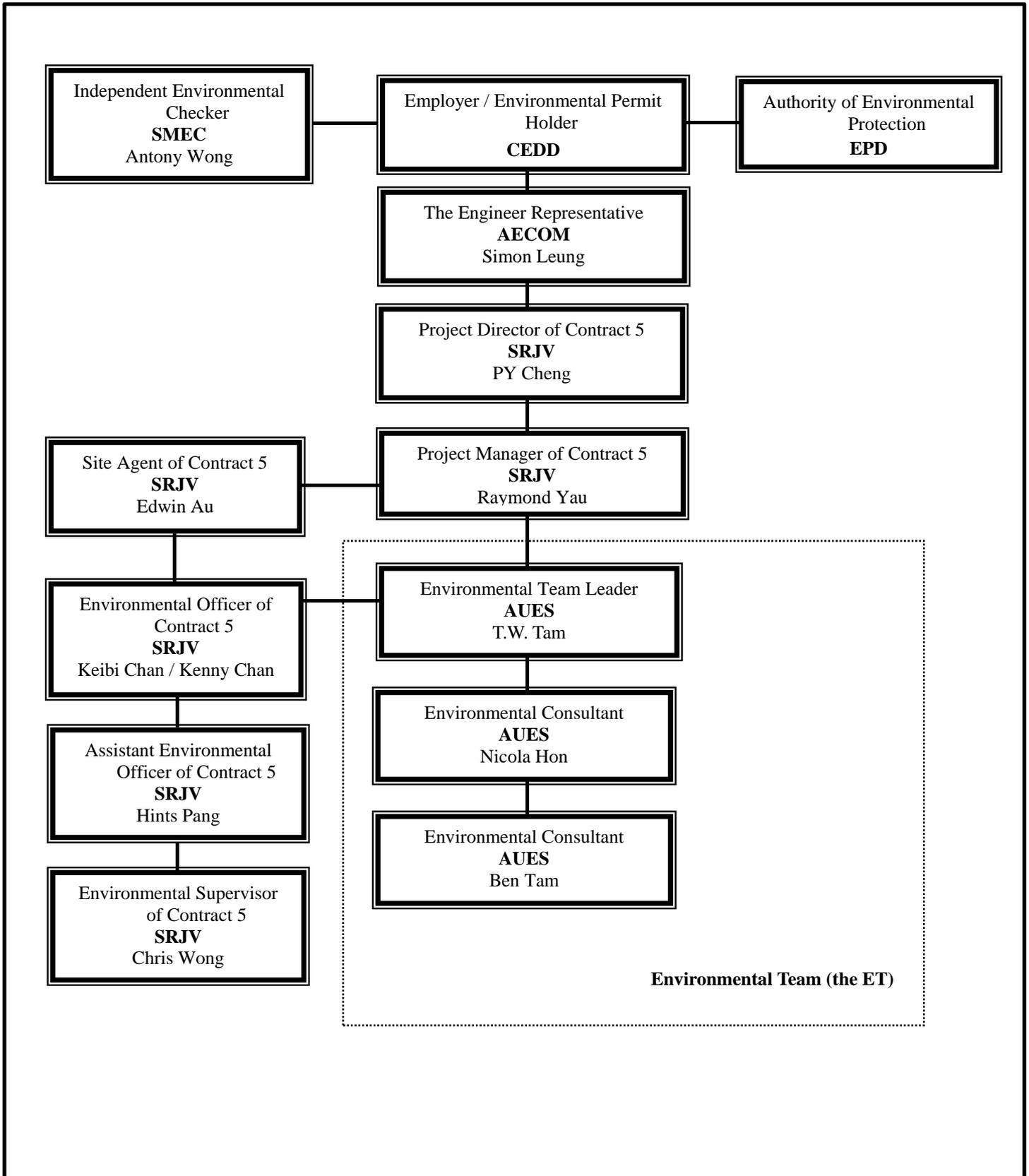
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

Chun Wo (Main Contractor) – Chun Wo Construction Ltd.

SMEC (IEC) – SMEC Asia Limited

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



Environmental Management Organization – CV/2013/03

Contact Details of Key Personnel for Contract 5 - CV/2013/03

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
AECOM	Engineer's Representative	Simon Leung	2674 2273	3922 9797
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
SRJV	Project Director	PY Cheng	9023 4821	2403 1162
SRJV	Contract Manager	Raymond Yu	9041 1620	2403 1162
SRJV	Project Manager	Aaron Mak	9464 7095	2403 1162
SRJV	Site Agent	Edwin Au	9208 7329	2403 1162
SRJV	Environmental Officer	Chan Ng jhon-keibi / Kenny Chan	6090 0183	2403 1162
SRJV	Environmental Supervisor	Chris Wong	6387 4683	2403 1162
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.

SRJV (Main Contractor) – Sang Hing Civil – Richwell Machinery JV

SMEC (IEC) – SMEC Asia Limited

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

Appendix C

Master Construction Programme

Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014				
							Apr	May	Jun	Jul	Aug
3-Month Rolling Programme 2014-04-21											
Key Dates (Contractual)											
KD-0010	Commencement of Works	0	0	31-Jul-13 A							
Key Dates (Forecast)											
KD-1005	KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests	0	0		21-Jun-14	54	◆ KD6B: Section 7 - All specified geotechnical fieldworks and				
Possession of Site											
PS-P10	Possession of Portion FH10	0	0	02-Apr-14 A			◆ Possession of Portion FH10				
PS-P11	Possession of Portion FH11	0	0	02-Apr-14 A			◆ Possession of Portion FH11				
PS-P04	Possession of Portion FH4	0	0	21-Apr-14*		1	◆ Possession of Portion FH4				
PS-P05	Possession of Portion FH5	0	0	21-Apr-14*		185	◆ Possession of Portion FH5				
PS-P09	Possession of Portion FH9	0	0	21-Apr-14*		716	◆ Possession of Portion FH9				
PS-P06	Possession of Portion FH6	0	0	22-Apr-14*		-43	◆ Possession of Portion FH6				
PS-P21	Construction of Temporary Cycle Track	28	28	08-May-14	10-Jun-14	-19	Construction of Temporary Cycle Track				
Major Procurement & Delivery											
Water Supply Pipeworks											
MM-1020	DN2200 MS pipe and pipe fittings	90	7	29-Oct-13 A	29-Apr-14	249	DN2200 MS pipe and pipe fittings				
MM-1030	DN2300 MS pipe and pipe fittings	90	7	29-Oct-13 A	29-Apr-14	226	DN2300 MS pipe and pipe fittings				
MM-1050	DN450 DI pipe and pipe fittings	30	30	22-Apr-14	28-May-14	99	DN450 DI pipe and pipe fittings				
Precast Bridge Segment Lifting Frames and Precast Yard											
MM-2000	Design and Submission of lifting frame	160	12	23-Aug-13 A	07-May-14	17	Design and Submission of lifting frame				
MM-2010	Approval of design for lifting frame	12	12	08-May-14	21-May-14	17	Approval of design for lifting frame				
MM-2020	Procurement and fabrication of lifting frame	90	90	22-May-14	05-Sep-14	17					
Design and Submissions											
Statutory Approval											
PRE-1010	Submission & approval of ADMS plan within MTR East Rail Line Protection Zone - MTRCL	30	6	17-Mar-14 A	28-Apr-14	21	Submission & approval of ADMS plan within MTR East Rail Line Protection Zone - MTRCL				
Method Statement and Design (Major) Approved by AECOM											
PRE-2000	Submission of E&M design for the re-provisioned WSD Valve Control House	60	38	20-Jan-14 A	07-Jun-14	36	Submission of E&M design for the re-provisioned WSD Valve Control House				
PRE-2020	Submission of noise barrier design for absorptive panels, transparent panels and as	60	60	28-Apr-14	10-Jul-14	350	Submission of noise barrier design for absorptive panels, transparent panels and as				
Contractor's Alternative Design (AD) Submission & Approval											
PRE-4170	Foundation Design Package G (AA9, AA13, AA18, AB6-AB7, AC5, AC11-AC12, AD	48	0	28-Jan-14 A	16-Apr-14 A		Foundation Design Package G (AA9, AA13, AA18, AB6-AB7, AC5, AC11-AC12, AD8-AD9)				
PRE-4190B	Pile Cap Design Package C (AA9, AA13, AA18, AB6-AB7, AC5, AC11, AC12, AD5-AD6, AD8-AD11)	48	0	28-Jan-14 A	16-Apr-14 A		Pile Cap Design Package C (AA9, AA13, AA18, AB6-AB7, AC5, AC11, AC12, AD5-AD6, AD8-AD11)				
PRE-4210	Pier Design Package A (AA2-AA5, AA10-AA13, AB2-AB6, AC2-AC5, AD9-AD13)	46	20	21-Nov-13 A	16-May-14	42	Pier Design Package A (AA2-AA5, AA10-AA13, AB2-AB6, AC2-AC5, AD9-AD13)				
PRE-4220	Pier Design Package B (AB7-AB11)	43	43	22-Apr-14*	13-Jun-14	88	Pier Design Package B (AB7-AB11)				
PRE-4240	Pier Design Package D (AA6-AA9, AA14-AA18, AD6-AD8)	46	46	29-Apr-14*	24-Jun-14	14	Pier Design Package D (AA6-AA9, AA14-AA18, AD6-AD8)				
PRE-4260	Portal Beam Design Package (AB9/AD11, AC11/AD8, AB7/AD9, AB8/AD10, AD3)	54	54	22-Apr-14*	26-Jun-14	122	Portal Beam Design Package (AB9/AD11, AC11/AD8, AB7/AD9, AB8/AD10, AD3)				
PRE-4230	Pier Design Package C (AD2-AD5)	56	56	22-Apr-14*	28-Jun-14	30	Pier Design Package C (AD2-AD5)				
PRE-4310	Superstructure Design Package A (AA6-AA18)	60	60	22-Apr-14*	04-Jul-14	206	Superstructure Design Package A (AA6-AA18)				
PRE-4320	Superstructure Design Package B (AB1-AB6, AC1-AC5, AD1-AD5)	64	64	29-Apr-14*	16-Jul-14	232	Superstructure Design Package B (AB1-AB6, AC1-AC5, AD1-AD5)				
PRE-4330	Superstructure Design Package C (AA1-AA5, AB7-AB12, AD6-AD8)	64	64	30-Apr-14*	17-Jul-14	214	Superstructure Design Package C (AA1-AA5, AB7-AB12, AD6-AD8)				
PRE-4340	Superstructure Design Package D (AC6-AC11, AD9-AD14)	62	62	14-May-14*	26-Jul-14	114	Superstructure Design Package D (AC6-AC11, AD9-AD14)				
PRE-4250	Pier Design Package E (AC6-AC11)	80	80	04-Jun-14*	05-Sep-14	2	Pier Design Package E (AC6-AC11)				
Temporary Traffic Arrangement (TTA) Submission and Approval											
TTA for Tai Wo Service Road West											
PRE-6140	TTA submission & approval - Scheme W3 (for Construction of FL/RW2)	40	40	26-May-14	12-Jul-14	107	TTA submission & approval - Scheme W3 (for Construction of FL/RW2)				



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CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3MPR009

Page 1 of 6

24-Apr-14

3MPR003 - 3-Month Rolling Programme updated to 2014-04-21

Date	Revision	Checked	Approved
24-Apr-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Apr	May	Jun	Jul	Aug	
TTA for Tai Wo Service Road East												
PRE-6200	TTA submission & approval - Scheme E1 (for Roundabout A)	60	60	23-Jun-14*	01-Sep-14	58						
Section IA & IB - Fanling Highway Widening (KD-1 & KD-2)												
Fanling Highway South Portion between CH6935 and CH7470												
Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZ2)												
At-Grade Roadworks (195m)												
FHW-1100	Site Formation, Preparation Works & Tree Transplant	65	54	12-Aug-13 A	26-Jun-14	0						
FHW-1150*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m d)	182	134	20-Feb-14 A	30-Sep-14	865						
FHW-1110*	Pipe Laying - DN1200 Watermains (CHC) across Fanling Highway (total 80m for 2	265	265	22-Apr-14	14-Mar-15	63						
FHW-1140	Noise Barrier NB70, NB6 and NB7 - Footing adjacent to SB lane (200m)	320	304	29-Mar-14 A	05-May-15	25						
Fanling Highway Zone 2 between CH7130 and CH7290												
At-Grade Roadworks (160m)												
FHW-2100*	Pipe Laying - Twin DN1400 Watermains (CHE & F) along Fanling Highway (44m lo	80	80	22-Apr-14	28-Jul-14	34						
FHW-2110	Noise Barrier NB71 - Footing adjacent to SB lane (90m)	150	149	17-Apr-14 A	20-Oct-14	21						
Fanling Highway Zone 3 between CH7290 and CH7380												
Box Culvert Extension - ID4												
ID4-3060A	Bay 1 - Wall and Top Slab	13	0	13-Mar-14 A	26-Mar-14 A							
At-Grade Roadworks (90m)												
FHW-3110	Filing Works & Reinstatement	30	10	27-Mar-14 A	03-May-14	104						
FHW-3130	Road Formation for the Remaining 1 lane of Permanent Road (Eastern Side)	45	45	05-May-14	27-Jun-14	112						
FHW-3100	Road Formation with 2 lanes width of Permanent Road (Eastern Side)	35	35	17-Jun-14	28-Jul-14	-110						
FHW-3140	Noise Barrier NB71 - Mini-Piling adjacent to SB lane (36nos)	85	85	05-May-14	14-Aug-14	159						
Fanling Highway Zone 4 between CH7380 and CH7470												
At-Grade Roadworks (90m)												
FHW-4100	Road Formation with 2 lanes width of Permanent Road (Eastern Side)	35	35	05-May-14*	16-Jun-14	-10						
FHW-4120	Road Formation for the Remaining 1 lane of Permanent Road (Eastern Side)	45	45	28-Jun-14	20-Aug-14	112						
FHW-4110*	Pipe Laying - Twin DN1400 Watermains (CHE & CHF) along Fanling Highway (90m	140	140	22-Apr-14	09-Oct-14	59						
Fanling Highway North Portion between CH7470 and CH7925												
Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)												
At-Grade Road Works (130m)												
FHW-5100	Demolition of Existing Structure and Site Clearance	45	45	22-Apr-14	16-Jun-14	19						
FHW-5110*	Pipe Laying & Connection - Twin DN1400 Watermains (CHE & CHG) adjacent to e)	186	186	17-Jun-14	27-Jan-15	19						
Fanling Highway Zone 7 between CH7660 and CH7925												
At-Grade Roadworks (265m)												
FHW-7100	Site Formation, Preparation Works & Tree Transplant	127	20	30-Aug-13 A	16-May-14	14						
FHW-7110	Road Formation and Pavement (Eastern Side)	160	160	22-Apr-14*	01-Nov-14	4						
Section II - Remainder of the Works (KD-3)												
WSD Works												
DN600 Water Mains (CHB)												
WB-1070	Pipe Laying - CHB 635 - 700 (DN600) near Realigned TWSR East (TWSRE: CH3&	60	60	22-Apr-14	04-Jul-14	361						
WB-0100	Temporary Local Diversion for DN600 near Abutment AD1	100	100	22-Apr-14*	20-Aug-14	443						
WB-1060	Pipe Laying - CHB 538 - 635 (DN600) near Realigned TWSR East (TWSRE: CH27	109	109	05-Jul-14	12-Nov-14	361						
DN1200 Water Mains (CHC)												
WC-1020A	Implementation of TTA - Scheme W1	0	0	22-Apr-14*		63						



俊和建築工程有限公司
CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

- Actual Work
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- Project Baseline Bar

CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

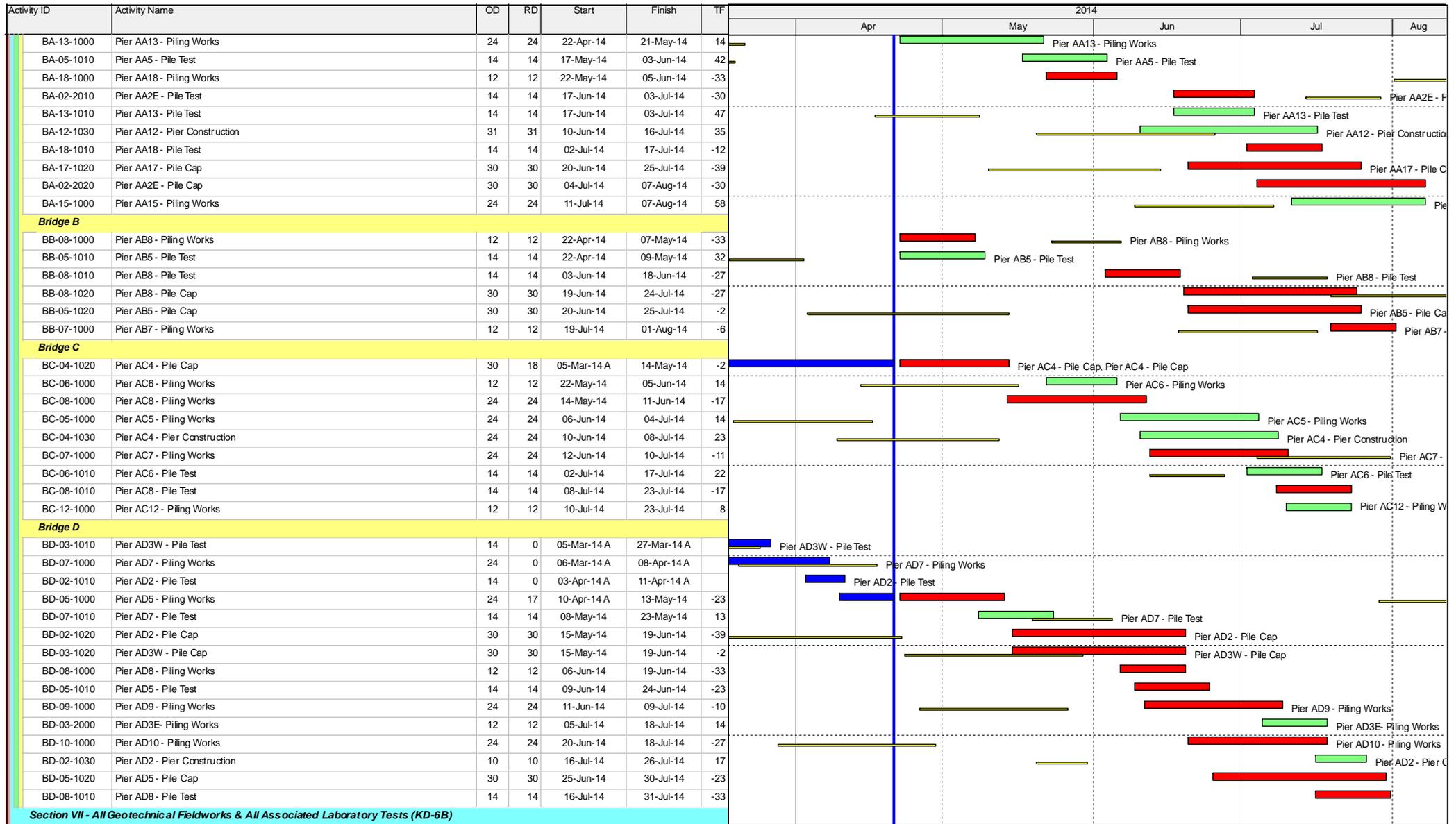
3-Month Rolling Programme

3MPR009 Page 2 of 6 24-Apr-14

3MPR003 - 3-Month Rolling Programme updated to 2014-04-21			
Date	Revision	Checked	Approved
24-Apr-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Apr	May	Jun	Jul	Aug	
TWSRW-5010	Noise Barrier NB2 - Footing and Retaining Structure adjacent to Realigned TWSR 1	85	85	22-Apr-14	02-Aug-14	190						Noise Bar
TWSRW-5050C	Construction of Bored Pile Wall (8 no. Piles) (conflict with overhead cable)	152	152	19-Jun-14	17-Dec-14	1						
TWSRW Zone 6 between CH520 and CH530												
Box Culvert Extension - BC01												
TWSRW-6050	Bay 2 - Wall and Top Slab	11	0	19-Mar-14 A	25-Mar-14 A							Bay 2 - Wall and Top Slab
Construction of Retaining Structures												
TWSRW-6070	Preparation works for implementation of TTA Scheme	25	25	13-Jun-14	12-Jul-14	22						Prep
TWSRW-6060	Construction of Retaining Wall (FL/RW2)	40	40	14-Jul-14	28-Aug-14	22						
TWSRW-6080*	Temporary Diversion of DN2200 water mains at existing TW SRW	211	211	03-Jun-14	30-Dec-14	1705						
TWSRW Zone 7 between CH530 and CH640												
Construction of Retaining Structures												
TWSRW-7010	Slope Cutting and Drainage Channel	80	42	06-Dec-13 A	12-Jun-14	4						Slope Cutting and Drainage Channel, Slope Cutting and Drainage C
TWSRW-7020	Installation of Soil Nail (129 nos)	75	75	05-Jun-14	01-Sep-14	4						
Remainder of the Works												
TWSRW-9020*	Utilities Diversion in Area 2 (along Re-aligned TWSRW CH 280 - CH315)	187	187	19-Jul-14	21-Jan-15	281						
Stage N4A & N4B - Realignment of Tai Wo Service Road East (KD-13 & KD-14)												
TWSRE Zone 2 between CH270 and CH380												
At-Grade Roadworks												
TWSRE-2020*	Pipe laying - DN600, DN1400 & DN1200 Watermains (CHB, CHK & CHC) along R	302	302	05-Jul-14	15-Jul-15	168						
TWSRE Zone 3 between CH380 and CH456												
At-Grade Roadworks												
TWSRE-3020*	Pipe Laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSF	78	78	22-Apr-14	25-Jul-14	361						
Roundabout A, Slip Road and Access Road												
TWSRE-4000	Site Formation, Preparation Works & Tree Transplant	65	65	22-Apr-14	10-Jul-14	103						Site Formation, Preparation Works
TWSRE-4010B	Filling Works for Slip Road Y	120	87	10-Mar-14 A	05-Aug-14	81						
Stage 1C - Viaduct Structure & TCSS Civil Provisions (KD-9)												
Preliminaries												
B-3020	Plant Mobilization for Piling Rig (Plant 3)	7	0	07-Apr-14 A	09-Apr-14 A							Plant Mobilization for Piling Rig (Plant 3)
B-1000B	ADMS Installation inside MTRCL Railway (for pier AC5, AC6, AC7)	3	3	29-Apr-14	02-May-14	21						ADMS Installation inside MTRCL Railway (for pier AC5, AC6, AC7)
B-1010B	Demonstration to MTRCL (for pier AC5, AC6, AC7)	1	1	03-May-14	03-May-14	21						Demonstration to MTRCL (for pier AC5, AC6, AC7)
B-2010	CLP LV Cable Diversion at Area D	12	12	22-Apr-14	07-May-14	54						CLP LV Cable Diversion at Area D
B-2050	Completion of CLP LV Cable Diversion at Area D	0	0		07-May-14	54						Completion of CLP LV Cable Diversion at Area D
B-1020B	Base-line Monitoring (for pier AC5, AC6, AC7)	7	7	05-May-14	13-May-14	21						Base-line Monitoring (for pier AC5, AC6, AC7)
B-3060	Plant Mobilization for Piling Rig (Plant 4)	7	7	03-Jun-14*	10-Jun-14	-10						Plant Mobilization for Piling Rig (Plant 4)
B-1000A	ADMS Installation inside MTRCL Railway (for pier AD11, AD12, AB10)	7	7	02-Jul-14*	09-Jul-14	41						ADMS Installation inside MTRCL Rai
B-1010A	Demonstration to MTRCL (for pier AD11, AD12, AB10)	1	1	10-Jul-14	10-Jul-14	41						Demonstration to MTRCL (for pier /
B-1020A	Base-line Monitoring (for pier AD11, AD12, AB10)	28	28	11-Jul-14	12-Aug-14	41						
Foundation & Pier Construction												
Bridge A												
BA-17-1000	Pier AA17 - Piling Works	24	0	01-Mar-14 A	01-Apr-14 A							Pier AA17 - Piling Works
BA-05-1000	Pier AA5 - Piling Works	12	0	12-Mar-14 A	17-Apr-14 A							Pier AA5 - Piling Works
BA-12-1020	Pier AA12 - Pile Cap	30	18	05-Mar-14 A	14-May-14	-39						Pier AA12 - Pile Cap, Pier AA12 - Pile Cap
BA-17-1010	Pier AA17 - Pile Test	14	14	30-Apr-14	17-May-14	-12						Pier AA17 - Pile Test
BA-02-2000	Pier AA2E - Piling Works	12	12	08-May-14	21-May-14	-33						Pier AA2E - Piling Works

3MPR003 - 3-Month Rolling Programme updated to 2014-04-21			
Date	Revision	Checked	Approved
24-Apr-14	Rev.1	SL	



Section VII - All Geotechnical Fieldworks & All Associated Laboratory Tests (KD-6B)



- █ Actual Work
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CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3MPR003 - 3-Month Rolling Programme updated to 2014-04-21

Date	Revision	Checked	Approved
24-Apr-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Apr	May	Jun	Jul	Aug	
Installation of Geotechnical Instruments / Ground Investigation												
S7-3030	Installation of Groundwater Instrument at Drillhole No. ADH7	12	12	22-Apr-14	07-May-14	83						
S7-1030	Ground Investigation Works - Drillhole No. VDH1	15	15	22-Apr-14	10-May-14	45						
S7-1050	Ground Investigation Works - Drillhole No. VDH3	15	15	22-Apr-14	10-May-14	45						
S7-1060	Ground Investigation Works - Drillhole No. VDH4	15	15	22-Apr-14	10-May-14	45						
S7-1070	Ground Investigation Works - Drillhole No. VDH5	15	15	22-Apr-14	10-May-14	45						
S7-1130	Ground Investigation Works - Drillhole No. VDH11	15	15	22-Apr-14	10-May-14	80						
Submission of Laboratory Tests												
S7-5000	Testing & Submission of Laboratory Test Report (Drillhole No. BDH1)	35	10	28-Dec-13 A	03-May-14	85						
S7-5010	Testing & Submission of Laboratory Test Report (Drillhole No. BDH2)	35	10	25-Feb-14 A	03-May-14	85						
S7-5020	Testing & Submission of Laboratory Test Report (Drillhole No. BDH3)	35	10	28-Feb-14 A	03-May-14	85						
S7-5040	Testing & Submission of Laboratory Test Report (Drillhole No. VDH2)	35	10	11-Mar-14 A	03-May-14	85						
S7-5100	Testing & Submission of Laboratory Test Report (Drillhole No. VDH8)	35	10	14-Mar-14 A	03-May-14	85						
S7-5110	Testing & Submission of Laboratory Test Report (Drillhole No. VDH9)	35	10	07-Mar-14 A	03-May-14	85						
S7-5120	Testing & Submission of Laboratory Test Report (Drillhole No. VDH10)	35	10	21-Feb-14 A	03-May-14	85						
S7-5030	Testing & Submission of Laboratory Test Report (Drillhole No. VDH1)	35	35	12-May-14	21-Jun-14	45						
S7-5050	Testing & Submission of Laboratory Test Report (Drillhole No. VDH3)	35	35	12-May-14	21-Jun-14	45						
S7-5060	Testing & Submission of Laboratory Test Report (Drillhole No. VDH4)	35	35	12-May-14	21-Jun-14	45						
S7-5070	Testing & Submission of Laboratory Test Report (Drillhole No. VDH5)	35	35	12-May-14	21-Jun-14	45						

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Date	Revision	Checked	Approved
24-Apr-14	Rev.1	SL	

Contract 5

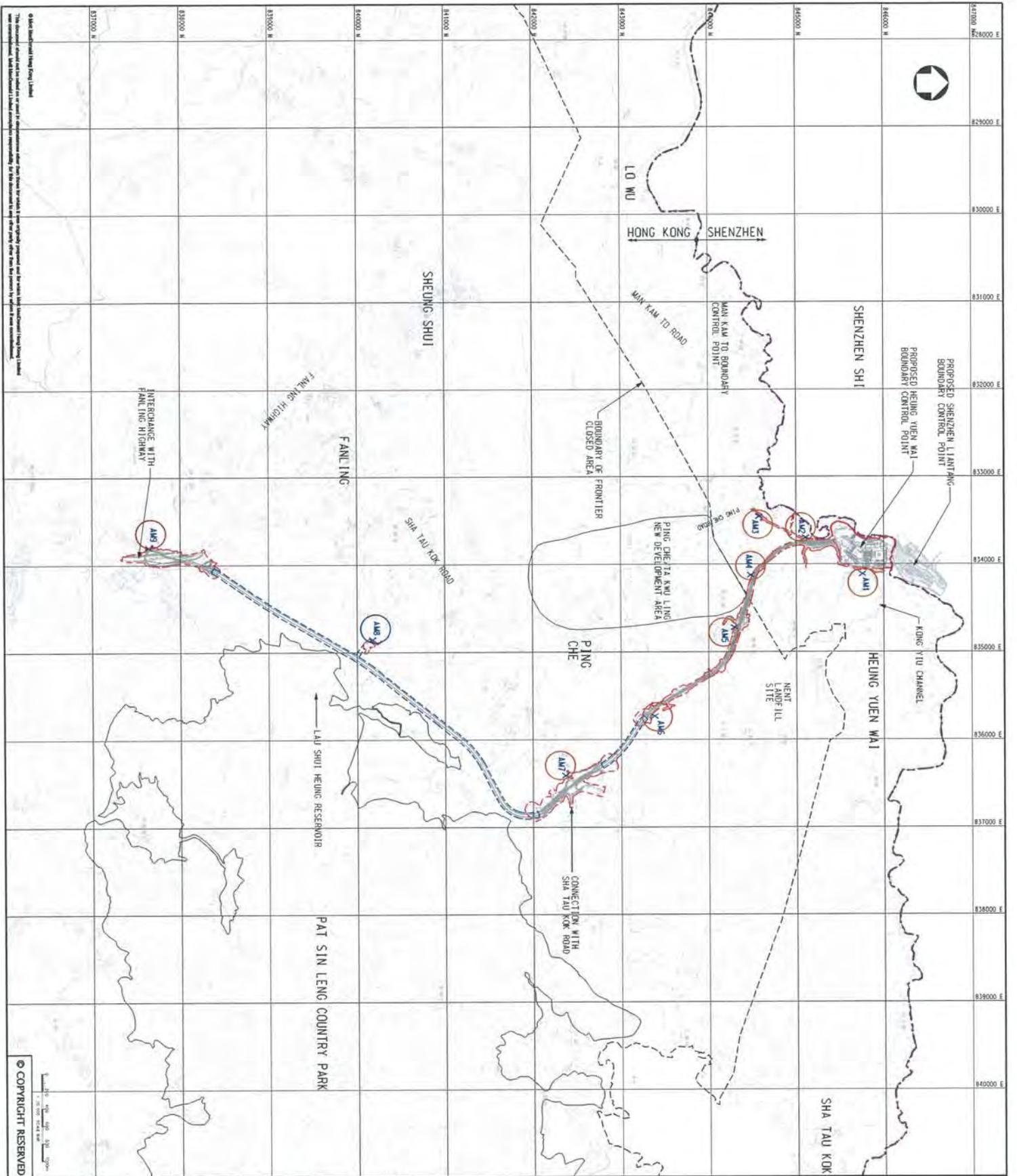
ID	WBS	Task Name	Duration	Start	Finish	% Complete	2013					2014					20								
							1st Half		2nd Half			1st Half		2nd Half				1st Half							
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
1	1	Key Dates	1110 days	28/3/2013	10/4/2016	0%																			
2	1.1	Contract Award & Commencement	15 days	28/3/2013	11/4/2013	100%																			
3	1.1.1	Letter of Acceptance	0 days	28/3/2013	28/3/2013	100%																			
4	1.1.2	Commencement of Works	0 days	11/4/2013	11/4/2013	100%																			
5	1.2	Site Possession Date	330 days	11/4/2013	7/3/2014	0%																			
6	1.2.1	Portion BCP 1 (partial only)(30/4, 19/7/2013)	0 days	11/5/2013	11/5/2013	100%																			
7	1.2.2	Portion BCP 2 (partial only)(16/4,30/5,17/7,19/7,24/7,2/9/2013)	0 days	10/6/2013	10/6/2013	100%																			
8	1.2.3	Portion BCP 3 (30/7, 2/9/2013, 22/10/2013)	0 days	8/9/2013	8/9/2013	100%																			
9	1.2.4	Portion BCP 4	0 days	7/3/2014	7/3/2014	0%																			
10	1.2.5	Portion BCP 5 (19/7/2013)	0 days	8/9/2013	8/9/2013	100%																			
11	1.2.6	Portion BCP 6 (18/9/2013)	0 days	8/9/2013	8/9/2013	100%																			
12	1.2.7	Portion BCP 7 (3/10/2013)	0 days	8/9/2013	8/9/2013	100%																			
13	1.2.8	Portion CR 2 (29/11/2013)	0 days	7/12/2013	7/12/2013	100%																			
14	1.2.9	Portion CR 40	0 days	7/3/2014	7/3/2014	0%																			
15	1.2.10	Portion CR 41	0 days	7/3/2014	7/3/2014	0%																			
16	1.2.11	Portion CR 42	0 days	7/3/2014	7/3/2014	0%																			
17	1.2.12	Portion CR 44 (28/2/2014)	0 days	5/2/2014	5/2/2014	100%																			
18	1.2.13	Area LMH 0 (11/4/2013)	0 days	11/4/2013	11/4/2013	100%																			
19	1.2.14	Area LMH 1 (19/7/2013)	0 days	8/9/2013	8/9/2013	100%																			
20	1.2.15	Area LMH 2 (partial)(30/4/2013, 30/5/2013)	0 days	11/5/2013	11/5/2013	100%																			
21	1.2.16	Area LMH 3 (18/9/2013)	0 days	7/3/2014	7/3/2014	0%																			
22	1.2.17	Area LMH 4 (18/9/2013)	0 days	8/9/2013	8/9/2013	100%																			
23	1.2.18	Area LMH 5 (24/9/2013)	0 days	8/10/2013	8/10/2013	100%																			
24	1.2.19	Area RS 1 (30/4/2013)	0 days	11/5/2013	11/5/2013	100%																			
25	1.2.20	Area RS 2 (Omitted)	0 days	11/5/2013	11/5/2013	0%																			
26	1.2.21	Area RS 3 (30/4/2013)	0 days	11/5/2013	11/5/2013	100%																			
27	1.2.22	Area RS 4 (8/5/2013)	0 days	11/5/2013	11/5/2013	100%																			
28	1.3	Section Completion Date	976 days	8/8/2013	10/4/2016	0%																			
29	1.3.1	KD-1 Section I of the Works - G.I. field works	0 days	4/2/2014	4/2/2014	100%																			
30	1.3.2	KD-2 Section II of the Works - All laboratory tests for Section I	0 days	6/3/2014	6/3/2014	100%																			
31	1.3.3	KD-3 Section III of the Works - Site formation works for portion RS1, RS2 & RS3	0 days	8/8/2013	8/8/2013	100%																			
32	1.3.4	KD-4 Section IV of the Works - Village house within portion RS4	0 days	5/1/2014	5/1/2014	100%																			
33	1.3.5	KD-5 Section V of the Works - All works within portion RS4 exclude Section IV	0 days	5/1/2014	5/1/2014	100%																			
34	1.3.6	KD-7 Section VII of the Works - All works within Area CRD	0 days	15/5/2014	15/5/2014	0%																			
35	1.3.7	KD-8 Section VIII of the Works - All works within Area BCPA	0 days	12/10/2014	12/10/2014	0%																			
36	1.3.8	KD-8 Section IX of the Works - All works within Area BCPB	0 days	11/4/2015	11/4/2015	0%																			
37	1.3.9	KD-10 Section X of the Works - All works within Area BCPC	0 days	4/6/2014	4/6/2014	0%																			
38	1.3.10	KD-11 Section XI of the Works - All works within Area BCPD	0 days	11/4/2015	11/4/2015	0%																			
39	1.3.11	KD-12 Section XII of the Works - All works within Area LMH	0 days	1/12/2014	1/12/2014	0%																			
40	1.3.12	KD-13 Section XIII of the Works - Works not covered in any other Sections	0 days	11/4/2015	11/4/2015	0%																			
41	1.3.13	KD-14 Section XIV of the Works - Trees preservation and protection	0 days	11/4/2015	11/4/2015	0%																			
42	1.3.14	KD-15 Section XV of the Works - Landscape soft works	0 days	11/4/2015	11/4/2015	0%																			
43	1.3.15	KD-16 Section XVI of the Works - Establishment works for landscape soft works	0 days	10/4/2016	10/4/2016	0%																			
44	1.4	Stage Completion Date	60 days	8/8/2013	7/10/2013	100%																			
45	1.4.1	KD-17 Stage I of the Works - Temporary vehicular bridge J and temporary Lin Ma Hang Road	0 days	7/10/2013	7/10/2013	100%																			
46	1.4.2	KD-18 Stage II of the Works - Temporary ArchSD Depot	0 days	8/8/2013	8/8/2013	100%																			
47	2	Preliminaries and Statuary / Contractual Submissions	424 days	11/4/2013	9/6/2014	92%																			
48	2.1	Site Establishment	399 days	11/4/2013	15/5/2014	89%																			
49	2.1.1	Take over of the Engineer Accommodation	0 days	11/4/2013	11/4/2013	100%																			
50	2.1.3	Initial Survey (to be extended until handover of BCP4, CR40-42)	399 days	12/4/2013	15/5/2014	86%																			
51	2.1.5	Setup and Management of TMLG	60 days	12/4/2013	10/6/2013	100%																			
52	2.1.6	Setup and Management of ULG	60 days	12/4/2013	10/6/2013	100%																			

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2013						2014						20							
							1st Half			2nd Half			1st Half			2nd Half				1st Half						
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun			
53	2.2	Applications to Government Department	89 days	12/4/2013	9/7/2013	100%																				
54	2.2.1	Application of excavation permit	89 days	12/4/2013	9/7/2013	100%																				
55	2.2.2	Application of Waste water discharge license	44 days	12/4/2013	25/5/2013	100%																				
56	2.2.3	Application of chemical waste producer permit	44 days	12/4/2013	25/5/2013	100%																				
57	2.2.4	Application of trip ticket system	44 days	12/4/2013	25/5/2013	100%																				
58	2.3	Temporary Traffic Arrangement (TTA) Scheme for temp. LMH Rd	131 days	12/4/2013	20/8/2013	100%																				
59	2.3.1	Submission / approval of traffic consultant	6 days	12/4/2013	17/4/2013	100%																				
60	2.3.2	Preparation of TTA scheme	45 days	18/4/2013	1/6/2013	100%																				
61	2.3.3	Comment & approval of TTA scheme by TD & RMO	66 days	2/6/2013	6/8/2013	100%																				
62	2.3.4	Obtain roadwork advice from RMO	14 days	7/8/2013	20/8/2013	100%																				
63	2.4	Liaison with Utility Undertakers	363 days	12/4/2013	9/4/2014	95%																				
64	2.4.1	Obtain most update utility drawings from various utility undertakers	29 days	12/4/2013	10/5/2013	100%																				
65	2.4.2	Liaise with various utility undertakers (to be extended)	363 days	12/4/2013	9/4/2014	94%																				
66	2.5	Environmental Baseline & Impact Monitoring	132 days	11/4/2013	21/8/2013	100%																				
67	2.5.1	Obtain Environmental Permit (EP) -- EP-404/2011	0 days	11/4/2013	11/4/2013	100%																				
68	2.5.2	Appointment of ET	0 days	11/4/2013	11/4/2013	100%																				
69	2.5.3	Approval of ET from EPD	6 days	13/4/2013	18/4/2013	100%																				
70	2.5.4	Preparation of method statement for baseline monitoring by ET	20 days	19/4/2013	8/5/2013	100%																				
71	2.5.5	Submission of relevant management plans & reports by Others	35 days	12/4/2013	16/5/2013	100%																				
72	2.5.6	Certify the method statement, management plans & reports by ET	15 days	17/5/2013	31/5/2013	100%																				
73	2.5.7	Verify the EM&A manual, management plans & reports by IEC	20 days	22/5/2013	10/6/2013	100%																				
74	2.5.8	Management plans & reports submitted to EPD three month before commencement of Construction works	97 days	17/5/2013	21/8/2013	100%																				
75	2.5.9	Carry out the baseline monitoring and preparation of report	35 days	11/6/2013	15/7/2013	100%																				
76	2.5.10	Baseline monitoring report submitted to EPD one month before commencement of Construction works	36 days	16/7/2013	20/8/2013	100%																				
77	2.6	General Site Clearance (to be extended until handover of BCP4, CR40-42)	424 days	12/4/2013	9/6/2014	81%																				
78	3	Stage of the Works	180 days	11/4/2013	7/10/2013	100%																				
79	3.1	Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road	179 days	12/4/2013	7/10/2013	100%																				
80	3.1.1	Submissions	69 days	12/4/2013	19/6/2013	100%																				
81	3.1.2	Approval of Submissions	69 days	14/6/2013	21/8/2013	100%																				
82	3.1.3	Construction of temporary vehicular bridge "B"	47 days	22/8/2013	7/10/2013	100%																				
83	3.1.3.1	Preparation of UBs	9 days	22/8/2013	30/8/2013	100%																				
84	3.1.3.2	Construct concrete footings	24 days	24/8/2013	16/9/2013	100%																				
85	3.1.3.3	construct main beam for bridge	17 days	17/9/2013	3/10/2013	100%																				
86	3.1.3.4	backfill with general fill adjacent to pile caps to form access roads	4 days	4/10/2013	7/10/2013	100%																				
87	3.1.4	Construction of temporary Lin Ma Hang Road	47 days	22/8/2013	7/10/2013	100%																				
88	3.1.4.1	Section 1 : chainage 100 - 730	47 days	22/8/2013	7/10/2013	100%																				
89	3.1.4.2	Section 2 : Chuk Yuen Tsuen (South) Sewage Pumping Station to Existing Lin Ma Hang Road Bridge	47 days	22/8/2013	7/10/2013	100%																				
90	3.2	Stage II of the Works - Temporary ArchSD Depot (LMH2)	78 days	11/4/2013	27/6/2013	100%																				
91	3.2.1	Liaison with ArchSD	49 days	11/4/2013	29/5/2013	100%																				
92	3.2.2	Construction of Temporary ArchSD Depot	29 days	30/5/2013	27/6/2013	100%																				
93	3.2.3	Handover of Temporary ArchSD Depot	0 days	27/6/2013	27/6/2013	100%																				
94	4	Section of the Works	1095 days	12/4/2013	10/4/2016	27%																				
95	4.1	Section I of the Works - Ground Investigation field works (Drg. 7101A-7111A)	251 days	30/5/2013	4/2/2014	100%																				
96	4.1.1	Submit method statement and specialist	48 days	30/5/2013	16/7/2013	100%																				
97	4.1.2	Approve method statement and specialist from ER	45 days	17/7/2013	30/8/2013	100%																				
98	4.1.3	56nrs. Inspection pits (IP) & 56nrs. Boreholes (BO)	154 days	22/8/2013	22/1/2014	100%																				
99	4.1.4	G.I works including installation of Settlement Plate (SP84 nrs.), Extensometer (EX16 nrs.), Ground Settlement Marker (GSM18nrs.)	167 days	22/8/2013	4/2/2014	100%																				
100	4.2	Section II of the Works - All laboratory tests for Section I	188 days	31/8/2013	6/3/2014	100%																				
101	4.2.1	Propose laboratory	45 days	31/8/2013	14/10/2013	100%																				
102	4.2.2	Approve laboratory from ER	42 days	15/10/2013	25/11/2013	100%																				
103	4.2.3	Laboratory preparation and Carry out laboratory tests	93 days	26/11/2013	26/2/2014	100%																				

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2013						2014						20																	
							1st Half			2nd Half			1st Half			2nd Half				1st Half																
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
544	4.12.10	Access road to be re-constructed / upgraded at RS3 (Drg/1203)	111 days	20/11/2014	10/3/2015	0%																														
545	4.13	Section XIV of the Works - Trees preservation and protection	730 days	12/4/2013	11/4/2015	44%																														
546	4.13.1	Submissions	69 days	12/4/2013	19/6/2013	100%																														
547	4.13.2	Approval of Submissions	70 days	20/6/2013	28/8/2013	100%																														
548	4.13.3	Tree felling/removal works and tree transplanting works	499 days	6/9/2013	17/1/2015	39%																														
549	4.13.4	Preservation and Protection of Existing Trees in all Portion of the Site	591 days	29/8/2013	11/4/2015	35%																														
550	4.14	Section XV of the Works - Landscape soft works (including transplant trees to permanent locations)	332 days	15/5/2014	11/4/2015	0%																														
551	4.14.1	tree & shrub planting at re-aligned Lin Ma Hang Road (west) for Section XIII of the Works	58 days	10/12/2014	5/2/2015	0%																														
552	4.14.2	tree & shrub planting at re-aligned Lin Ma Hang Road (east) for Section XIII of the Works	65 days	6/2/2015	11/4/2015	0%																														
553	4.14.3	shrub planting at BCPC for Section X of the Works	21 days	15/5/2014	4/6/2014	0%																														
554	4.14.4	tree & shrub planting at BCPD Section XI of the Works	55 days	16/2/2015	11/4/2015	0%																														
555	4.15	Section XVI of the Works - Establishment works for landscape soft works	365 days	12/4/2015	10/4/2016	0%																														

Appendix D

Designated Monitoring Locations as Recommended in the Approved EM&A Manual



- LEGEND:**
- BOUNDARY OF HK/SAR
 - WORKS AREA (ABOVE GROUND)
 - WORKS AREA (TUNNEL)
 - X AIR MONITORING STATIONS

PI	NO. TO	DATE	DESCRIPTION	BY	CHKD

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 20th Floor
 200 The Landmark East
 200 The Landmark East
 200 The Landmark East

CEDD

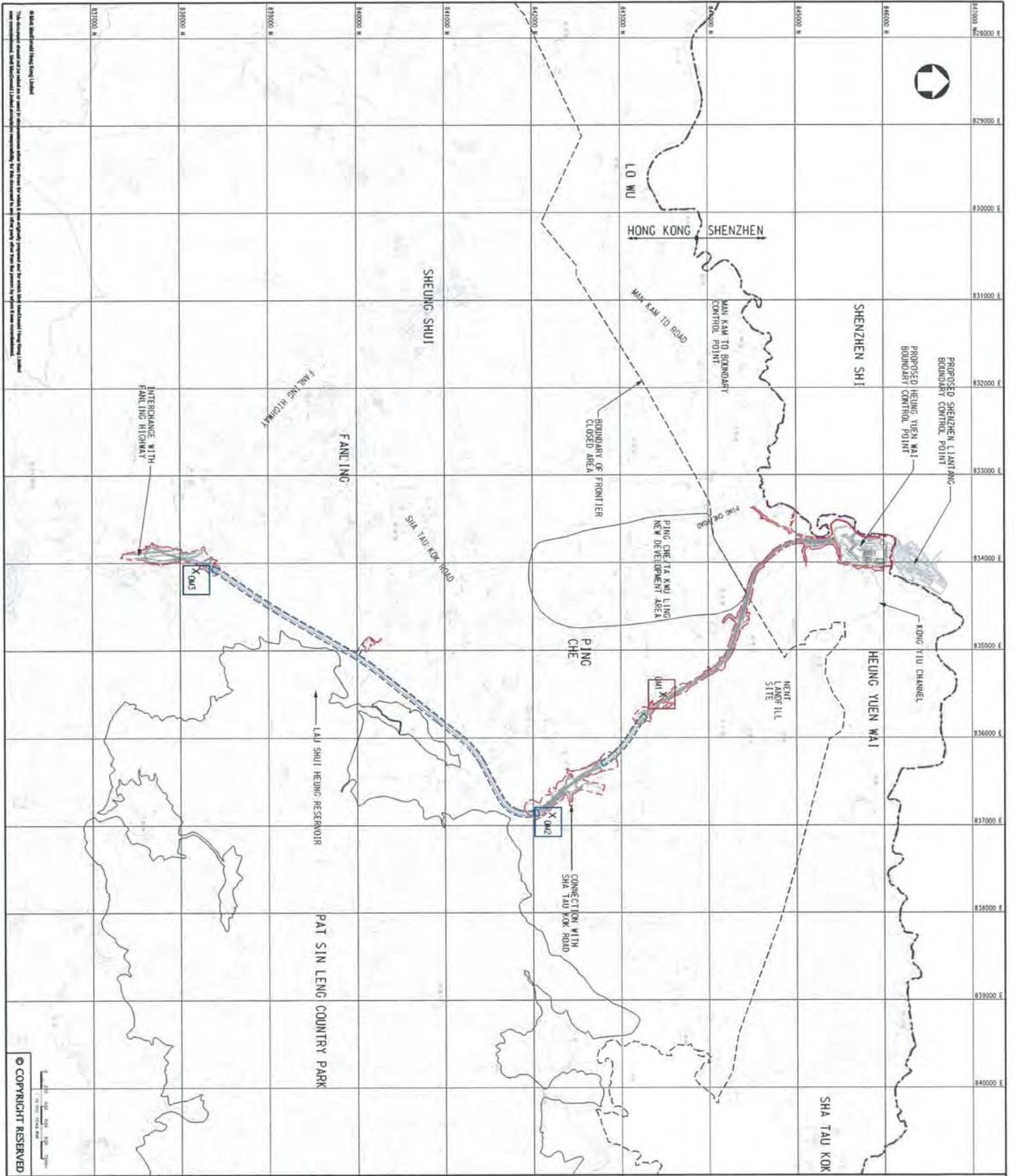
CIVIL ENGINEERING
 AND DEVELOPMENT
 DEPARTMENT

PROJECT
 AGREEMENT NO. CE45/2008(CE3)
 LIANTANG/HENG YUEN WAI BOUNDARY
 CONTROL POINT AND ASSOCIATED WORKS

TITLE
 PROPOSED LOCATION OF CONSTRUCTION
 AIR QUALITY MONITORING STATIONS

Drawn by	Checked by	Scale	Date	Project	Sheet No.
DC	DC	1:20000	25/2/28	CE45/2008(CE3)	P1

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- LEGEND:**
- BOUNDARY OF HKSAR
 - WORKS AREA (ARBOE GROUND)
 - WORKS AREA (TUNNEL)
 - X OPERATIONAL NOISE MONITORING STATIONS

Rev	Date	Drawn	Description	DC	EC	HT
P1	DEC 10	WING	FIRST ISSUE			

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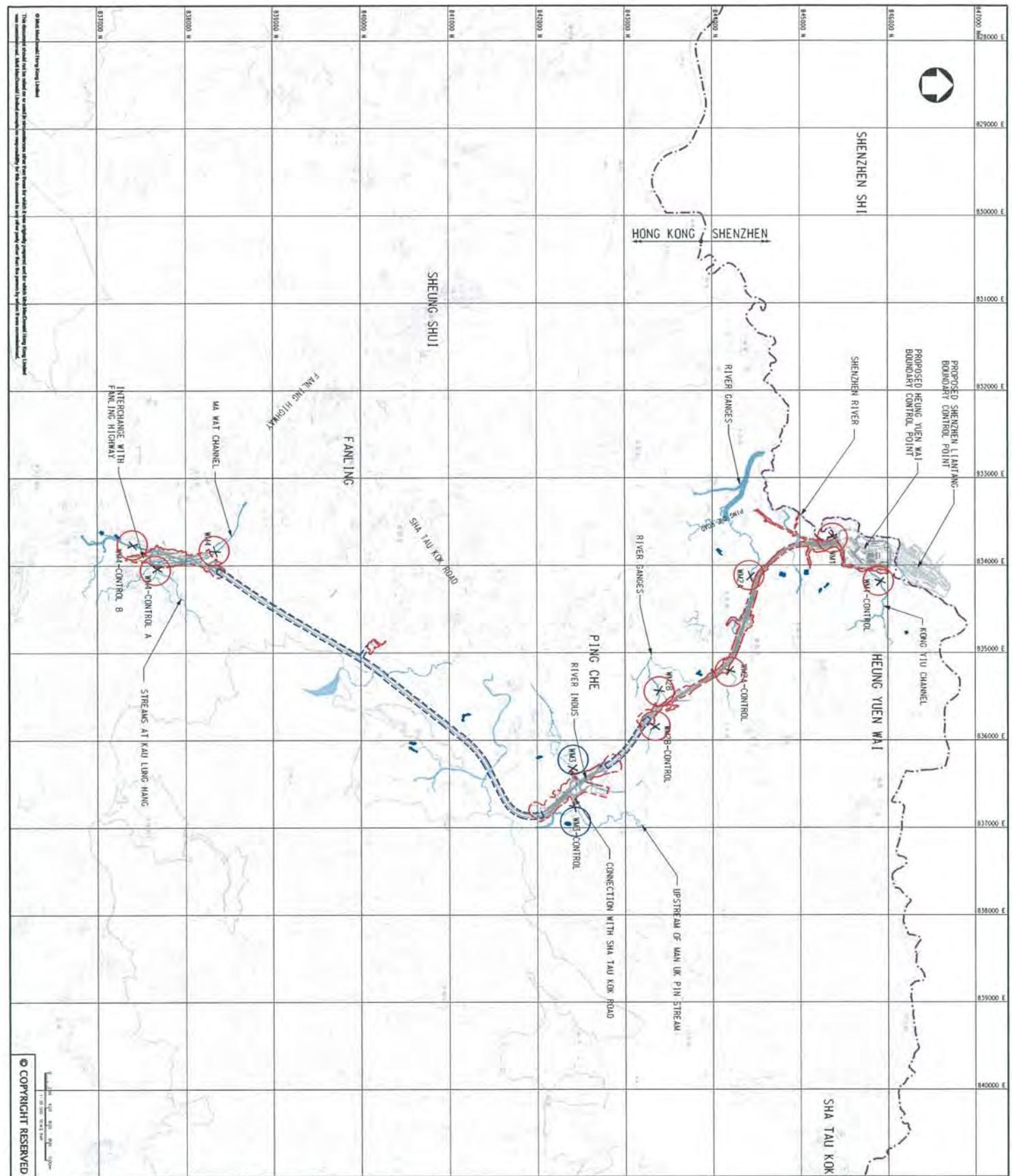
Project: AGREEMENT NO. CE45/2008(CE)
 LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Proposed Location of Operational Noise Monitoring Stations

Designated	DC	EC	HT/CHK	EC
Checked	HT/CHK	EC	Approved	HT
Drawn	DC	EC	Approved	HT

Scale of A1: 1:20000
 Scale of A2: 1:20000
 Drawing No: FIDLINE 3.2
 Status: PRE
 Rev: P1

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LEGEND:

- BOUNDARY OF HKSAR
- - - LAND REQUIREMENT LIMIT (ABOVE GROUND)
- - - LAND REQUIREMENT LIMIT (TUNNEL)
- - - PROPOSED WATER QUALITY MONITORING STATION
- X MONITORING STATION

MONITORING STATION	COORDINATES
WMA	EASTING: 83168.452 NORTHING: 84531.693
WMB	83148.462 84516.642
WMC	83132.153 84482.917
WMD	83556.329 84620.157
WME	83544.744 84334.626
WMA-C	83546.878 84334.626
WMA-B	83623.627 84204.977
WMA	83663.419 84245.507
WMA	83340.703 83844.842
WMA-C	83408.937 83788.995
WMA-B	83369.123 83746.936

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 7 Maitland Street
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CIVIL ENGINEERING
 AND DEVELOPMENT
 DEPARTMENT

Project: AGREEMENT NO. CE45/2008 (CE)
 Title: LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS
 Locations of Proposed Water Quality Monitoring Stations

Rev	Date	Drawn	Description	CHKD	APPD
P2	NOV 10	HMC	GENERAL REVISION	HC	HT
T1	OCT 10	HMC	FIRST ISSUE	HC	HT

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Scale: 1:20000

Project: CE45/2008 (CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Drawing No: P2

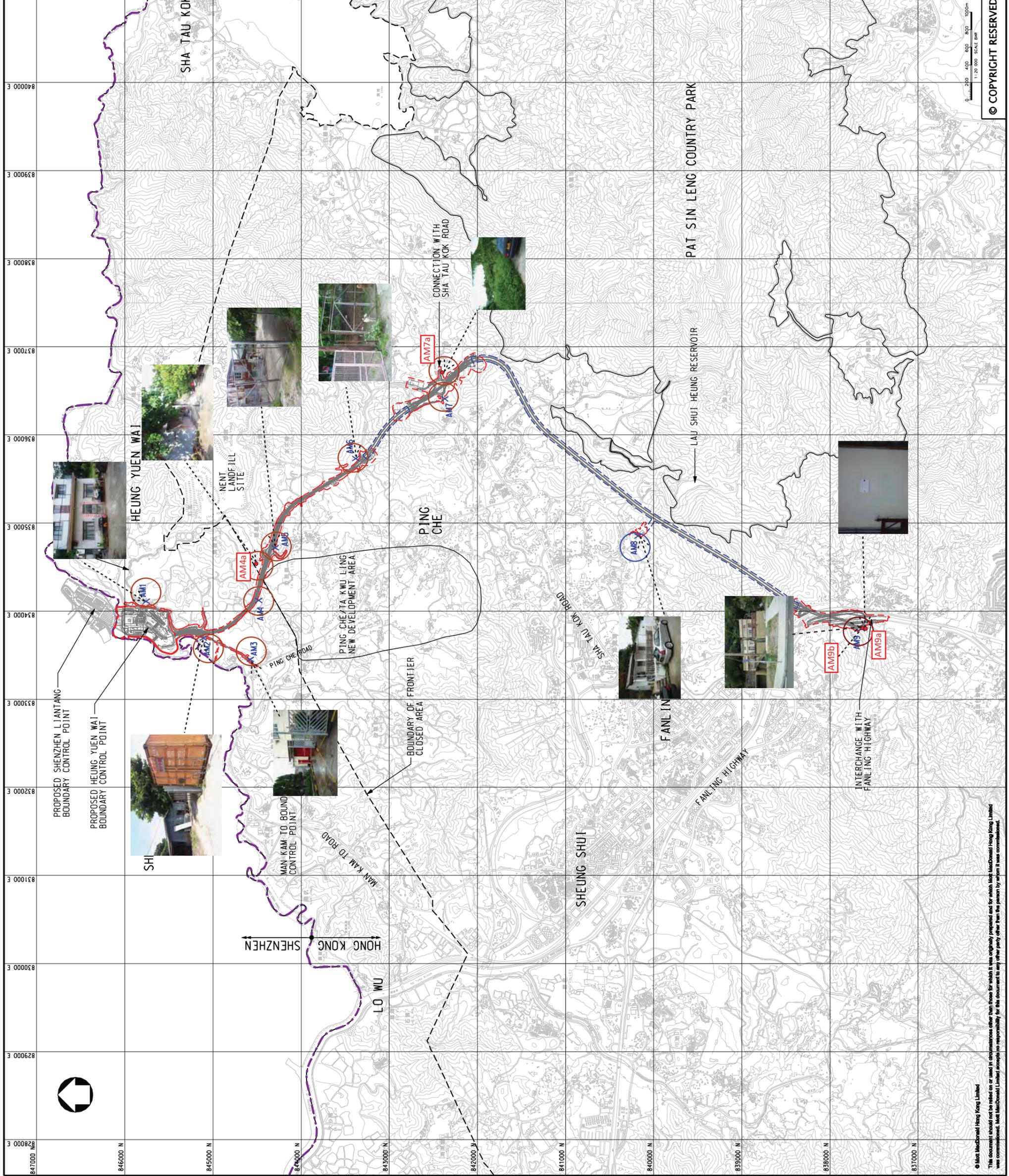
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Appendix E

Monitoring Locations for Impact Monitoring

LEGEND:

- BOUNDARY OF HKSAR
- - - WORKS AREA (ABOVE GROUND)
- - - WORKS AREA (TUNNEL)
- X AIR MONITORING STATIONS



PROPOSED SHENZHEN LIANTANG BOUNDARY CONTROL POINT

PROPOSED HEUNG YUEN WAI BOUNDARY CONTROL POINT

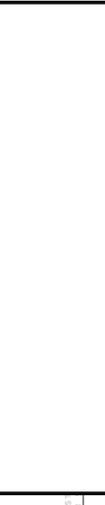
MAN KAM TO BOUND CONTROL POINT

BOUNDARY OF FRONTIER CLOSED AREA

INTERCHANGE WITH FAN LING HIGHWAY

PI	AUG 10	MING	FIRST ISSUE	DC	HT
Rev	Date	Drawn	Description	Ch'kd	App'd

20/F Two Landmark East
100-Hoi King Street
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Fax: +852 2627 1823
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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

AGREEMENT NO. CE45/2008(CE)
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

Designed	DC	EC
Drawn	MING	EC
Dwg. Chk.	DC	HT

Scale at A1
1:20000
Project
255228
CAD File
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Drawing No
PRE
Rev
P1

FIGURE 2.1

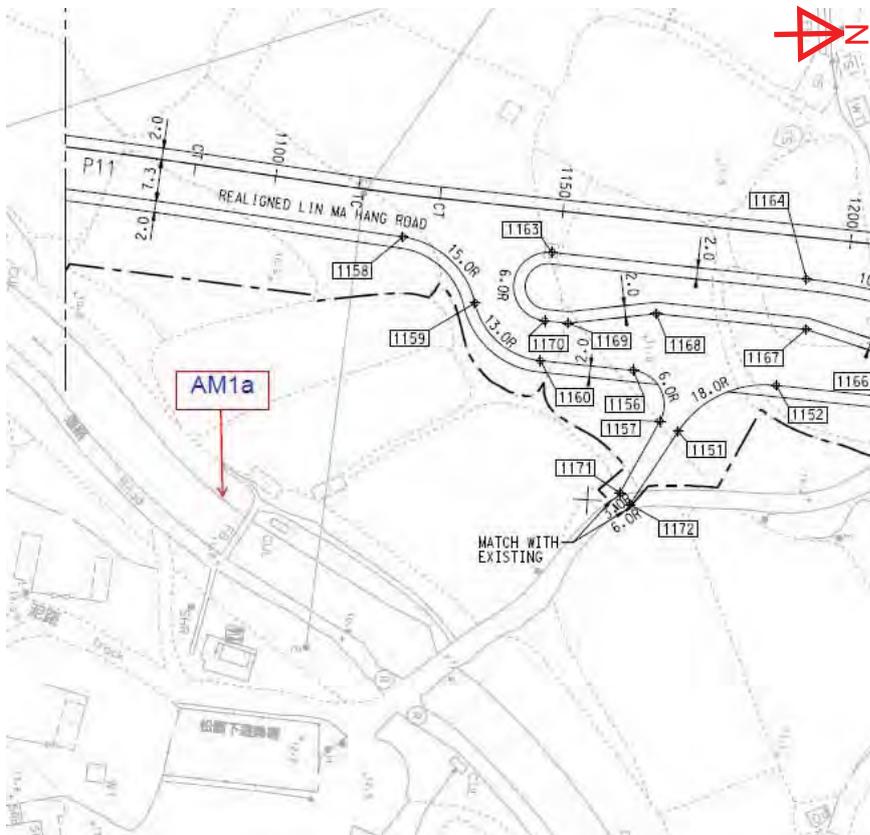
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Annex A - Location Map for Air Monitoring Location AM1 and AM1a



Location Map for of Air Monitoring Locations AM1 and AM1a



Location Map for Proposed Monitoring Location AM1a

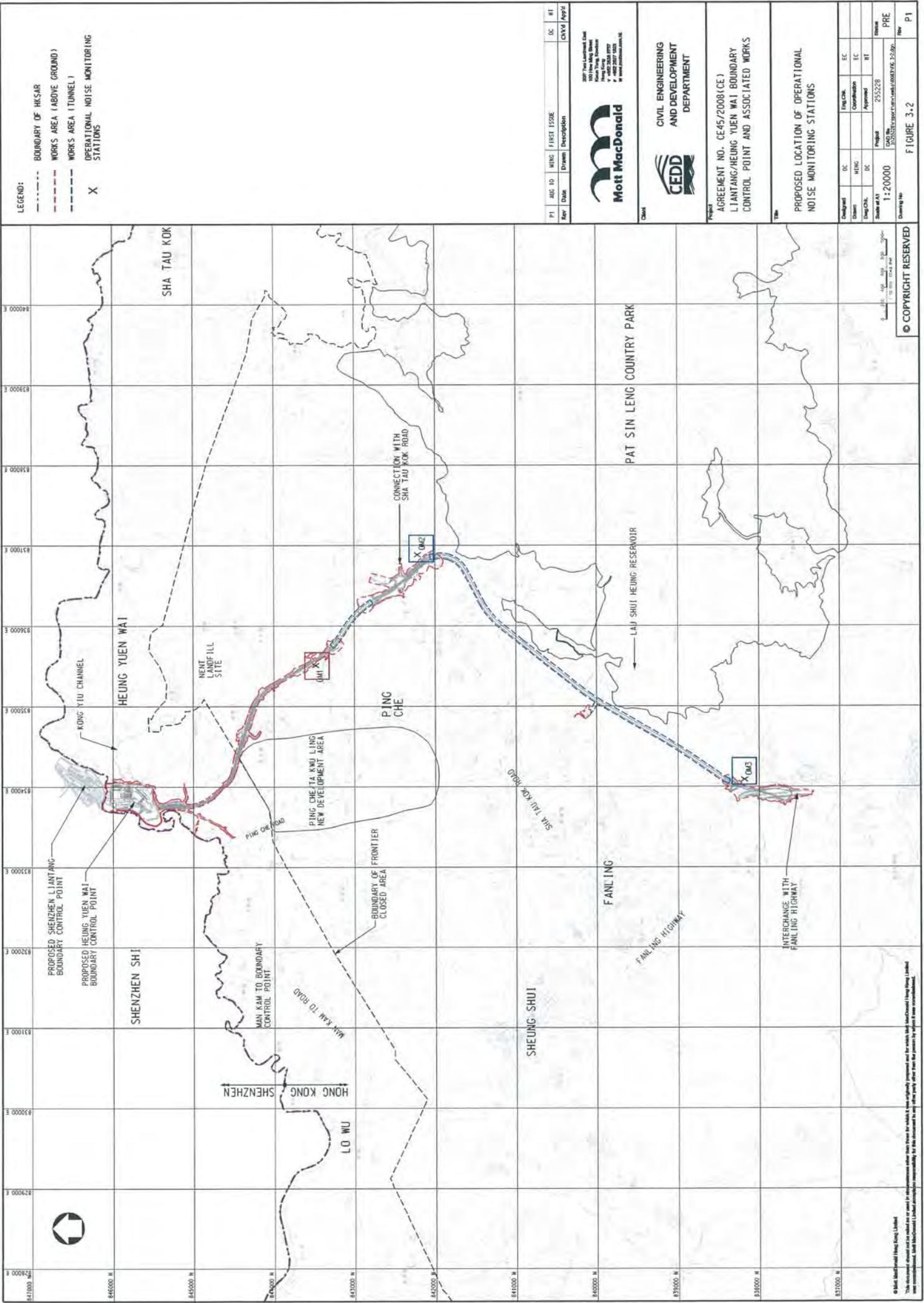
Annex B - Photo Record for Proposed Monitoring Location AM1a



Full view of proposed Air Quality Monitoring Location AM1a (Garden Farm, Tsung Yuen Ha Village)



Proposed location for the HVS installation inside AM1a



LEGEND:

- BOUNDARY OF HEUNG YUEN WAI
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X OPERATIONAL NOISE MONITORING STATIONS

PI	DATE	REVISION	DESCRIPTION	BY	CHKD
1	04/01/2008	1	ISSUE FOR TENDER	CHW	APR



CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project AGREEMENT NO. CE45/2008(CE)
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

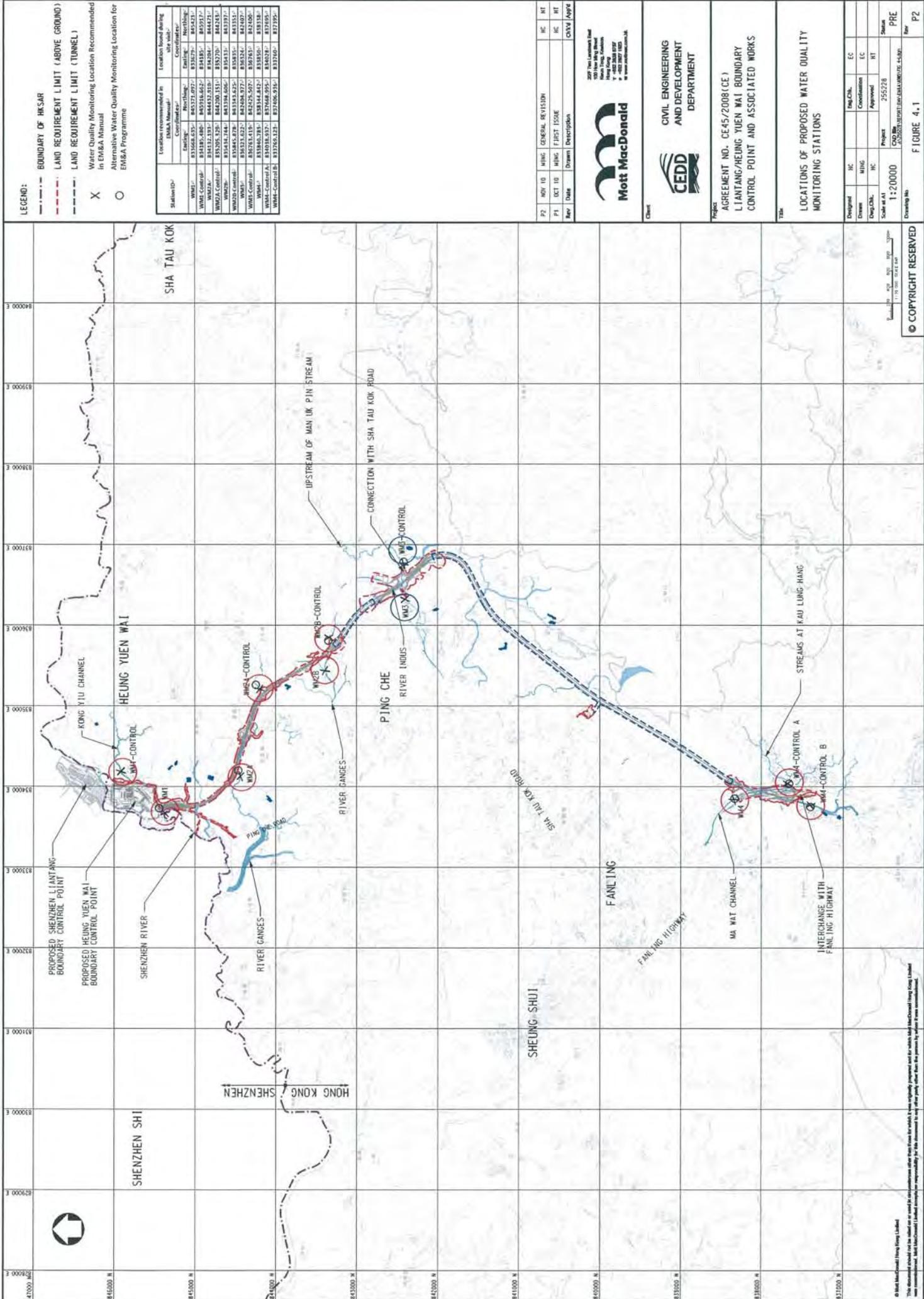
PROPOSED LOCATION OF OPERATIONAL NOISE MONITORING STATIONS

Design No.	DC	HT/C	DC						
1:20000									

Scale of A1: 1:20000
Scale of A2: 1:20000
Scale of A3: 1:20000
Scale of A4: 1:20000
Scale of A5: 1:20000
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Scale of A8: 1:20000
Scale of A9: 1:20000
Scale of A10: 1:20000

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LEGEND:

- BOUNDARY OF HK SAR
- - - LAND REQUIREMENT LIMIT (ABOVE GROUND)
- - - LAND REQUIREMENT LIMIT (TUNNEL)
- X Water Quality Monitoring Location Recommended in EM&A Manual
- O Alternative Water Quality Monitoring Location for EM&A Programme

Station ID	Location recommended in EM&A Manual		Location based on the site visit	
	Easting	Northing	Easting	Northing
WMA1	83366.433	845372.097	83367	845373
WMA2	84412.183	844452.816	84412	84445
WMA3	85205.326	844200.331	85205	84420
WMA4	83743.744	843334.606	83743	84333
WMA5	83545.478	843343.625	83545	84334
WMA6	83765.415	842524.507	83765	84252
WMA7	83846.283	838144.842	83846	83814
WMA8	83403.837	837649.295	83403	83764
WMA9	83765.427	837649.316	83765	83764

P2	REV 10	HWG	GENERAL REVISION	HC	HT
P1	REV 10	HWG	FIRST ISSUE	HC	HT
Rev	Date	Drawn	Description	Checked	App'd



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Civil Engineering and Development Department

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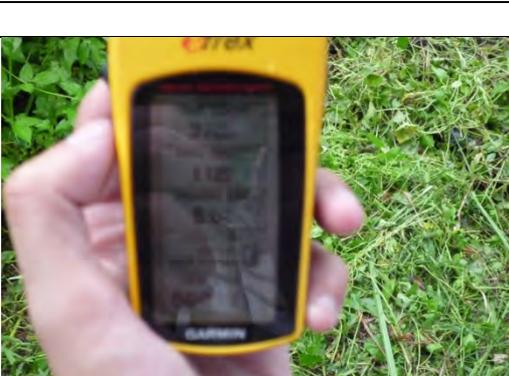
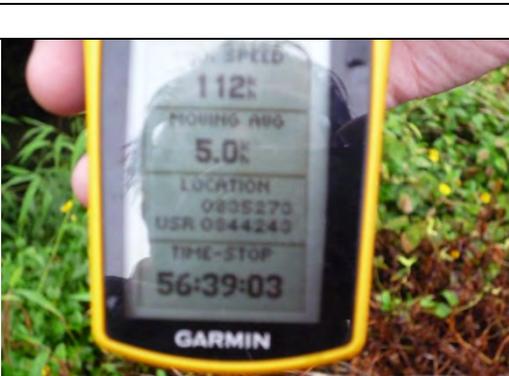
Locations of Proposed Water Quality Monitoring Stations

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Drawn	MHC	HWG	EC	EC
Checked	HC	HWG	EC	EC
Scale at A1	1:20000			
Project No.	CE45/2008(CE)			
Drawn No.	FIGURE 4.1			
Sheet	PRE			
Rev	P2			

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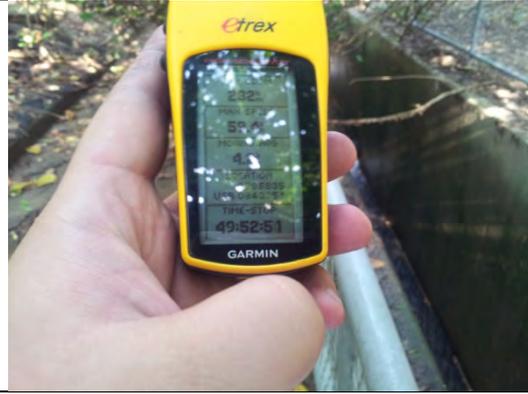
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Photographic Records for Water Quality Monitoring Location

	
<p>Alternative Location of WM1</p>	<p>Co-ordinates of Alternative Location of WM1</p>
	
<p>Alternative Location of WM1 - Control</p>	<p>Co-ordinates of Alternative Location of WM1 - Control</p>
	
<p>Alternative Location of WM2A</p>	<p>Co-ordinates of Alternative Location of WM2A</p>
	
<p>Alternative Location of WM2-Control A</p>	<p>Co-ordinates of Alternative Location of WM2 - Control</p>



Location of WM2B-Control



Co-ordinates of WM2B-Control



Location of WM2B



Co-ordinates of WM2B



Location of WM3-Control



Co-ordinates of WM3-Control



Location of WM3



Co-ordinates of WM3



Location of WM4-Control A



Co-ordinates of WM4-Control A



Location of WM4-Control B



Co-ordinates of WM4-Control B



Location of WM4



Co-ordinates of WM4

Appendix F

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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Tsung Yuen Ha Village House No. 63	Date of Calibration: 25/2/2014
Location ID : AM1	Next Calibration Date: 25/4/2014
	Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1018.6	Corrected Pressure (mm Hg)	763.95
Temperature (°C)	18.7	Temperature (K)	292

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.11662
Model-> 5025A	Qstd Intercept -> -0.01714
Serial # -> 1941	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.7	6.7	13.4	1.761	48	48.64	Slope =	31.0604	
13	5.4	5.4	10.8	1.581	42	42.56	Intercept =	-6.0004	
10	4.1	4.1	8.2	1.379	37	37.49	Corr. coeff. =	0.9987	
7	2.4	2.4	4.8	1.057	27	27.36			
5	1.6	1.6	3.2	0.865	20	20.27			

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:

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

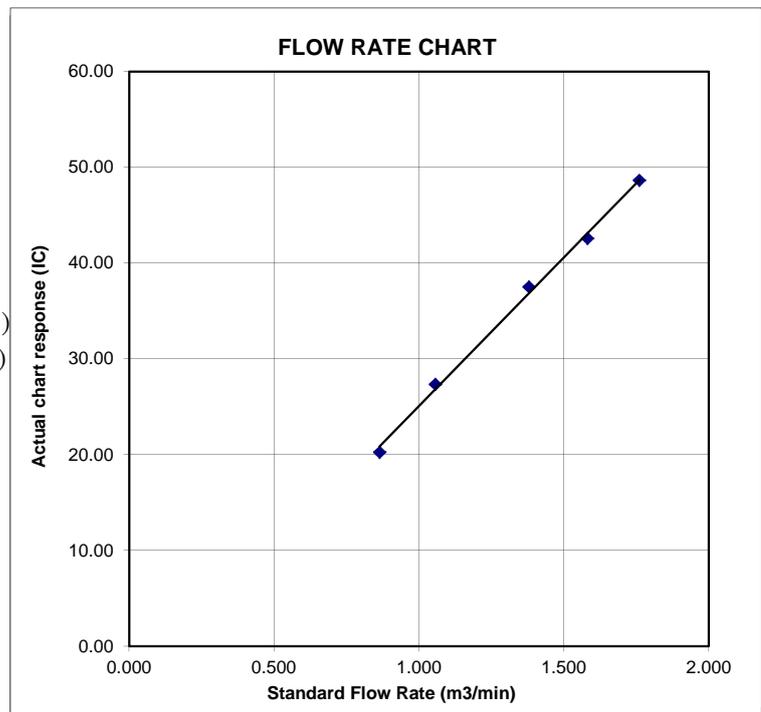
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House near Lin Ma Hang Road
 Location ID : AM2

Date of Calibration: 25/2/2014
 Next Calibration Date: 25/4/2014
 Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1018.6	Corrected Pressure (mm Hg)	763.95
Temperature (°C)	18.7	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Serial # ->	1941		

CALIBRATION

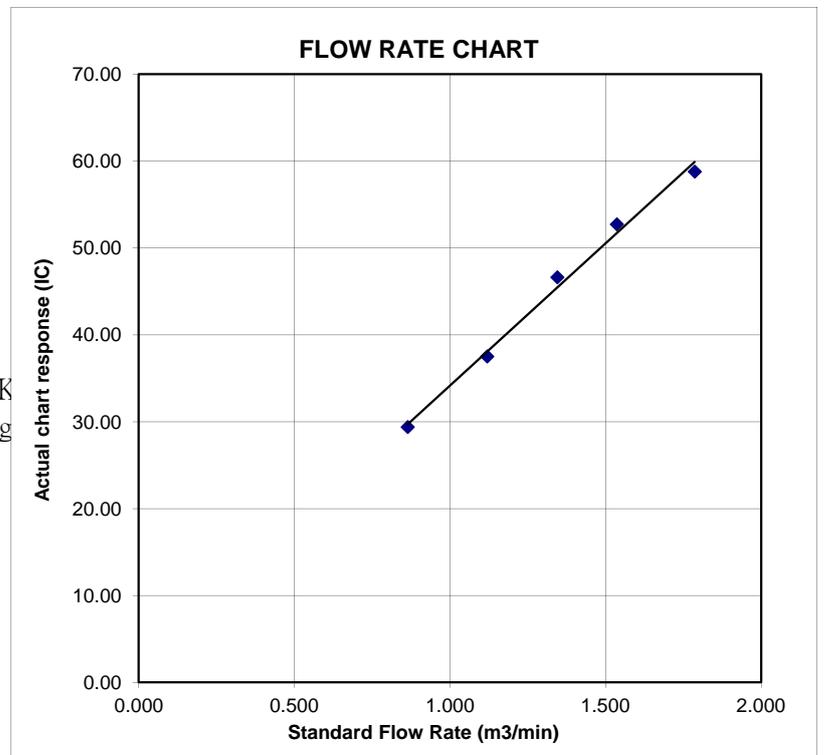
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.9	6.9	13.8	1.787	58	58.78	Slope = 32.7005 Intercept = 1.4743 Corr. coeff. = 0.9964
13	5.1	5.1	10.2	1.537	52	52.69	
10	3.9	3.9	7.8	1.345	46	46.61	
7	2.7	2.7	5.4	1.121	37	37.49	
5	1.6	1.6	3.2	0.865	29	29.39	

Calculations :

$Q_{std} = 1/m[\sqrt{H20(Pa/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{Pa/P_{std})(T_{std}/T_a)}]$
 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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ta Kwu Ling Fire Service Station
 Location ID : AM3

Date of Calibration: 25/2/2014
 Next Calibration Date: 25/4/2014
 Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1018.6	Corrected Pressure (mm Hg)	763.95
Temperature (°C)	18.7	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Serial # ->	1941		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.7	6.7	13.4	1.761	55	55.74	Slope = 33.1772 Intercept = -1.8416 Corr. coeff. = 0.9985
13	5.3	5.3	10.6	1.567	50	50.67	
10	4.1	4.1	8.2	1.379	44	44.59	
7	2.7	2.7	5.4	1.121	35	35.47	
5	1.6	1.6	3.2	0.865	26	26.35	

Calculations :

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

$$IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$$

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:

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

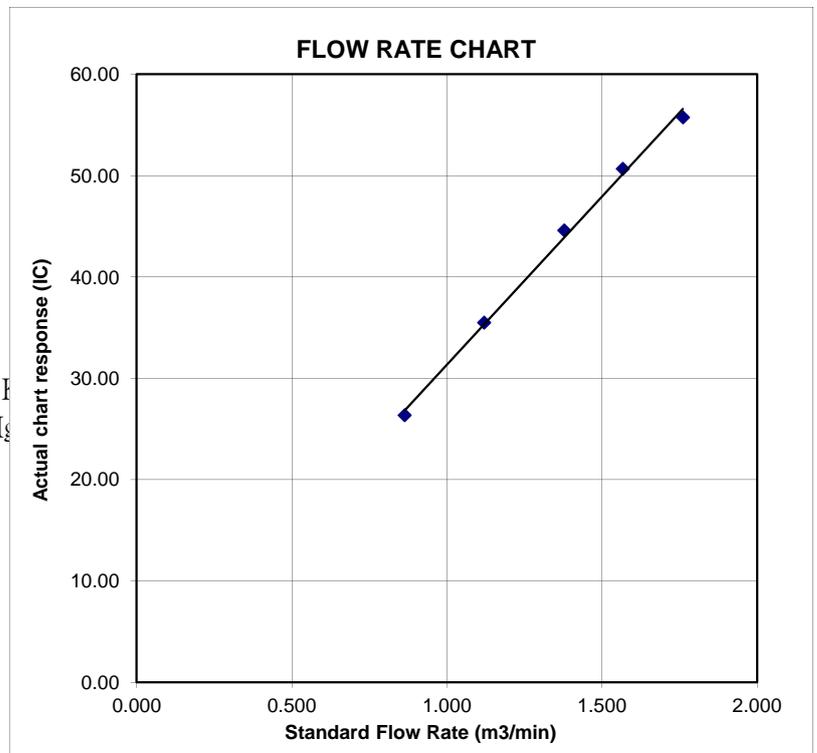
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Nam Wa Po Village House No. 80	Date of Calibration:	25/2/2014
Location ID : AM9b	Next Calibration Date:	25/4/2014
	Technician:	Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1018.6	Corrected Pressure (mm Hg)	763.95
Temperature (°C)	18.7	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Serial # ->	1941		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.653	57	57.76	Slope = 39.6816 Intercept = -7.2952 Corr. coeff. = 0.9995
13	5	5	10.0	1.522	53	53.71	
10	3.7	3.7	7.4	1.310	44	44.59	
7	2	2	4.0	0.966	31	31.41	
5	1.3	1.3	2.6	0.780	23	23.31	

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

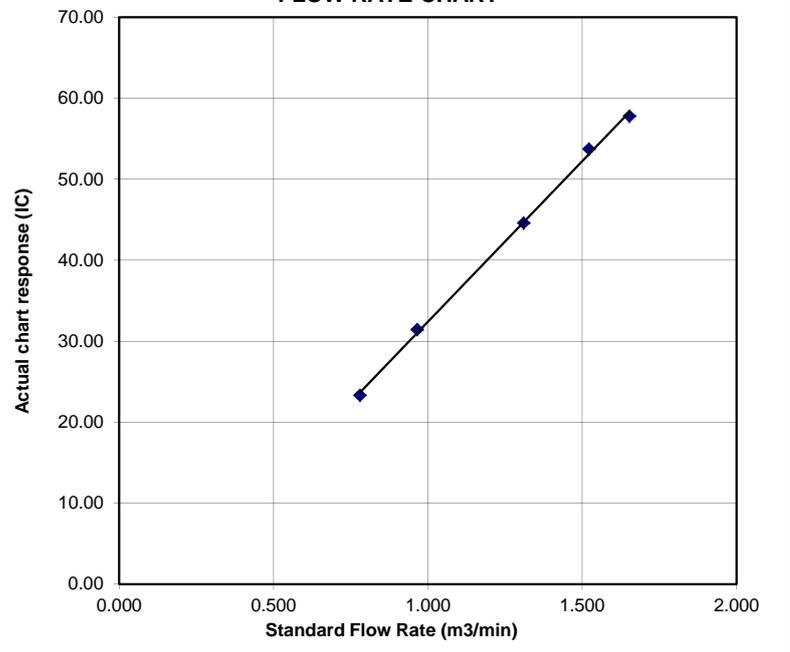
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

FLOW RATE CHART



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Garden Farm, Tsung Yuen Ha Village	Date of Calibration: 22/4/2014
Location ID : AM1a	Next Calibration Date: 22/6/2014
	Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012.6	Corrected Pressure (mm Hg)	759.45
Temperature (°C)	24.8	Temperature (K)	298

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.00757
Model-> 5025A	Qstd Intercept -> -0.01628
Serial # -> 1612	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.3	6.3	12.6	1.776	45	45.00	Slope =	32.3280	
13	5.2	5.2	10.4	1.614	40	40.00	Intercept =	-12.2719	
10	4	4	8.0	1.417	34	34.00	Corr. coeff. =	0.9991	
7	2.6	2.6	5.2	1.144	24	24.00			
5	1.7	1.7	3.4	0.927	18	18.00			

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:

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

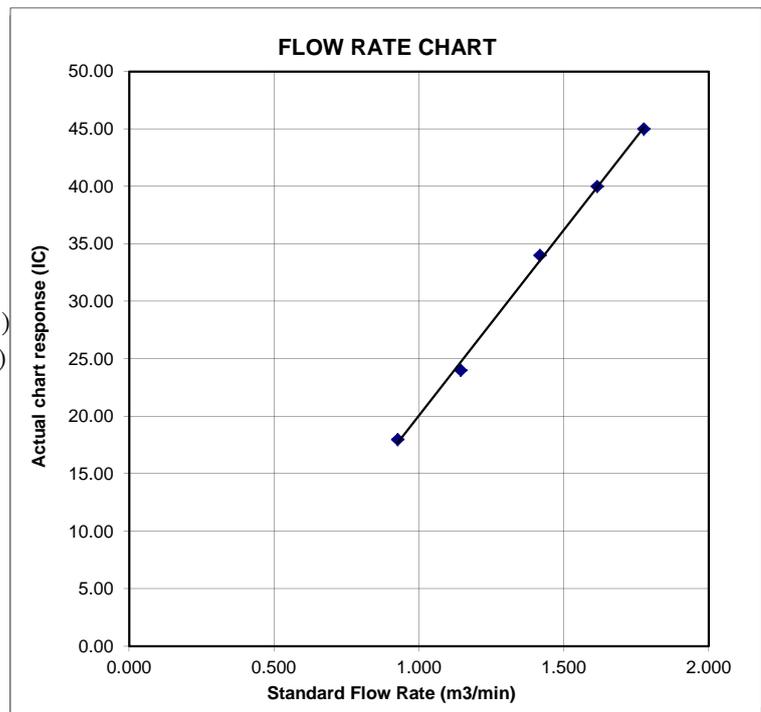
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House near Lin Ma Hang Road	Date of Calibration:	22/4/2014
Location ID : AM2	Next Calibration Date:	22/6/2014
	Technician:	Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012.6	Corrected Pressure (mm Hg)	759.45
Temperature (°C)	24.8	Temperature (K)	298

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Serial # ->	1612		

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	1.776	59	59.00	Slope = 30.5922 Intercept = 4.0939 Corr. coeff. = 0.9934
13	4.5	4.5	9.0	1.502	51	51.00	
10	4.1	4.1	8.2	1.434	46	46.00	
7	2.6	2.6	5.2	1.144	39	39.00	
5	1.7	1.7	3.4	0.927	33	33.00	

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:

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

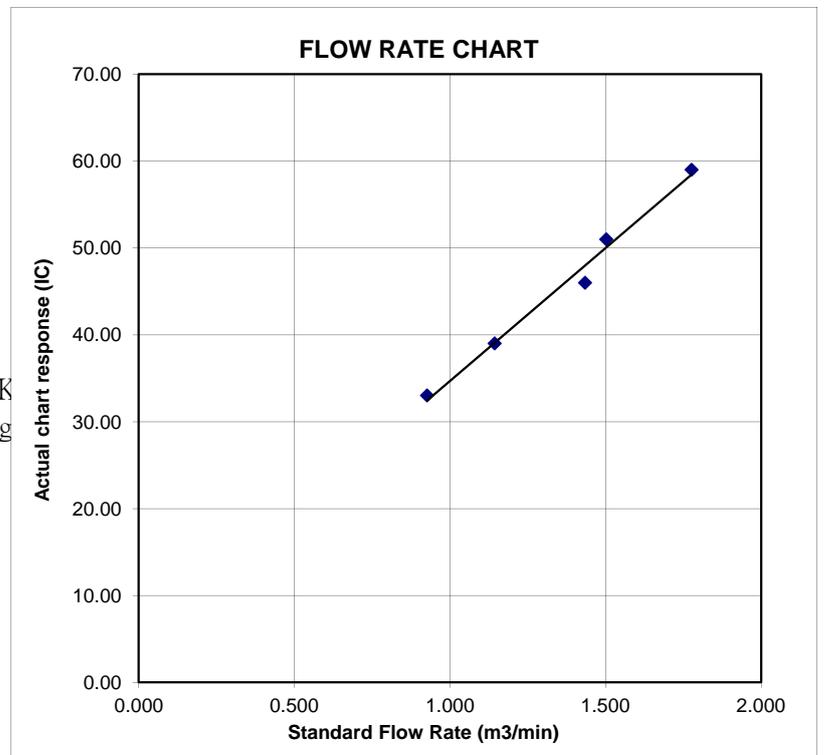
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ta Kwu Ling Fire Service Station
 Location ID : AM3

Date of Calibration: 24/4/2014
 Next Calibration Date: 24/6/2014
 Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1011.7	Corrected Pressure (mm Hg)	758.775
Temperature (°C)	21.7	Temperature (K)	295

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Serial # ->	1612		

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	1.756	56	56.27	Slope = 38.7265 Intercept = -12.3739 Corr. coeff. = 0.9966
13	5	5	10.0	1.591	48	48.23	
10	3.9	3.9	7.8	1.406	43	43.21	
7	3	3	6.0	1.234	34	34.16	
5	1.6	1.6	3.2	0.903	23	23.11	

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:

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

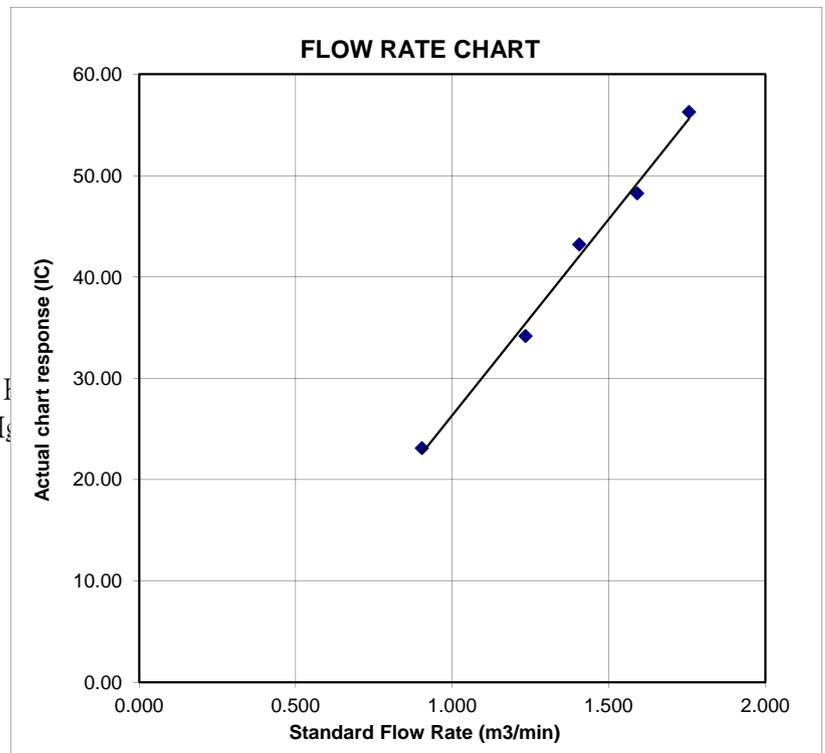
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Nam Wa Po Village House No. 80
 Location ID : AM9b

Date of Calibration: 22/4/2014
 Next Calibration Date: 22/6/2014
 Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012.6	Corrected Pressure (mm Hg)	759.45
Temperature (°C)	24.8	Temperature (K)	298

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.00757
Model-> 5025A	Qstd Intercept -> -0.01628
Serial # -> 1612	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.2	5.2	10.4	1.614	59	59.00	Slope = 28.9383 Intercept = 12.4450 Corr. coeff. = 0.9990
13	3.8	3.8	7.6	1.381	53	53.00	
10	2.9	2.9	5.8	1.208	47	47.00	
7	2.1	2.1	4.2	1.029	42	42.00	
5	1.4	1.4	2.8	0.842	37	37.00	

Calculations :

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

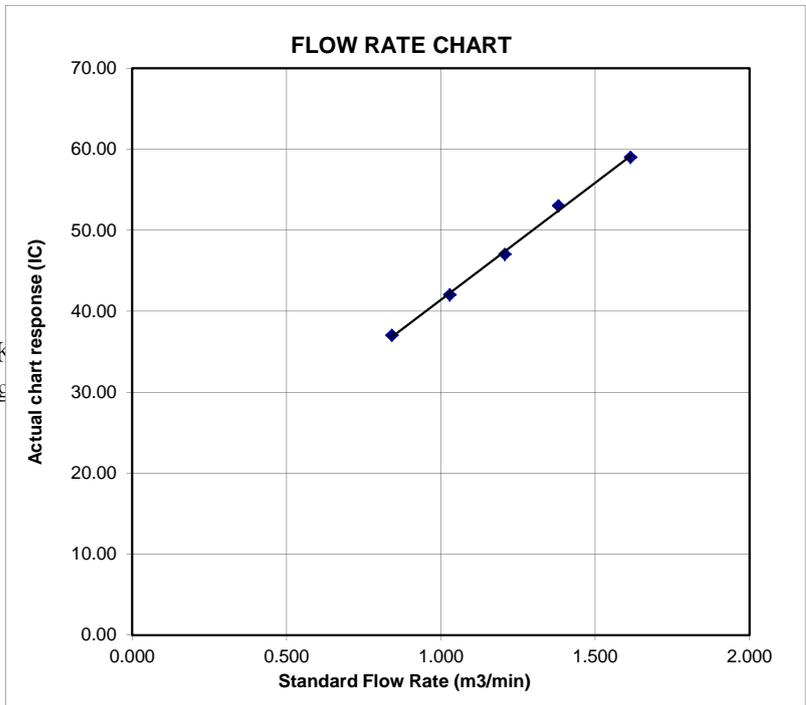
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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



CALIBRATION CERTIFICATE

Date: June 20, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	366407
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	563 CPM
Scale Setting	:	June 17, 2013

We hereby certify that the avobe mentioned instrmt has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Kentaro Togo

Overseas Sales Division

CALIBRATION CERTIFICATE

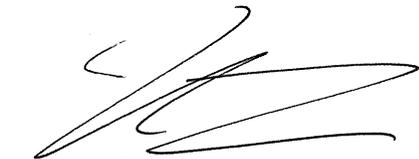
Date: June 20, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	366410
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	668 CPM
Scale Setting	:	June 17, 2013

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.



Kentaro Togo

Overseas Sales Division

CALIBRATION CERTIFICATE

Date: June 20, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	366409
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	527 CPM
Scale Setting	:	June 17, 2013

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.



Kentaro Togo

Overseas Sales Division

CALIBRATION CERTIFICATE

Date: June 20, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	366418
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	664 CPM
Scale Setting	:	June 17, 2013

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.



Kentaro Togo

Overseas Sales Division



Certificate of Calibration 校正證書

Certificate No. : C132568
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-0878)

Description / 儀器名稱 : Integrating Sound Level Meter (EQ006)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285762
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

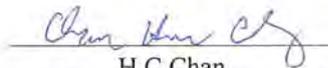
DATE OF TEST / 測試日期 : 27 April 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By : 
測試 H C Chan

Certified By : 
核證 K C Lee

Date of Issue : 30 April 2013
簽發日期

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

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Certificate of Calibration

校正證書

Certificate No. : C132568
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- 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	C130019
CL281	Multifunction Acoustic Calibrator	DC110233

- 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 _{AFF}	A	F	94.00	1	93.6

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 _{AFF}	A	F	94.00	1	94.0	± 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 _{AFF}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

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校正證書

Certificate No. : C132568
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6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.0	± 0.1
	L _{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L _{ASP}	S	Continuous		106.0	Ref.	
	L _{ASMax}		500 ms		101.9	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	55.1	-39.4 ± 1.5
					63 Hz	67.9	-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)

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Certificate of Calibration

校正證書

Certificate No. : C132568
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	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 _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
								90	89.8	± 0.5
								80	79.4	± 1.0
								70	69.2	± 1.0

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

- Uncertainties of Applied Value :

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

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

Note :

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

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

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Certificate of Calibration 校正證書

Certificate No. : C132567
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-0878)
Description / 儀器名稱 : Integrating Sound Level Meter (EQ010)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285721
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

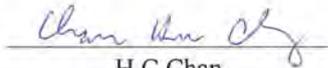
DATE OF TEST / 測試日期 : 27 April 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By : 
測試 H C Chan

Certified By : 
核證 K C Lee

Date of Issue : 30 April 2013
簽發日期

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

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Certificate of Calibration

校正證書

Certificate No. : C132567
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	C130019
CL281	Multifunction Acoustic Calibrator	DC110233

- 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 _{AFF}	A	F	94.00	1	94.7

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 _{AFF}	A	F	94.00	1	94.1	± 0.7

6.1.2 Linearity

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

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

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

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Certificate of Calibration

校正證書

Certificate No. : C132567
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.7	-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. : C132567
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	91.2	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	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	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
								90	90.0	± 0.5
			60 sec.					80	79.9	± 1.0
			5 min.					70	69.7	± 1.0

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

- Uncertainties of Applied Value :

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

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

Note :

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

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

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

Certificate of Calibration

校正證書

Certificate No. : C132979
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-0878)

Description / 儀器名稱 : Sound Level Meter (EQ068)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410247
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 18 May 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By : 
測試 : K C Lee

Certified By : 
核證 : K M Wu

Date of Issue : 20 May 2013
簽發日期

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

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Certificate of Calibration

校正證書

Certificate No. : C132979
證書編號

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C130019
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L _A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L _A	A	Fast	94.00	1	94.0	Ref.
			Slow				

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

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Certificate of Calibration

校正證書

Certificate No. : C132979

證書編號

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 -110	L _A	A	Fast	106.00	Continuous	106.0	Ref.
	L _A max				200 ms	105.1	-1.0 ± 1.0
	L _A		Slow		Continuous	106.0	Ref.
	L _A max				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)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _A	A	Fast	94.00	31.5 Hz	54.2	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.0
					250 Hz	85.2	-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	95.1	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5; -3.0)
					12.5 kHz	90.0	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L _C	C	Fast	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5; -3.0)
					12.5 kHz	88.2	-6.2 (+3.0; -6.0)

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

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Certificate of Calibration

校正證書

Certificate No. : C132979

證書編號

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
20 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						1/10 ²		90	90.0	± 0.5
			60 sec.			1/10 ³		80	80.0	± 1.0
			5 min.			1/10 ⁴		70	70.0	± 1.0

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 319841

- 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.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

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

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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. : C132565
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-0878)

Description / 儀器名稱 : Acoustical Calibrator (EQ082)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2713428
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$
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 : 27 April 2013

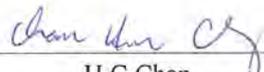
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

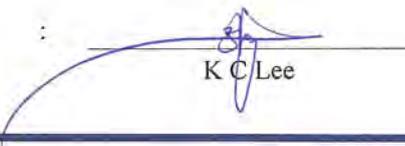
The test equipment used for calibration are traceable to National Standards via :

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

Tested By
測試

: 
H C Chan

Certified By
核證

: 
K C Lee

Date of Issue
簽發日期

: 30 April 2013

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

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Certificate of Calibration

校正證書

Certificate No. : C132565
證書編號

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

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C123541
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

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

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

Note :

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www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION UNITED ENVIRO SERVICES
ADDRESS: RM A 20/F., GOLDEN KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1401665
LABORATORY: HONG KONG
DATE RECEIVED: 15/01/2014
DATE OF ISSUE: 18/01/2014

PROJECT: --

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen, Temperature
Equipment Type: DO
Brand Name: YSI
Model No.: YSI PRO 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 15 January, 2014

NOTES

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

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


Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1401665
Date of Issue: 18/01/2014
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: DO
Brand Name: YSI
Model No.: YSI PRO 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 15 January, 2014 **Date of next Calibration:** 15 April, 2014

Parameters:

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

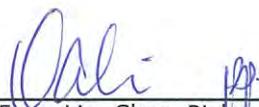
Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.26	3.32	0.06
6.64	6.74	0.10
9.17	9.03	-0.14
Tolerance Limit (±mg/L)		0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
8.5	8.3	-0.2
22.0	22.0	0.0
42.0	42.8	0.8
Tolerance Limit (±°C)		2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.



 Mr. Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong



ALS Technichem (HK) Pty Ltd
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www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION UNITED ENVIRO SERVICES
ADDRESS: RM A 20/F., GOLDEN KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG,
PROJECT: N.T., HONG KONG

WORK ORDER: HK1411182
LABORATORY: HONG KONG
DATE RECEIVED: 10/04/2014
DATE OF ISSUE: 17/04/2014

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Dissolved Oxygen and Temperature
Description: Dissolved Oxygen
Brand Name: YSI
Model No.: PRO 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 17 April, 2014

NOTES

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

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


Mr Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1411182
Date of Issue: 17/04/2014
Client: ACTION UNITED ENVIRO SERVICES



Description: Dissolved Oxygen
Brand Name: YSI
Model No.: PRO 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 17 April, 2014

Date of next Calibration: 17 July, 2014

Parameters:

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.86	3.8	-0.06
5.09	5.1	+0.01
8.02	8.1	+0.08
	Tolerance Limit (mg/L)	±0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.2	-0.3
24.0	24.1	+0.1
36.0	35.8	-0.2
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.



 Mr Fung Lim Chee Richard
 General Manager
 Greater China & Hong Kong



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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION UNITED ENVIRO SERVICES
ADDRESS: RM A 20/F., GOLDEN KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1401663
LABORATORY: HONG KONG
DATE RECEIVED: 15/01/2014
DATE OF ISSUE: 18/01/2014

PROJECT: --

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 12060C018266
Equipment No.: --
Date of Calibration: 15 January, 2014

NOTES

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

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


Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1401663
Date of Issue: 18/01/2014
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 12060C018266
Equipment No.: --
Date of Calibration: 15 January, 2014 **Date of next Calibration:** 15 April, 2014

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.20	--
4	4.07	1.8
40	36.7	-8.2
80	75.3	-5.9
400	385	-3.8
800	783	-2.1
	Tolerance Limit ($\pm\%$)	10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

A handwritten signature in blue ink, appearing to read 'Richard Fung Lim Chee'.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong



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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
CLIENT: ACTION UNITED ENVIRO SERVICES
ADDRESS: RM A 20/F., GOLDEN KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG,
PROJECT: N.T., HONG KONG

WORK ORDER: HK1410448
LABORATORY: HONG KONG
DATE RECEIVED: 07/04/2014
DATE OF ISSUE: 11/04/2014

COMMENTS

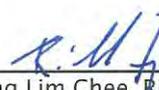
It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Description: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 07 April, 2014

NOTES

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


Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1410448
Date of Issue: 11/04/2014
Client: ACTION UNITED ENVIRO SERVICES



Description: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 07 April, 2014

Date of next Calibration: 07 July, 2014

Parameters:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.62	--
4	4.2	+5.0
40	40.2	+0.5
80	80.1	+0.1
400	412	+3.0
800	802	+0.3
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.


Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

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

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

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

Environmental Testing
環境測試

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

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

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

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

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

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



Appendix G

Event and Action Plan

Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 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 on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented;	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
	and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	the ER accordingly; 5. Monitor the implementation of remedial measures.	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.	under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

Event		ET	IEC	ER	Action Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. 	
Limit Level	<ol style="list-style-type: none"> 1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 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. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. 	

Event and Action Plan for Water Quality

EVENT	ACTION CONTRACTOR			
	ET	IEC	ER	
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit Level. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or to stop all or part of the construction activities.

Appendix H

Impact Monitoring Schedule

Impact Monitoring Schedule for the Reporting Period – April 2014

Date		Dust Monitoring		Noise Monitoring	Water Quality
		1-hour TSP	24-hour TSP		
Tue	1-Apr-14				
Wed	2-Apr-14				
Thu	3-Apr-14				
Fri	4-Apr-14				
Sat	5-Apr-14				
Sun	6-Apr-14				
Mon	7-Apr-14				
Tue	8-Apr-14				
Wed	9-Apr-14				
Thu	10-Apr-14				
Fri	11-Apr-14				
Sat	12-Apr-14				
Sun	13-Apr-14				
Mon	14-Apr-14				
Tue	15-Apr-14				
Wed	16-Apr-14				
Thu	17-Apr-14				
Fri	18-Apr-14				
Sat	19-Apr-14				
Sun	20-Apr-14				
Mon	21-Apr-14				
Tue	22-Apr-14				
Wed	23-Apr-14				
Thu	24-Apr-14				
Fri	25-Apr-14				
Sat	26-Apr-14				
Sun	27-Apr-14				
Mon	28-Apr-14				
Tue	29-Apr-14				
Wed	30-Apr-14				

Air Quality Monitoring Location:

- Contract 3 – AM9b
- Contract 5 – AM1a, AM2 and AM3

Construction Noise Monitoring Location:

- Contract 3 – NM8, NM9 and NM10
- Contract 5 – NM1 and NM2

Water Quality Monitoring Location:

- Contract 3 – W4 , W4-Control A and W4-Control B
- Contract 5 – W1 and W1-Control

	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule for next Reporting Period – May 2014

Date		Dust Monitoring		Noise Monitoring	Water Quality
		1-hour TSP	24-hour TSP		
Thu	1-May-14				
Fri	2-May-14	C3 & C5		C3 & C5	C3 & C5
Sat	3-May-14		C3 & C5		
Sun	4-May-14				
Mon	5-May-14	C5		C5	C3 & C5
Tue	6-May-14				
Wed	7-May-14				
Thu	8-May-14	C3		C3	C3 & C5
Fri	9-May-14		C3 & C5		
Sat	10-May-14	C5		C5	C3 & C5
Sun	11-May-14				
Mon	12-May-14				C3 & C5
Tue	13-May-14				
Wed	14-May-14	C3		C3	C3 & C5
Thu	15-May-14		C3 & C5		
Fri	16-May-14	C5		C5	C3 & C5
Sat	17-May-14				
Sun	18-May-14				
Mon	19-May-14				
Tue	20-May-14	C2 & C3		C2 & C3	C3 & C5
Wed	21-May-14		C2& C3 & C5		
Thu	22-May-14	C5		C5	C3 & C5
Fri	23-May-14				
Sat	24-May-14				C3 & C5
Sun	25-May-14				
Mon	26-May-14	C2 & C3		C2 & C3	C3 & C5
Tue	27-May-14		C2& C3 & C5		
Wed	28-May-14	C5		C5	C3 & C5
Thu	29-May-14				
Fri	30-May-14				
Sat	31-May-14	C2 & C3		C2 & C3	C3 & C5

Air Quality Monitoring Location:

- Contract 2 –AM7a & AM8
- Contract 3 – AM9b
- Contract 5 – AM1a, AM2 and AM3

Construction Noise Monitoring Location:

- Contract 2 –NM5, NM6, NM7, NM8
- Contract 3 – NM8, NM9 and NM10
- Contract 5 – NM1 and NM2

Water Quality Monitoring Location:

- Contract 3 – W4 , W4-Control A and W4-Control B
- Contract 5 – W1 and W1-Control

	Monitoring Day
	Sunday or Public Holiday

Appendix I

Database of Monitoring Result

24-hour TSP Monitoring Data

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m ³ /min)	AIR VOLUME (std m ³)	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-hr TSP (µg/m ³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
AM1a - Garden Farm, Tsung Yuen Ha Village															
2-Apr-14	26613	8253.33	8276.91	1414.80	52	53	52.5	20.7	1014.3	1.90	2683	2.7060	2.8406	0.1346	50
8-Apr-14	26631	8276.91	8300.46	1413.00	52	54	53.0	21.5	1013.3	1.91	2698	2.6881	2.8208	0.1327	49
14-Apr-14	26632	8300.46	8323.90	1406.40	53	55	54.0	21.9	1013.6	1.94	2730	2.6964	2.8850	0.1886	69
17-Apr-14	26672	8323.90	8348.39	1469.40	52	54	53.0	22.7	1012.8	1.91	2800	2.7250	2.8555	0.1305	47
23-Apr-14	26675	8348.39	8372.06	1420.20	58	59	58.5	23.9	1012	2.19	3112	2.7129	2.8200	0.1071	34
29-Apr-14	26720	8372.06	8395.62	1413.60	50	51	50.5	24.4	1011.7	1.94	2745	2.7059	2.8810	0.1751	64
AM2 - Village House near Lin Ma Hang Road															
2-Apr-14	26612	3728.12	3752.72	1476.00	45	48	46.5	20.7	1014.3	1.39	2049	2.7089	2.8620	0.1531	75
8-Apr-14	26633	3752.72	3776.36	1418.40	45	46	45.5	21.5	1013.3	1.35	1921	2.6942	2.7774	0.0832	43
14-Apr-14	26649	3776.36	3800.00	1418.40	43	44	43.5	21.9	1013.6	1.29	1833	2.6220	2.8104	0.1884	103
17-Apr-14	26673	3800.00	3824.39	1463.40	42	43	42.5	22.7	1012.8	1.26	1843	2.7437	2.8650	0.1213	66
23-Apr-14	26676	3824.39	3848.87	1468.80	46	49	47.5	23.9	1012	1.42	2087	2.7239	2.8729	0.1490	71
29-Apr-14	26718	3848.87	3872.51	1418.40	41	42	41.5	24.4	1011.7	1.22	1735	2.7300	2.8990	0.1690	97
AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village															
2-Apr-14	26614	4735.17	4759.10	1435.80	43	44	43.5	20.7	1014.3	1.45	2084	2.6937	2.8111	0.1174	56
8-Apr-14	26634	4759.10	4782.35	1395.00	42	43	42.5	21.5	1013.3	1.42	1986	2.6739	2.7377	0.0638	32
14-Apr-14	26650	4782.35	4805.55	1392.00	43	45	44.0	21.9	1013.6	1.46	2035	2.6199	2.7516	0.1317	65
17-Apr-14	26674	4805.55	4829.66	1446.60	43	44	43.5	22.7	1012.8	1.45	2093	2.7160	2.8060	0.0900	43
23-Apr-14	26693	4829.66	4852.80	1388.40	41	42	41.5	23.9	1012	1.31	1816	2.6948	2.7711	0.0763	42
29-Apr-14	26697	4852.80	4876.15	1401.00	40	41	40.5	24.4	1011.7	1.37	1913	2.7163	2.8430	0.1267	66
AM9b - Nam Wa Po Village House No. 80															
2-Apr-14	26615	13741.46	13765.12	1419.60	38	40	39.0	20.7	1014.3	1.17	1667	2.6998	2.7621	0.0623	37
8-Apr-14	26630	13765.12	13788.66	1412.40	23	24	23.5	21.5	1013.3	0.78	1101	2.6997	2.7317	0.0320	29
14-Apr-14	26651	13788.66	13812.15	1409.40	23	24	23.5	21.9	1013.6	0.78	1098	2.6341	2.7099	0.0758	69
17-Apr-14	26669	13812.15	13835.55	1404.00	24	26	25.0	22.7	1012.8	0.82	1146	2.7094	2.7397	0.0303	26
23-Apr-14	26694	13835.55	13858.89	1400.40	29	30	29.5	23.9	1012	0.59	827	2.7050	2.7491	0.0441	53
29-Apr-14	26712	13858.89	13882.09	1392.00	37	39	38.0	24.4	1011.7	0.88	1230	2.6891	2.7626	0.0735	60

Construction Noise Monitoring Results, dB(A)

Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 rd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq30	façade correction
NM1 - Tsung Yuen Ha Village House No. 63																					
3-Apr-14	14:10	51.8	54.1	49.7	52.4	54.2	50.3	53.0	55.6	50.2	51.9	54.0	49.3	53.0	55.3	50.4	52.0	54.3	49.4	52	NA
9-Apr-14	10:34	53.0	55.0	50.4	51.4	52.4	50.1	50.9	52.2	49.3	51.0	51.7	48.7	55.2	54.6	48.7	54.3	53.5	48.4	53	NA
15-Apr-14	16:14	56.7	59.0	53.5	57.5	60.1	53.7	55.9	57.7	53.6	56.9	61.2	52.1	52.8	54.2	50.6	57.8	59.4	51.7	57	NA
22-Apr-14	11:29	51.2	53.8	48.5	52.3	53.8	49.3	46.7	48.6	44.1	46.7	48.6	43.7	46.2	47.6	42.3	51.8	50.5	42.8	50	NA
26-Apr-14	11:02	52.4	52.6	48.0	50.7	51.7	47.6	48.5	49.9	47.1	52.3	51.9	47.5	51.1	52.7	49.1	56.4	57.7	48.1	53	NA
NM2 - Village House near Lin Ma Hang Road																					
3-Apr-14	14:06	61.0	64.4	52.6	57.0	58.9	52.5	60.6	65.2	52.4	53.6	54.9	52.0	54.0	54.9	51.5	56.5	59.5	51.9	58	NA
9-Apr-14	11:33	61.9	64.7	45.8	54.9	54.7	44.7	58.9	57.3	43.7	58.4	59.2	43.2	54.6	50.6	43.0	61.2	64.6	43.2	59	NA
15-Apr-14	17:17	66.4	69.0	62.0	66.6	68.0	60.0	65.9	69.0	59.5	64.8	67.0	59.0	63.8	65.5	53.0	66.1	69.0	54.5	66	NA
22-Apr-14	13:01	65.8	61.0	46.0	54.8	55.8	46.1	54.9	57.2	47.6	59.6	63.1	48.4	55.2	59.6	45.8	56.2	57.4	47.3	60	NA
26-Apr-14	11:43	65.4	59.1	41.5	52.5	56.9	43.4	52.7	52.6	42.9	53.3	54.8	41.8	50.1	52.1	42.3	49.2	51.7	42.6	58	NA
NM8 - Village House, Tong Hang																					
3-Apr-14	10:21	67.2	68.0	66.2	69.2	71.2	67.4	68.6	69.6	67.5	68.0	68.9	66.7	68.5	71.9	66.6	68.8	71.1	66.5	68	NA
9-Apr-14	10:12	59.3	58.5	54.9	62.7	67.7	54.5	61.5	66.6	54.3	62.2	66.5	54.7	64.1	70.5	55.7	65.5	70.0	55.0	63	NA
15-Apr-14	11:30	69.6	74.4	54.5	68.3	73.1	56.9	61.5	65.5	55.3	63.8	68.6	54.2	56.7	57.4	53.0	55.5	56.6	54.3	65	NA
22-Apr-14	13:03	56.8	60.0	49.0	58.5	62.5	52.4	57.3	62.1	52.3	57.7	60.5	54.5	56.8	60.3	52.0	57.0	60.5	51.9	57	NA
26-Apr-14	16:30	65.0	69.5	56.3	65.8	69.1	60.1	66.4	70.8	58.6	64.4	68.4	59.7	63.7	68.8	60.0	65.0	70.2	59.8	65	NA
NM9 - Village House, Kiu Tau Village																					
3-Apr-14	11:23	71.2	72.9	62.7	67.6	72.5	62.4	66.1	69.7	62.4	67.1	71.5	61.0	66.8	71.5	60.0	67.2	71.4	61.0	68	NA
9-Apr-14	10:55	61.4	64.2	58.8	63.1	66.2	52.5	60.8	65.8	51.5	58.5	61.6	52.5	58.6	62.2	52.2	52.9	54.7	51.2	60	NA
15-Apr-14	10:50	58.5	62.9	52.6	58.0	60.8	52.6	57.9	62.0	52.2	59.1	63.1	51.9	58.5	62.1	51.7	60.8	60.5	52.0	59	NA
22-Apr-14	10:48	56.7	59.8	51.9	56.0	61.0	50.8	58.7	63.1	51.4	60.9	65.5	52.1	56.1	59.8	52.0	55.7	57.4	53.0	58	NA
26-Apr-14	13:45	60.7	64.1	52.8	60.3	63.5	52.7	61.2	64.5	53.6	60.1	63.7	52.5	61.5	63.1	52.4	61.0	64.5	52.7	61	NA
NM10 - Nam Wa Po Village House No. 80																					
3-Apr-14	16:30	55.9	57.3	54.1	56.2	57.6	54.0	57.0	58.7	53.7	57.0	57.7	53.9	61.1	58.6	53.9	56.7	57.9	55.1	58	61
9-Apr-14	11:40	68.0	67.7	64.9	68.8	70.1	64.4	68.3	65.4	63.3	64.5	65.5	63.2	64.7	65.7	63.5	63.8	64.6	63.0	67	70
15-Apr-14	18:14	69.8	71.0	67.0	69.8	72.0	67.0	69.3	71.5	66.0	69.2	71.0	66.0	68.3	70.0	65.5	68.4	70.5	65.5	69	72
22-Apr-14	11:33	59.0	61.2	56.8	58.8	60.6	56.9	58.9	60.9	56.7	58.1	59.5	56.0	57.3	58.8	55.5	57.0	58.5	55.1	58	61
26-Apr-14	11:23	67.0	70.0	61.6	63.1	65.6	58.8	59.6	61.5	57.1	58.7	60.3	56.7	59.4	61.2	56.4	59.1	61.3	56.2	62	65

Water Quality Monitoring Results

Date	2-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:25	0.60	20	20.0	7.65	7.5	83.8	82.6	792.0	800.0	7.9	7.9	401	399.0
			20		7.41		81.4		808.0		7.9		397	
WM1	11:42	1.20	19.5	19.5	7.19	7.2	78.2	77.8	947.0	941.5	7.6	7.6	780	749.5
			19.5		7.11		77.3		936.0		7.6		719	

Date	4-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	13:55	0.33	22.7	22.7	7.67	7.6	86.2	85.4	9.1	9.1	7	7.0	<2	2.0
			22.7		7.52		84.6		9.1		7		<2	
WM1	13:30	0.38	22.7	22.7	7.4	7.5	84.7	85.0	48.5	48.8	7	7.0	46	44.5
			22.7		7.53		85.3		49.1		7		43	

Date	7-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	14:13	0.34	21.6	21.6	8.07	8.1	89.3	89.9	10.9	10.7	6.9	6.9	5	5.5
			21.6		8.16		90.4		10.4		6.9		6	
WM1	14:34	0.26	21.3	21.3	7.54	7.5	83.1	82.9	44.4	45.0	6.6	6.6	32	31.0
			21.3		7.5		82.7		45.6		6.6		30	

Date	9-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:00	0.42	24.6	24.6	7.31	7.4	86.2	87.1	8.5	8.4	7.2	7.2	4	4.5
			24.6		7.47		88.0		8.4		7.2		5	
WM1	11:40	0.21	26.4	26.4	6.65	6.5	81.3	79.0	37.8	38.0	7.1	7.1	20	20.0
			26.4		6.26		76.6		38.1		7.1		20	

Date	11-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	

WM1-C	10:48	0.34	25	25.0	8.58	8.5	103.1	102.1	8.5	8.4	7.7	7.7	4	5.0
			25		8.49		101.1		8.3		7.7		6	
WM1	11:12	0.31	27.2	27.2	8.96	9.0	112.3	112.3	37.0	37.0	7.3	7.3	48	47.5
			27.2		8.94		112.2		36.9		7.3		47	

Date	15-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	16:20	0.22	26.1	26.1	9.5	9.5	117.4	117.6	13.7	13.6	7.1	7.1	9	9.5
			26.1		9.58		117.8		13.4		7.1		10	
WM1	17:00	0.30	26.5	26.5	9.36	9.3	116.8	115.9	31.3	31.6	6.9	6.9	50	51.5
			26.5		9.24		114.9		31.9		6.9		53	

Date	17-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:40	0.27	27.5	27.5	8.14	8.1	105.7	105.0	13.3	12.7	8.3	8.3	10	11.0
			27.5		8.12		104.3		12.1		8.3		12	
WM1	12:00	0.21	29.5	29.5	9.75	9.6	126.5	124.5	22.6	22.3	7.6	7.6	21	21.0
			29.5		9.44		122.5		21.9		7.6		21	

Date	22-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:50	0.29	26	26.0	8.22	8.2	100.4	95.8	8.0	8.0	6.6	6.6	4	3.5
			26		8.12		91.2		7.9		6.6		3	
WM1	12:35	0.20	27.2	27.2	8.37	8.3	108.8	108.2	23.0	23.4	6.7	6.7	25	24.0
			27.2		8.29		107.6		23.7		6.7		23	

Date	24-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	13:42	0.37	24	24.0	8.28	8.3	98.2	98.7	15.0	15.1	6.9	6.9	8	7.0
			24		8.37		99.1		15.2		6.9		6	
WM1	14:08	0.26	24	24.0	8.63	8.6	102.5	102.3	20.5	20.2	7.4	7.4	25	25.0
			24		8.56		102.1		19.9		7.4		25	

Date	26-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:20	0.32	25.5	25.5	7.31	7.3	89.7	89.7	8.2	8.2	7.4	7.4	3	3.0
			25.5		7.36		89.6		8.2		7.4		3	
WM1	14:20	0.19	24.8	24.8	7.67	7.7	92.7	93.0	15.1	15.4	7.6	7.6	16	16.0
			24.8		7.77		93.2		15.6		7.6		16	

Date	28-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	13:10	0.30	26.3	26.3	8.68	8.7	106.2	106.0	9.8	9.9	8.2	8.2	2	2.0
			26.3		8.66		105.7		10.0		8.2		2	
WM1	13:46	0.24	29.6	29.6	8.15	8.2	105.7	105.7	13.3	13.2	7.7	7.7	9	8.5
			29.6		8.21		105.7		13.0		7.7		8	

Date	30-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:30	0.32	24.4	24.4	6.68	6.7	78.2	78.6	18.6	18.7	7.7	7.7	8	7.0
			24.4		6.76		79.0		18.7		7.7		6	
WM1	11:50	0.23	24.9	24.9	8.06	8.1	96.0	96.8	35.4	35.9	7.4	7.4	31	30.5
			24.9		8.19		97.6		36.3		7.4		30	

Date	2-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:00	0.18	20.4	20.4	8.42	8.4	91.9	91.6	26.3	25.8	7.6	7.6	17	18.0
			20.4		8.37		91.3		25.3		7.6		19	
WM4-CB	15:20	0.55	20.7	20.7	6.86	6.9	75.6	41.6	62.3	63.3	6.9	6.9	42	41.0
			20.7		6.88		7.5		64.2		6.9		40	
WM4	14:40	0.46	21	21.0	7.45	7.5	84.7	84.5	139.0	136.0	7.3	7.3	63	65.5
			21		7.58		84.2		133.0		7.3		68	

Date	4-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	10:42	0.11	20.6	20.6	7.79	7.8	85.1	84.7	4.8	4.9	8	8.0	<2	2.0
			20.6		7.71		84.2		5.0		8		<2	
WM4-CB	11:10	0.20	22.3	22.3	7.23	7.3	81.7	81.9	9.0	8.9	7.1	7.1	4	5.0
			22.3		7.27		82.1		8.9		7.1		6	
WM4	10:08	0.21	21.1	21.1	7.09	7.1	78.5	78.7	9.5	9.5	7.5	7.5	5	4.5
			21.1		7.11		78.8		9.5		7.5		4	

Date	7-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	12:25	0.15	22.7	22.7	8.31	8.3	94.0	93.6	4.2	4.3	7.1	7.1	<2	2.0
			22.7		8.22		93.1		4.4		7.1		<2	
WM4-CB	12:05	0.21	23.8	23.8	6.68	6.6	77.3	76.2	8.1	8.0	7.0	7.0	7	6.5
			23.8		6.48		75.1		7.9		7.0		6	
WM4	12:41	0.29	23.5	23.5	8.59	8.5	95.3	94.7	10.0	10.0	6.7	6.7	10	11.0
			23.5		8.48		94.1		10.0		6.7		12	

Date	9-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	10:50	0.13	26.3	26.3	8.07	8.1	97.8	98.4	4.5	4.2	7.3	7.3	3	3.0
			26.3		8.12		98.9		4.0		7.3		3	
WM4-CB	12:15	0.16	27	27.0	7.01	7.0	86.4	85.9	12.9	13.2	7	7.0	8	8.5
			27		6.97		85.3		13.5		7		9	

WM4	10:05	0.37	27.4	27.4	7.57	7.5	93.4	93.2	35.5	34.5	7	7.0	29	28.0
			27.4		7.51		92.9		33.4		7		27	

Date		11-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	14:33	0.09	27.7	27.7	8.24	8.2	104.7	103.9	4.3	4.3	7.1	7.1	4	4.5	
			27.7		8.18		103.1		4.2		7.1		5		
WM4-CB	14:59	0.12	27.6	27.6	7.76	7.7	100.5	99.3	7.9	7.9	6.8	6.8	7	6.5	
			27.6		7.63		98.1		8.0		6.8		6		
WM4	14:14	0.36	28.8	28.8	8.53	8.5	108.6	106.7	11.7	11.5	7.1	7.1	10	11.0	
			28.8		8.42		104.7		11.2		7.1		12		

Date		15-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	11:53	0.09	25.2	25.2	8.68	8.6	105.4	104.4	8.3	7.8	6.7	6.7	9	10.0	
			25.2		8.52		103.3		7.4		6.7		11		
WM4-CB	12:40	0.10	27.4	27.4	10.07	10.3	129.8	132.3	5.6	5.5	6.4	6.4	4	4.5	
			27.4		10.46		134.8		5.4		6.4		5		
WM4	11:10	0.32	26.6	26.6	8.71	8.8	109.8	109.8	9.2	8.7	6.6	6.6	9	9.0	
			26.6		8.86		109.7		8.3		6.6		9		

Date		17-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	15:37	0.12	27.7	27.7	7.63	7.6	97.8	97.0	4.3	4.2	6.9	6.9	3	3.0	
			27.7		7.59		96.2		4.2		6.9		3		
WM4-CB	16:01	0.16	28.5	28.5	7.72	7.7	99.2	99.2	5.4	5.4	6.6	6.6	3	2.5	
			28.5		7.63		99.2		5.4		6.6		2		
WM4	15:10	0.22	31.3	31.3	8.92	9.0	120.1	119.7	12.6	12.5	6.6	6.6	8	7.0	
			31.3		9.01		119.2		12.4		6.6		6		

Date		22-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	17:30	0.16	25.5	25.5	6.65	6.6	81.3	81.3	4.3	4.2	6.8	6.8	2	2.0	

			25.5		6.63		81.2		4.1		6.8		2	
WM4-CB	17:47	0.27	26.2	26.2	2.52	2.5	31.1	30.6	5.0	4.9	6.4	6.4	2	2.0
			26.2		2.46		30.1		4.8		6.4		2	
WM4	17:05	0.27	26.5	26.5	4.81	4.8	60.0	60.0	11.3	11.2	6.5	6.5	12	11.5
			26.5		4.82		59.9		11.1		6.5		11	

Date	24-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	11:52	0.10	22.6	22.6	7.65	7.7	87.9	88.3	4.8	4.8	7.1	7.1	6	6.0
			22.6		7.73		88.6		4.7		7.1		6	
WM4-CB	11:30	0.16	23.2	23.2	6.09	6.1	70.8	70.9	6.3	6.2	6.9	6.9	9	9.0
			23.2		6.14		71.0		6.0		6.9		9	
WM4	12:08	0.24	23.4	23.4	7.17	7.1	83.4	82.6	12.3	12.2	6.8	6.8	16	15.5
			23.4		7.05		81.7		12.0		6.8		15	

Date	26-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	10:40	0.16	24.7	24.7	6.15	6.3	73.2	74.6	12.7	12.4	6.5	6.5	10	10.0
			24.7		6.42		76.0		12.1		6.5		10	
WM4-CB	14:03	0.07	24.8	24.8	6.6	6.5	78.1	77.2	12.7	12.2	6.8	6.8	7	7.5
			24.8		6.44		76.2		11.6		6.8		8	
WM4	14:25	0.17	25	25.0	4.57	4.8	54.9	57.9	15.3	15.7	6.9	6.9	17	17.0
			25		5.06		60.9		16.1		6.9		17	

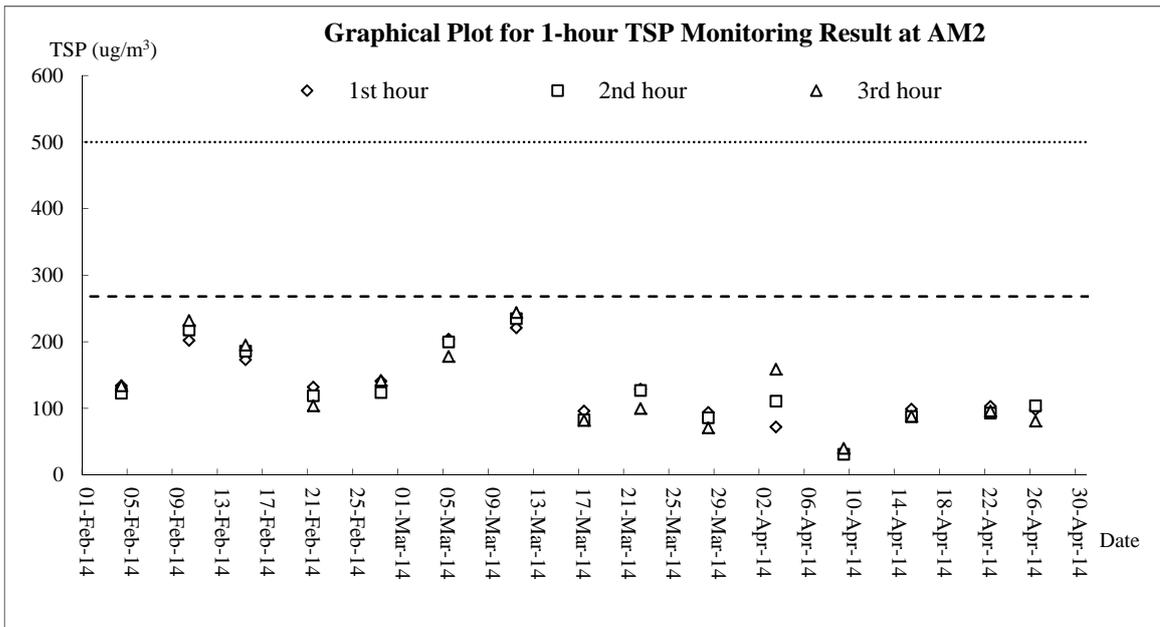
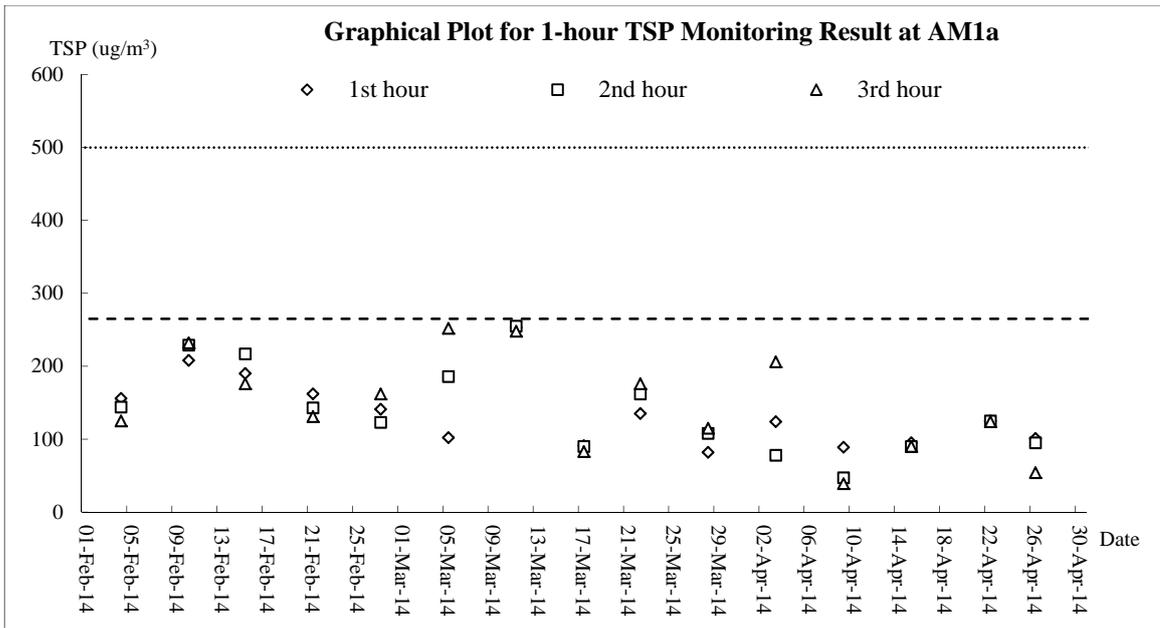
Date	28-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:58	0.14	28.1	28.1	6.99	6.9	87.5	86.2	4.7	4.7	8.5	8.5	3	3.0
			28.1		6.72		84.9		4.7		8.5		3	
WM4-CB	15:41	0.14	29	29.0	6.76	6.8	86.3	86.0	4.9	4.9	7.6	7.6	4	4.5
			29		6.74		85.6		4.9		7.6		5	
WM4	16:19	0.27	29	29.0	7.04	7.0	90.7	90.7	9.6	9.4	7.8	7.8	11	11.5
			29		7.04		90.7		9.2		7.8		12	

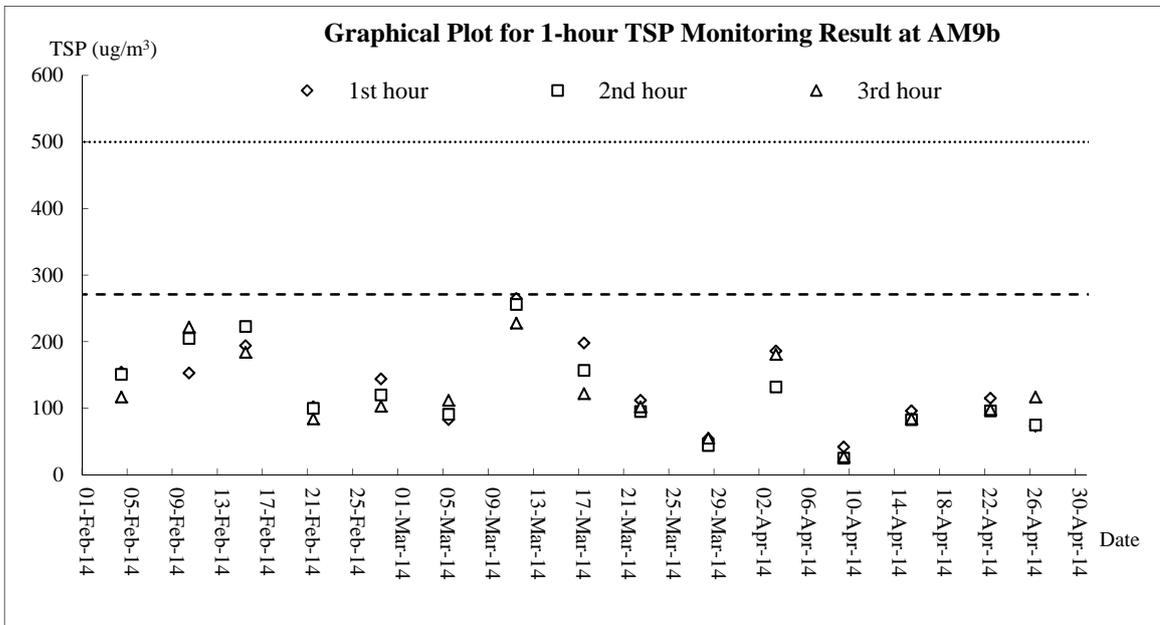
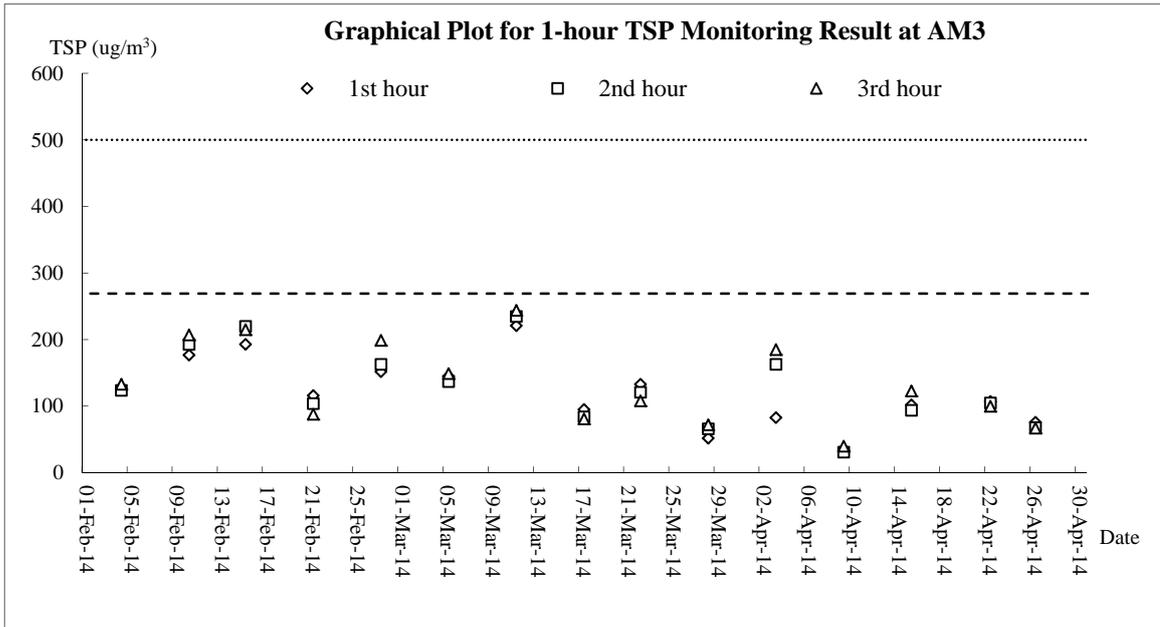
Date	30-Apr-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:10	0.16	24.7	24.7	6.97	6.9	82.5	82.1	8.5	8.5	8.1	8.1	3	3.0
			24.7		6.91		81.6		8.5		8.1		3	
WM4-CB	15:36	0.15	25.4	25.4	4.72	4.7	56.8	56.8	7.0	7.1	7.8	7.8	10	9.5
			25.4		4.62		56.8		7.2		7.8		9	
WM4	14:50	0.24	25.6	25.6	6.88	6.9	83.4	83.2	11.9	11.8	7.7	7.7	9	9.5
			25.6		6.85		82.9		11.7		7.7		10	

Appendix J

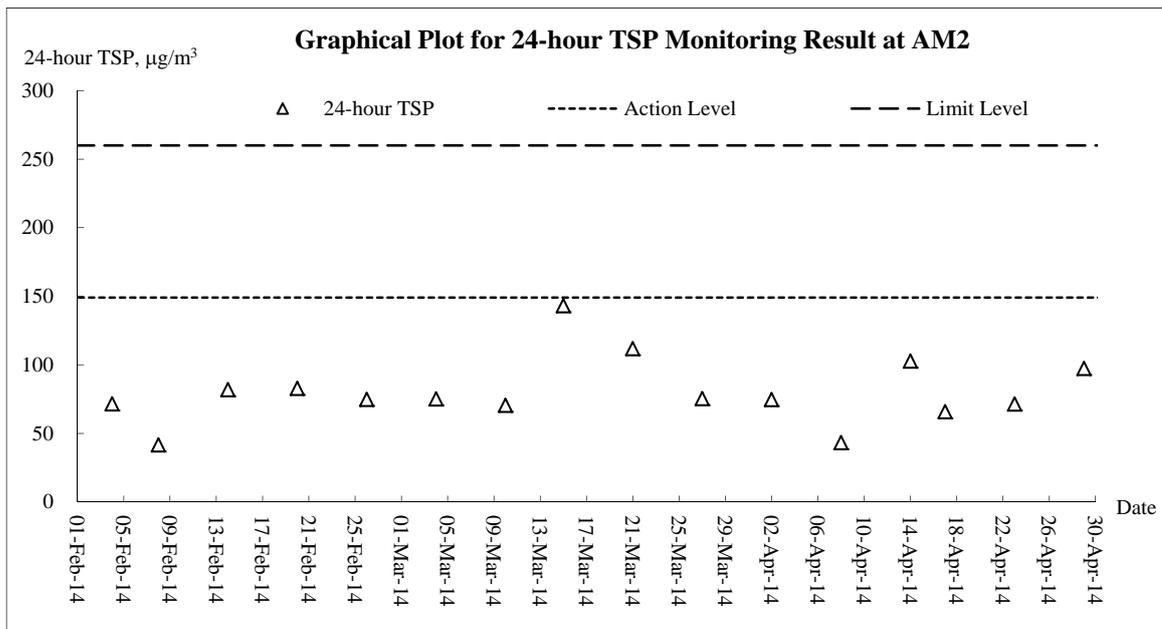
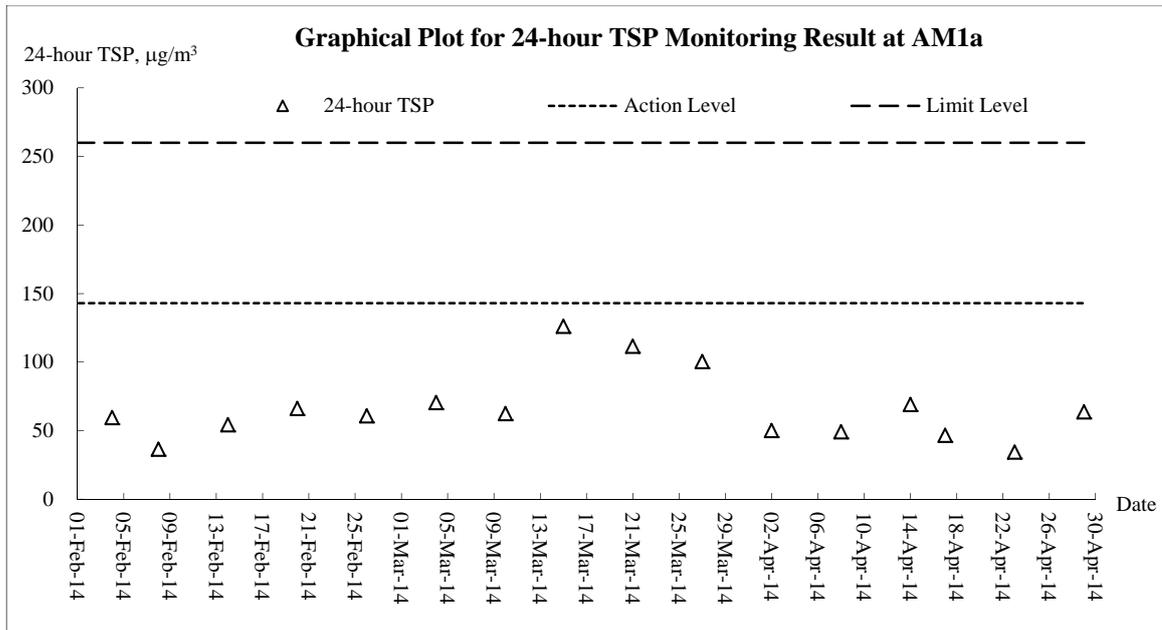
Graphical Plots for Monitoring Result

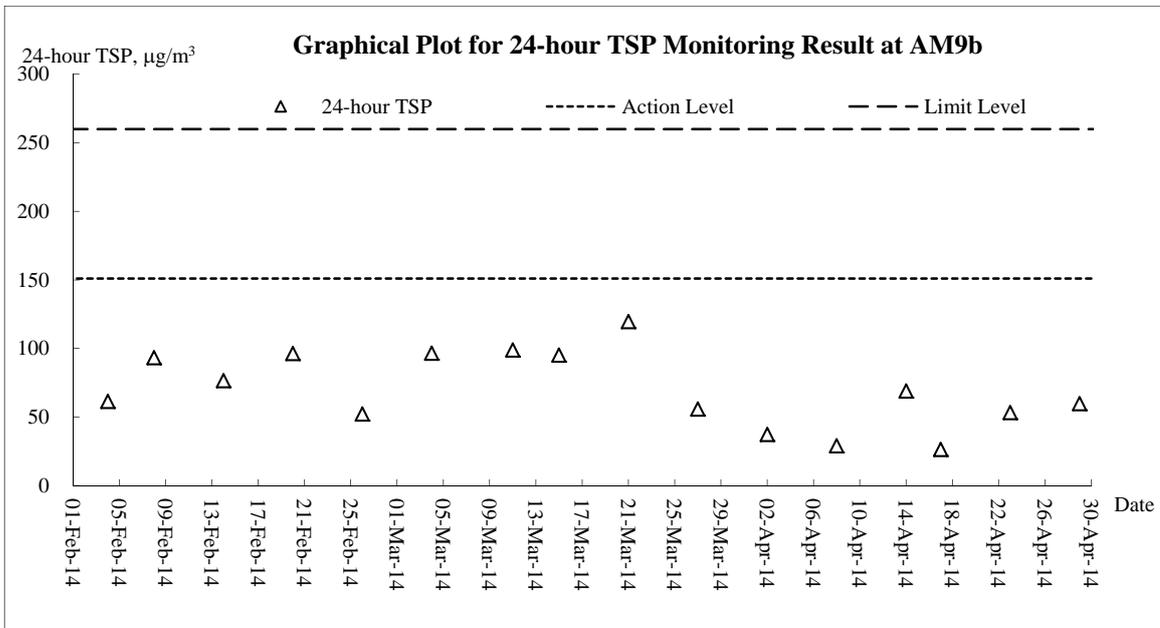
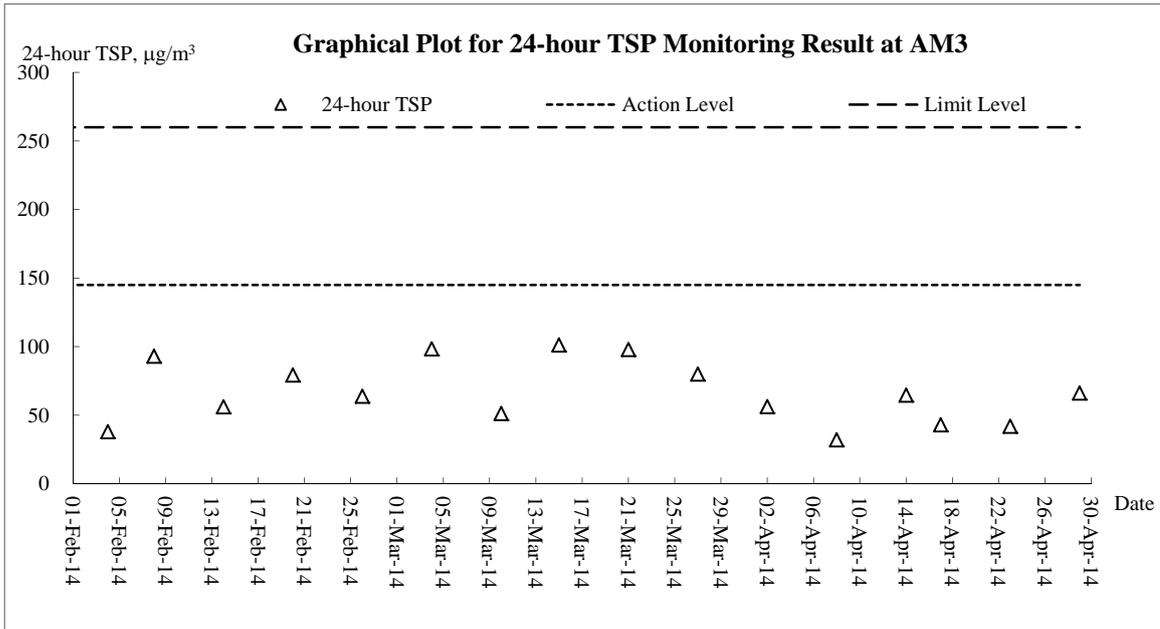
Air Quality – 1-hour TSP



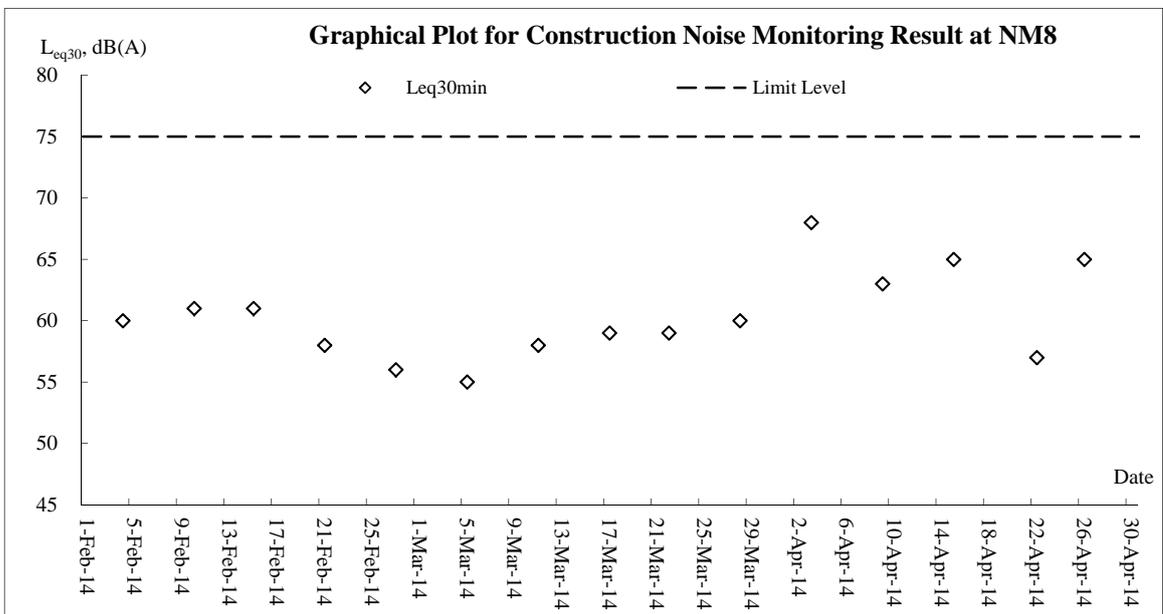
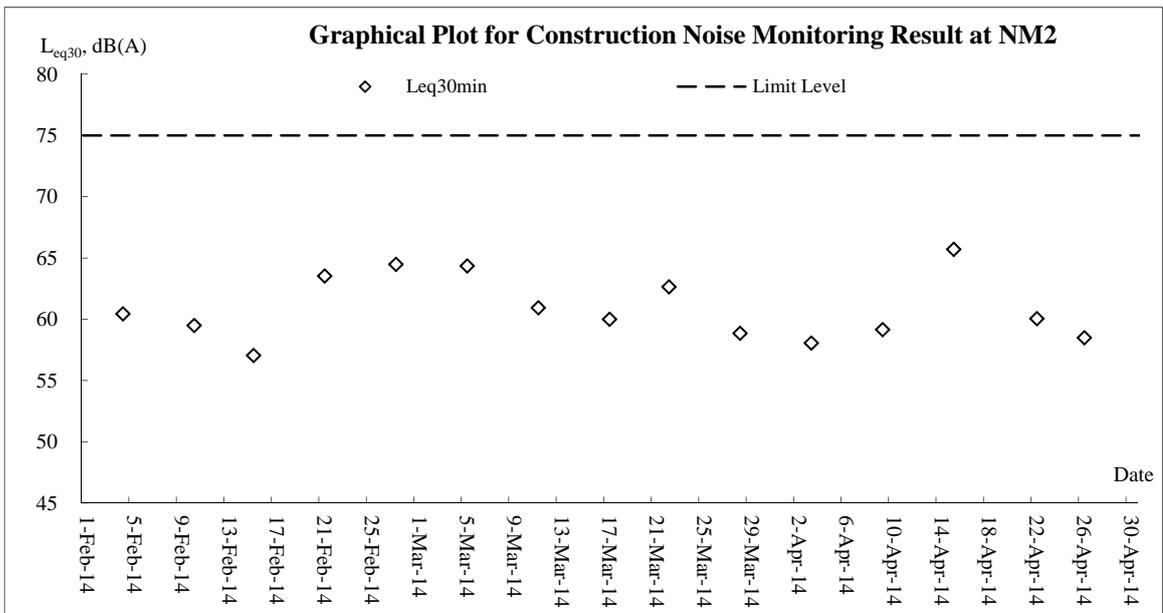
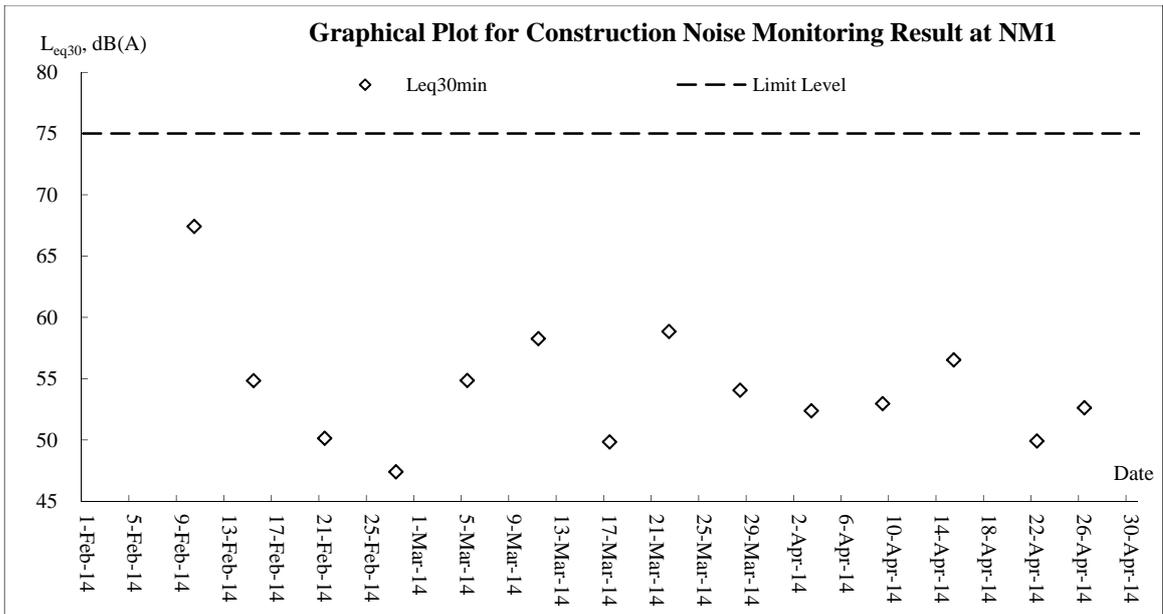


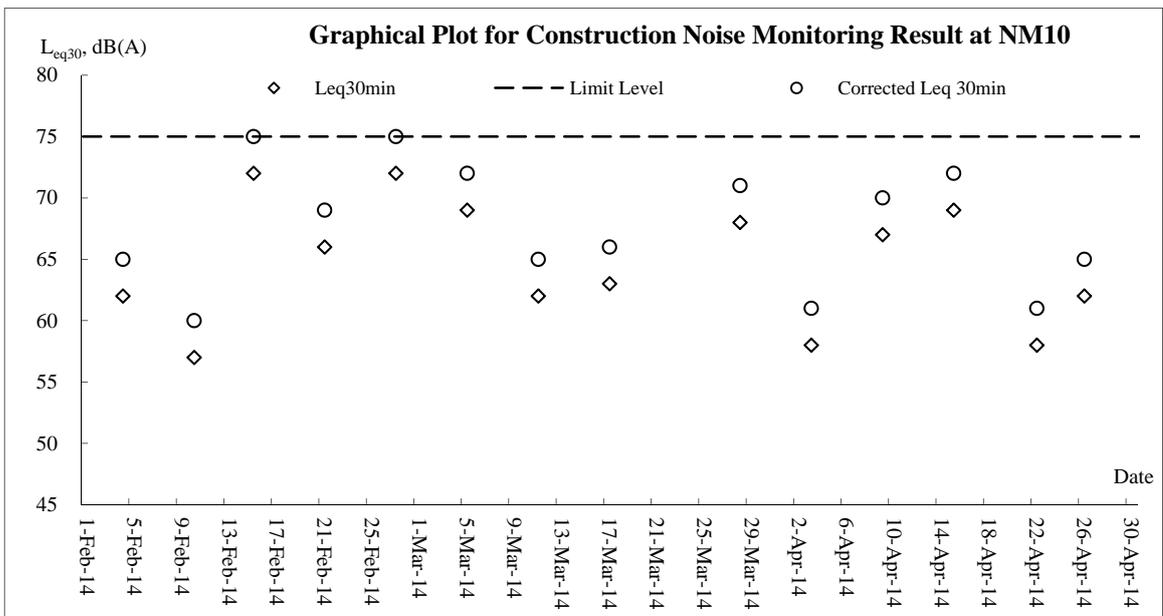
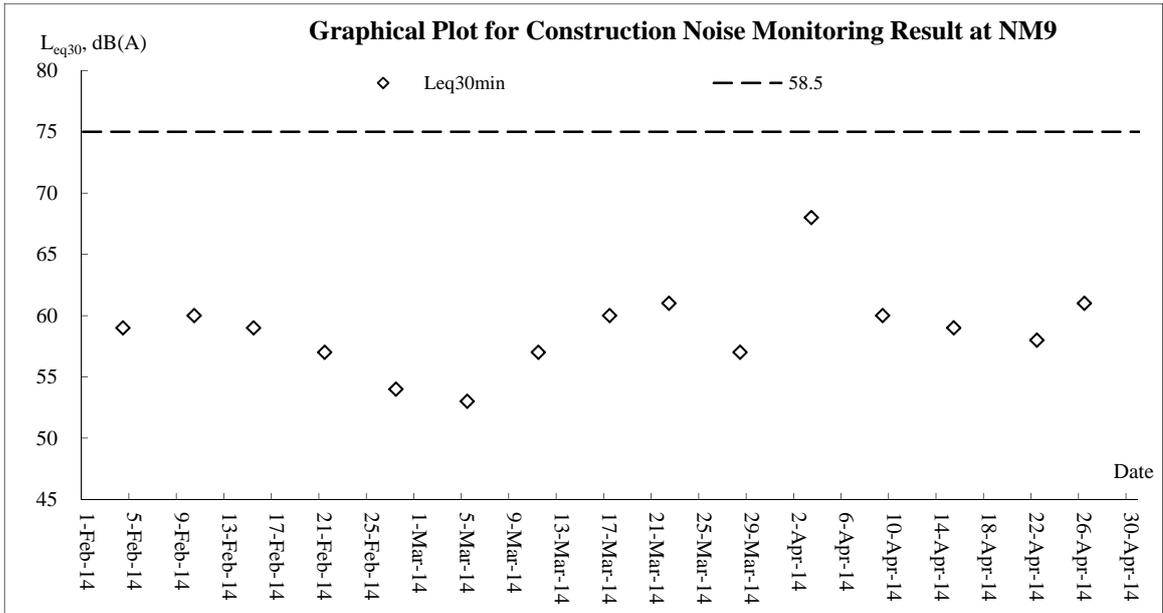
Air Quality – 24-hour TSP



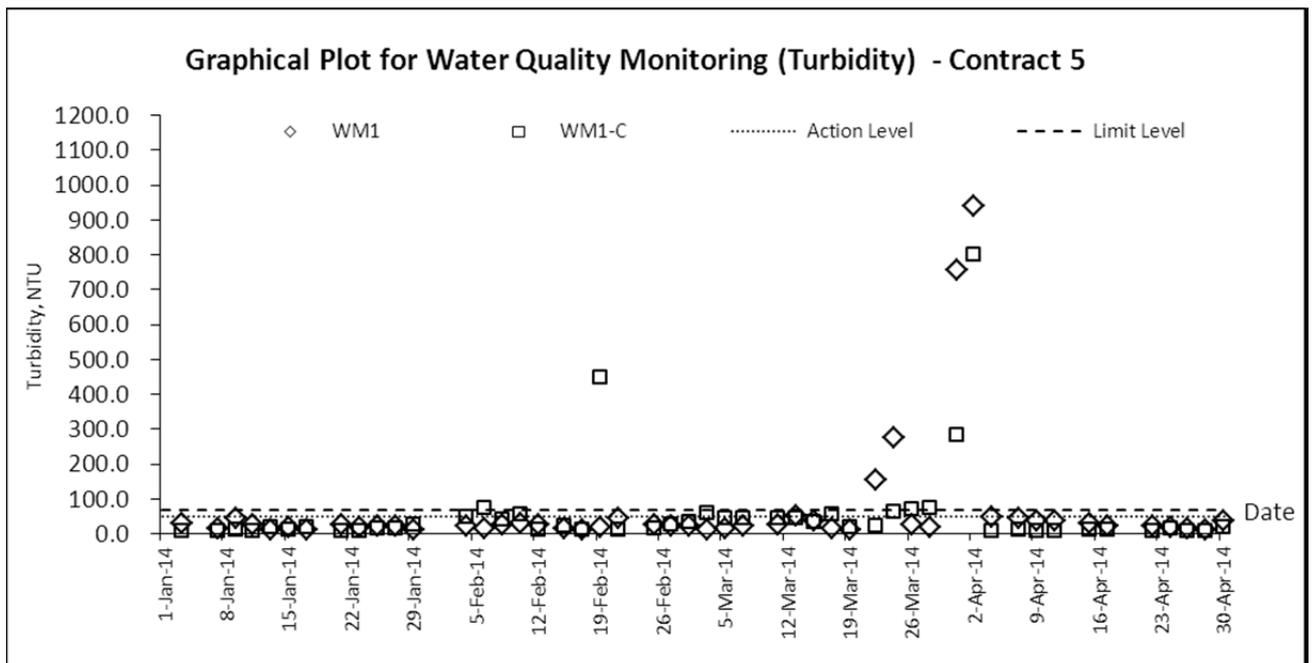
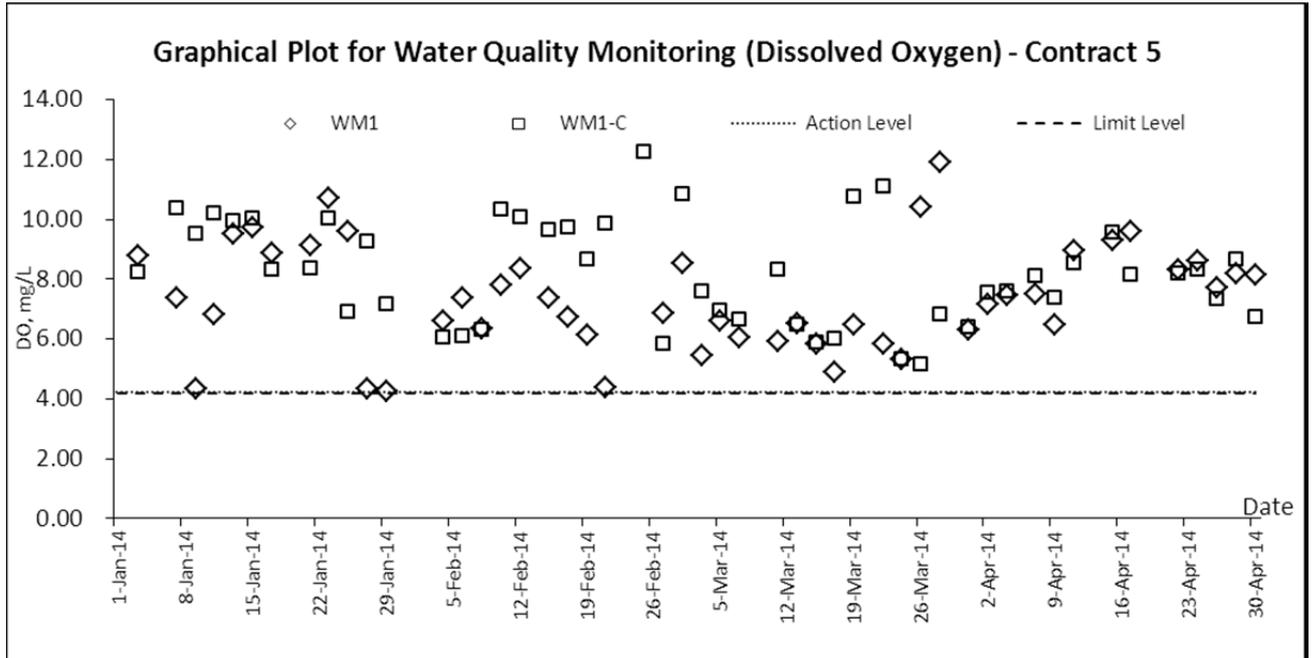


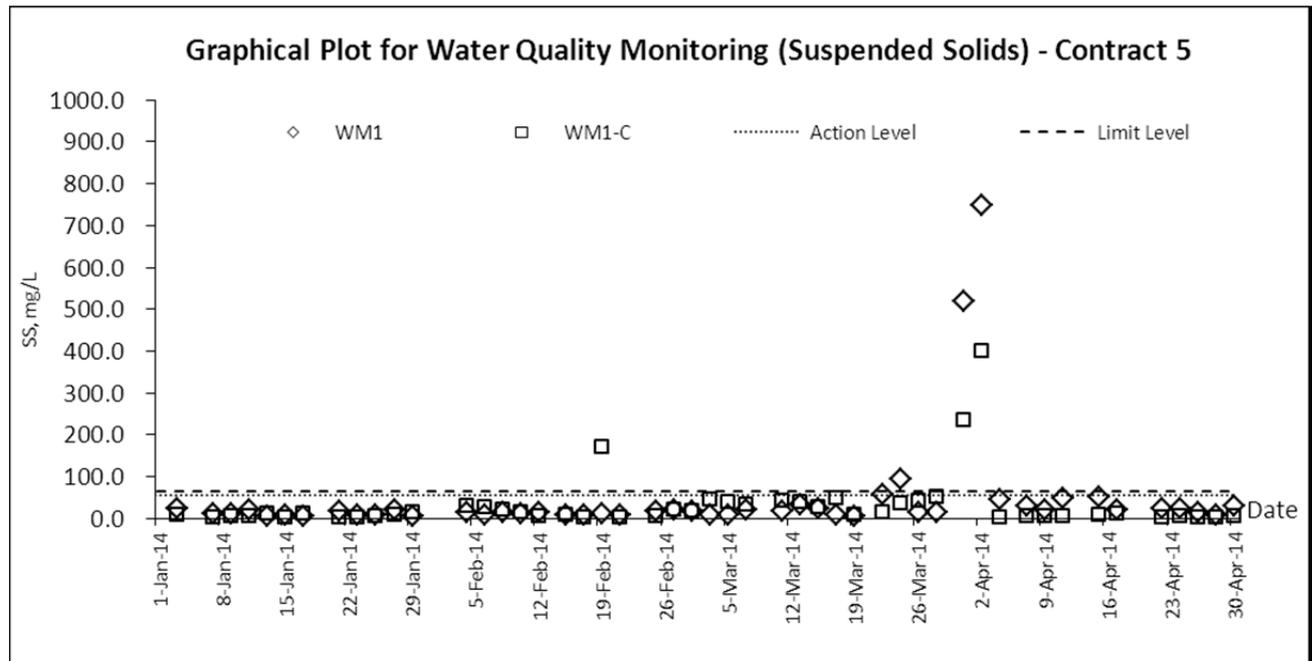
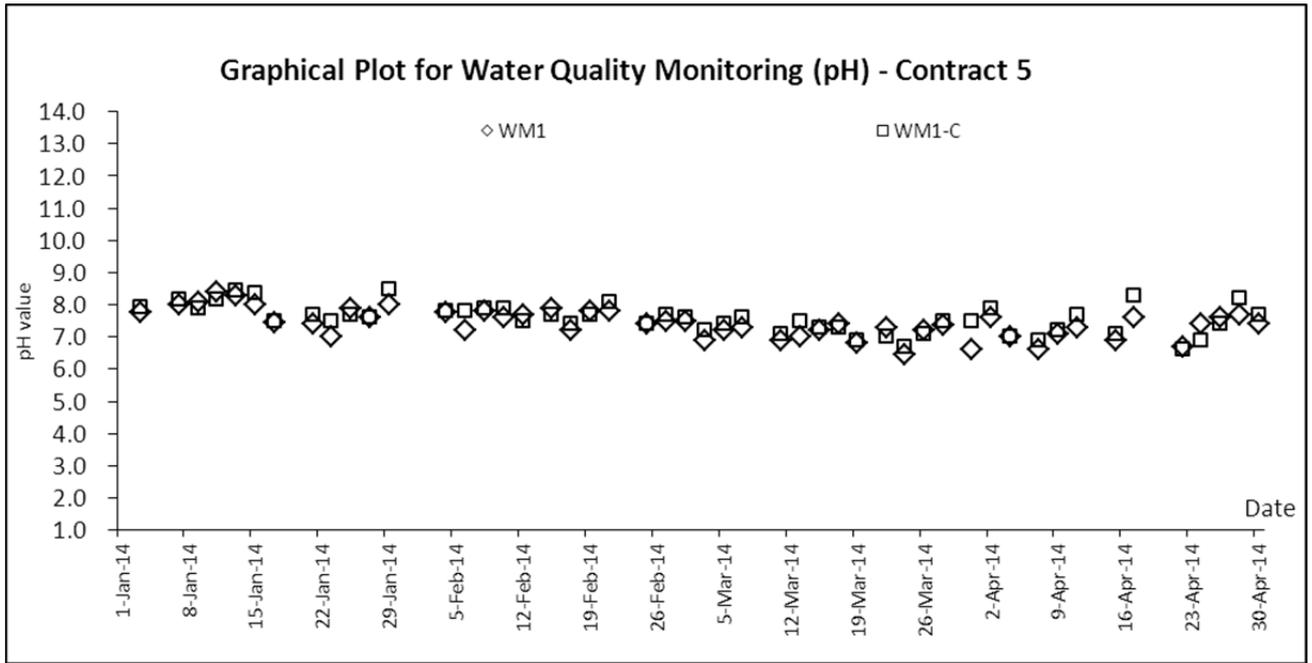
Noise

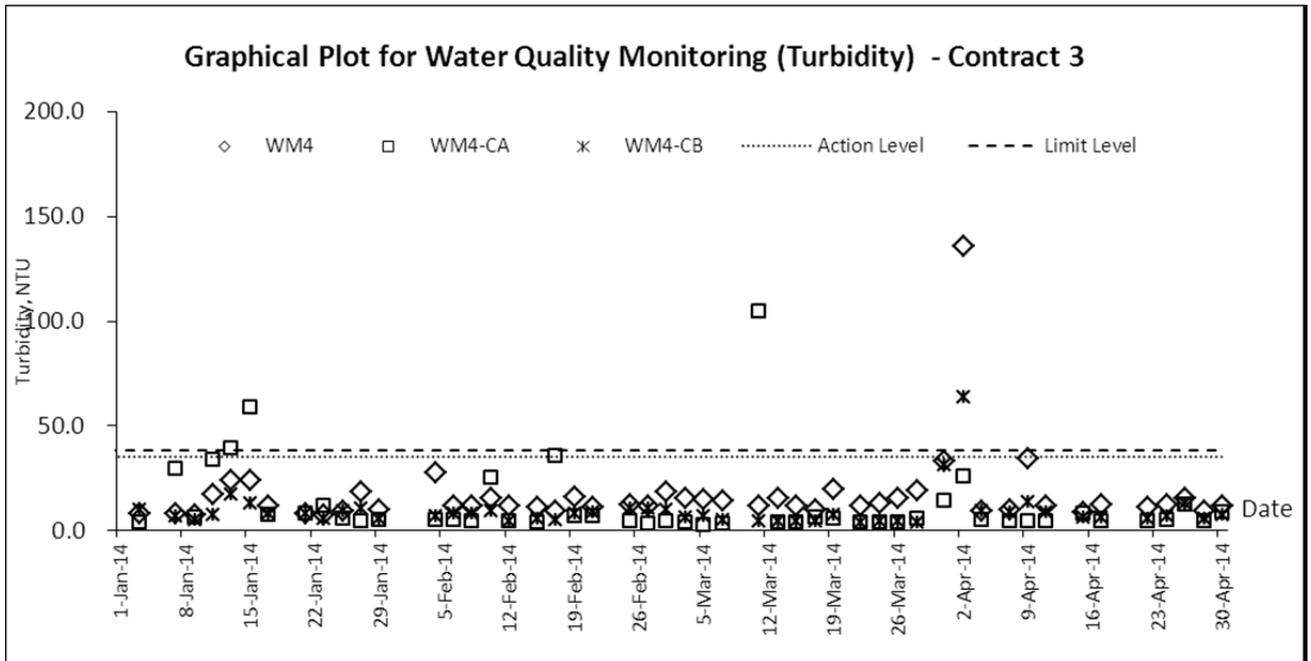
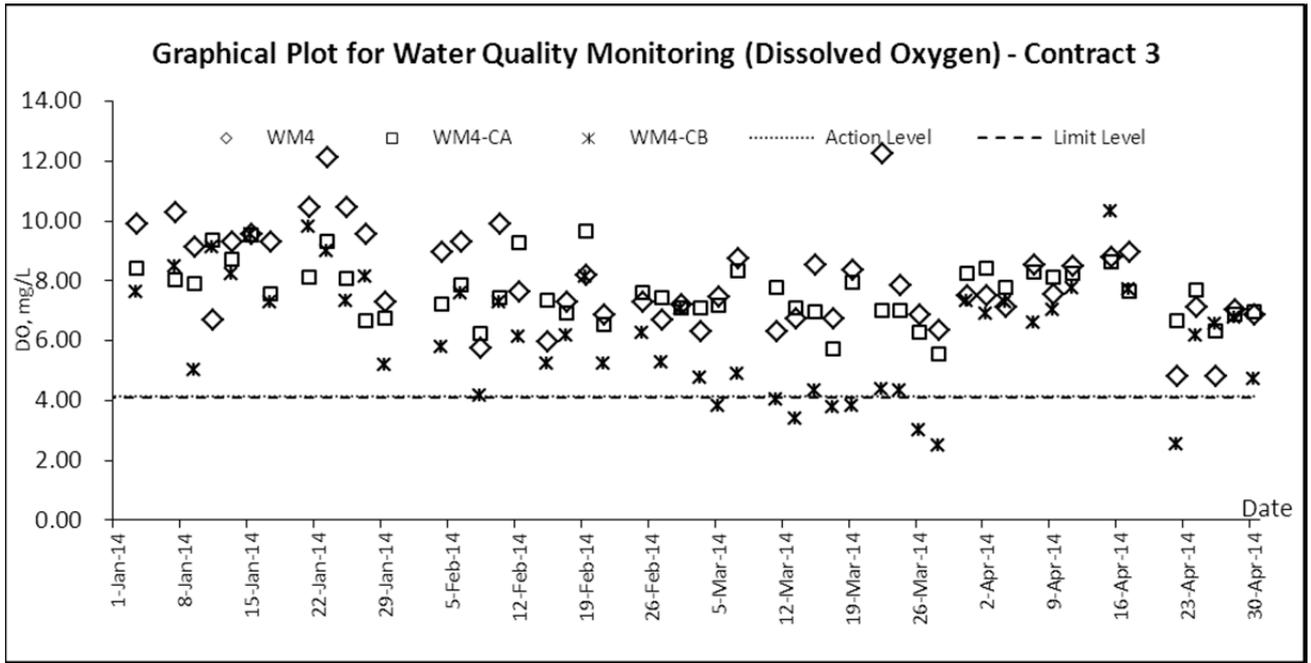


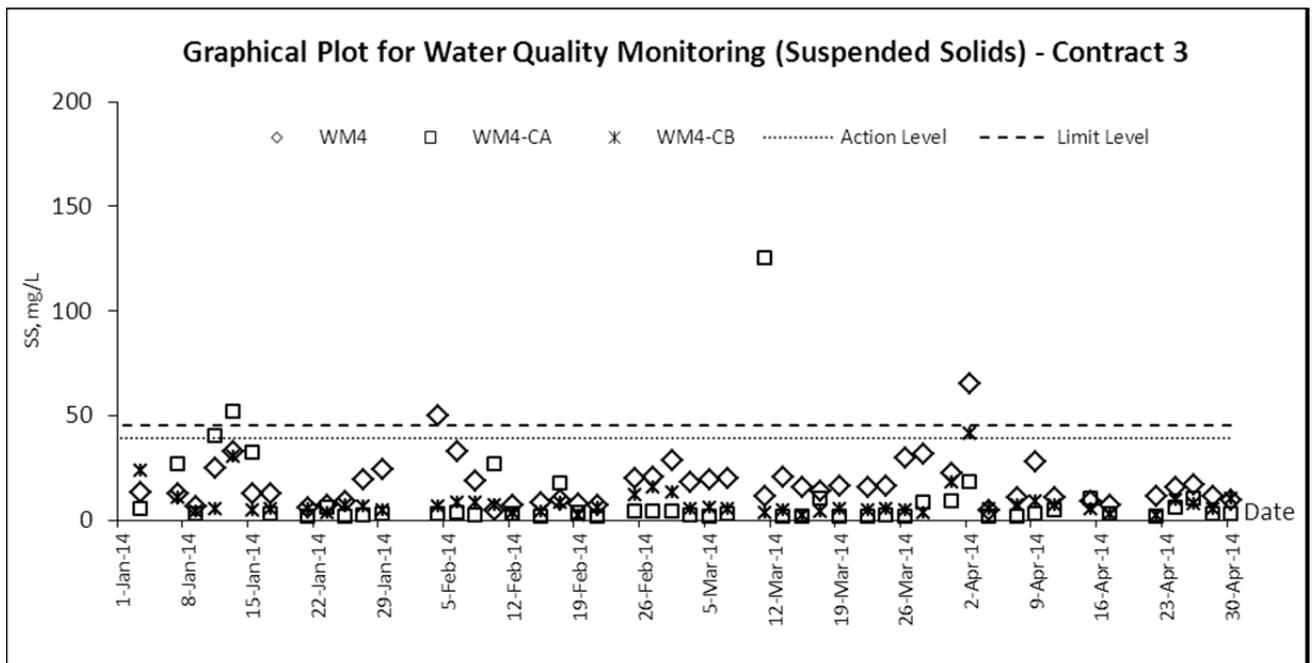
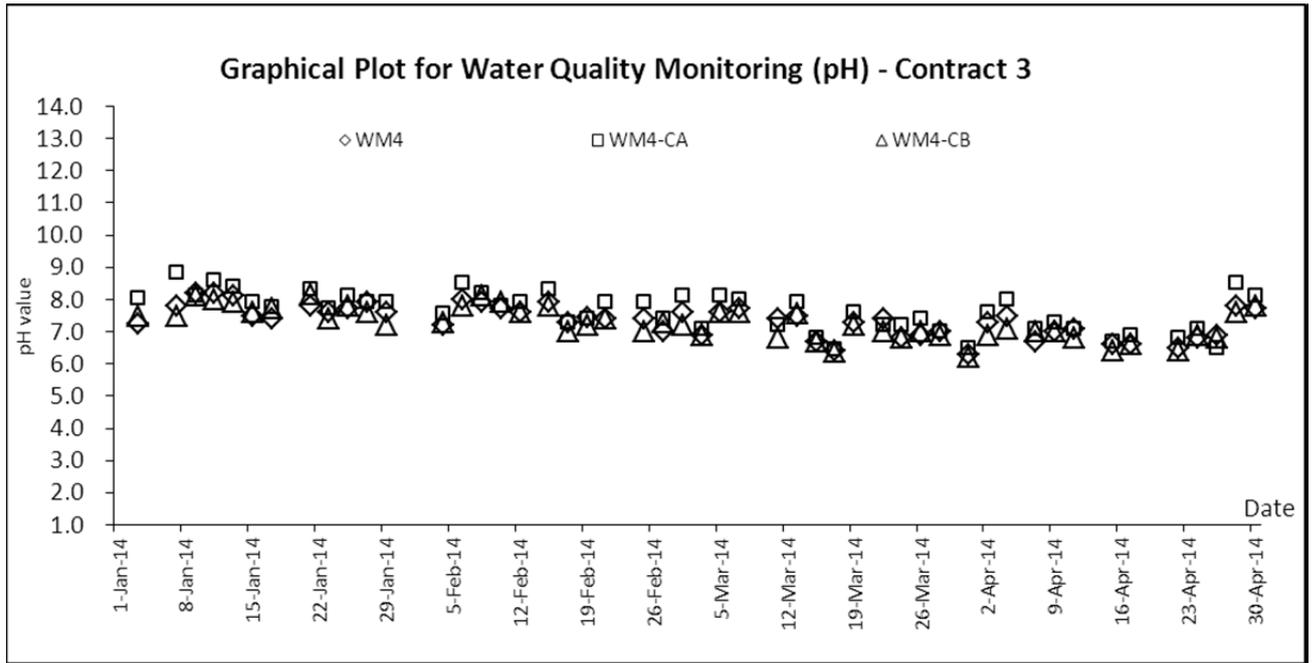


Water Quality









Appendix K

Meteorological Data

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Apr-14	Tue	Cloudy with rain and squally thunderstorms. Moderate east to northeasterly winds.	8	Maintenance	5.4	Maintenance	E/SE
2-Apr-14	Wed	Cloudy with rain and squally thunderstorms. Moderate east to northeasterly winds.	24.4	20.1	8.2	89.5	E
3-Apr-14	Thu	Cloudy, rain. Moderate east to northeasterly winds	42.3	19.8	8.5	89.7	E/SE
4-Apr-14	Fri	Mainly fine. Moderate east to northeasterly winds.	0	21.2	9.7	75.7	E/NE
5-Apr-14	Sat	Cloudy, rain, thunderstorm later. Fresh easterly winds, strong offshore at first.	0	21.4	8.4	61.5	E/SE
6-Apr-14	Sun	Cloudy, rain, thunderstorm later. Fresh easterly winds, strong offshore at first.	9.3	20.3	7.5	77	E
7-Apr-14	Mon	Mainly cloudy, rain. Fresh easterly winds. Moderate easterly winds.	Trace	20	9.6	81.5	E/SE
8-Apr-14	Tue	Cloudy, a few showers, sunny intervals. Moderate easterly winds.	27.5	21.2	7.5	88.5	E/SE
9-Apr-14	Wed	Cloudy, fog, rain. Moderate easterly winds, fresh offshore tomorrow.	Trace	23.4	7.5	78.5	E
10-Apr-14	Thu	Mainly cloudy with bright periods. Moderate easterly winds, fresh offshore.	Trace	23.5	10.5	73.5	E/NE
11-Apr-14	Fri	Cloudy, fine, warm, mist. Light to moderate easterly winds.	Trace	24	9.3	77.5	E
12-Apr-14	Sat	Cloudy, fog, mainly fine. Light winds.	0	25.7	7.5	73.5	E
13-Apr-14	Sun	Fine, fog, cloudy, rain. Moderate to fresh easterly winds.	0	26.7	5.3	74.2	W/SW
14-Apr-14	Mon	Cloudy, bright. Moderate to fresh easterly winds	0.4	23.4	8	79.2	E/SE
15-Apr-14	Tue	Sunny periods. Moderate to fresh easterly winds.	0	22.9	13.2	63.5	E/SE
16-Apr-14	Wed	Mainly cloudy, sunny periods, mist patches. Moderate easterly winds.	0	23.6	8.5	76	E
17-Apr-14	Thu	Mainly fine, fog, hot, Light to moderate east to southeasterly winds.	0	25.1	7.3	77.5	E/NE
18-Apr-14	Fri	Mainly fine, fog, hot, Light to moderate east to southeasterly winds.	0	25	6.6	77.7	E
19-Apr-14	Sat	Mainly cloudy, sunny periods, mist patches. Moderate easterly winds.	0	24.6	7.3	82	E
20-Apr-14	Sun	Cloudy, rain, fog, light winds. Moderate to fresh easterlies.	0	25.7	5.5	80	E
21-Apr-14	Mon	Cloudy, rain, fog, light winds. Moderate to fresh easterlies.	0.6	23.8	9.8	86.2	E
22-Apr-14	Tue	Cloudy, rain, mist. Moderate to fresh easterly winds.	Trace	25.4	6	80.5	E/SE
23-Apr-14	Wed	Cloudy, fog, rain. Moderate to fresh easterly winds.	13.3	22.5	10.2	89	E/SE
24-Apr-14	Thu	Cloudy, fog, rain. Moderate to fresh easterly winds.	1.5	22	13.9	88	E/SE
25-Apr-14	Fri	Cloudy and misty with light rain patches. Moderate to fresh easterly winds.	1.7	24.1	12.3	85.7	E
26-Apr-14	Sat	Cloudy and misty with light rain patches. Moderate to fresh easterly winds.	2.7	23.7	10	72	N/NW
27-Apr-14	Sun	Dry with sunny periods during the day. Mainly cloudy tonight. Moderate to fresh north to northeasterly winds.	0	25.5	12	69	N/NW
28-Apr-14	Mon	Dry with sunny periods during the day. Mainly cloudy tonight. Moderate to fresh north to northeasterly winds.	0	25.8	8.1	66.5	E
29-Apr-14	Tue	Mainly cloudy. Visibility relatively low in some areas. Showers and a few thunderstorms later. Light to moderate easterly winds.	0	24.5	6.8	76.5	E
30-Apr-14	Wed	Mainly cloudy. Visibility relatively low in some areas. Showers and a few thunderstorms later. Light to moderate easterly winds.	0.7	23	6	84.7	E

Appendix L

Waste Flow Table

Monthly Summary Waste Flow Table for 2014 (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	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)
Jan	0.409	0.084	0	0	0.409	0.200	0	0	0.010	0	0.110
Feb	1.697	0.356	0.380	0	1.473	0	0.002	0	0	0.019	0.040
Mar	3.954	0.506	1.092	0	2.862	0	0	0	0	0	0.265
Apr	1.600	0.054	0.672	0	0.928	0.200	0	0	0	0.020	0.135
May											
Jun											
Sub-total	7.660	1.000	2.144	0.000	5.672	0.400	0.002	0.000	0.010	0.039	0.550
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	7.660	1.000	2.144	0.000	5.672	0.400	0.002	0.000	0.010	0.039	0.550

- Note:**
1. Assume the density of soil fill is 2 ton/m³.
 2. Assume the density of rock and broken concrete is 2.5 ton/m³.
 3. Assume each truck of C&D wastes is 5m³.
 4. The inert C&D materials except slurry and bentonite are disposed at Tuen Mun 38.
 5. The slurry and bentonite are disposed at Tseung Kwun O 137.
 6. The non-inert C&D wastes are disposed at NENT.
 7. Assume the density of metal is 7,850 kg/m³.

Name of Department: CEDD

Monthly Summary Waste Flow Table for 2014

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	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
JAN	0	0	0	0	0	16.571	0	0	0	0	0.85
FEB	0	0	0	0	0	18.672	0	0	0	0	0.005
MAR	0	0	0	0	0	2.968	0	0	0	6	0.01
APRIL	0	0	0	0	0	1.664	0.87	0	0	0	0.245
MAY											
JUN											
Sub Total	0	0	0	0	0	39.875	0.87	0	0	6	1.11
JUL											
AUG											
SEP											
OCT											
NOV											
DEC											
Total	0	0	0	0	0	39.88	0.87	0	0	6	1.11

Notes:

Name of Department: CEDD

Forecast of Total Quantities of C&D Materials to be Generated from the Contract (see Note 4)										
Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metal	Paper / cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
0	0	0	0	0	350	30	4	2	1	4

Notes:

- (1) The performance targets are given in PS clause 6(14) above.
- (2) The waste flow table shall also include C&D materials that are specified in the Contractor to be imported for use at the Site.
- (3) Plastic 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
 - Hard Rocks and Large Broken Concrete = Cannot be defined at this stage
 - Imported Fill = Estimated by the Contractor = 1 loading = 8m³
 - Metal = Estimated by the Contractor
 - Paper/cardboard packaging = Estimated by the Contractor
 - Plastics = Estimated by the Contractor
 - Chemical Waste = Estimated by the Contractor (Spent lubricating oil, assume density 0.9kg/L)
 - Other, e.g. general refuse = Estimated by the Contractor

Appendix M

**Implementation Schedule for
Environmental Mitigation Measures**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Air Quality Impact (Construction)							
3.6.1.1	2.1	<p>General Dust Control Measures</p> <p>The following dust suppression measures should be implemented:</p> <ul style="list-style-type: none"> ■ Frequent water spraying for active construction areas (4 times per day for active areas in Po Kak Tsai and 8 times per day for all other active areas), including areas with heavy construction and slope cutting activities ■ 80% of stockpile areas should be covered by impervious sheets ■ Speed of trucks within the site should be controlled to about 10 km/hr ■ All haul roads within the site should be paved to avoid dust emission due to vehicular movement 	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation
3.6.1.2	2.1	<p>Best Practice for Dust Control</p> <p>The relevant best practices for dust control as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted to further reduce the construction dust impacts of the Project. These best practices include:</p> <p><i>Good site management</i></p> <ul style="list-style-type: none"> ■ The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. ■ Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimize the release of visible dust emission. ■ Any piles of materials accumulated on or around the work areas should be cleaned up regularly. ■ Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimizing generation of fugitive dust emissions. ■ The material should be handled properly to prevent fugitive dust emission before cleaning. <p><i>Disturbed Parts of the Roads</i></p> <ul style="list-style-type: none"> ■ Each and every main temporary access should be paved with 	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or</p> <ul style="list-style-type: none"> Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. <p><i>Exposed Earth</i></p> <ul style="list-style-type: none"> Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seeding with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. <p><i>Loading, Unloading or Transfer of Dusty Materials</i></p> <ul style="list-style-type: none"> All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet. <p><i>Debris Handling</i></p> <ul style="list-style-type: none"> Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped. <p><i>Transport of Dusty Materials</i></p> <ul style="list-style-type: none"> Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards. <p><i>Wheel washing</i></p> <ul style="list-style-type: none"> Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. <p><i>Use of vehicles</i></p> <ul style="list-style-type: none"> Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle. 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p><i>Site hoarding</i></p> <ul style="list-style-type: none"> Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit. <p><i>Blasting</i></p> <ul style="list-style-type: none"> The areas within 30m from the blasting area should be wetted with water prior to blasting. 					
<u>Air Quality Impact (Operation)</u>							
3.5.2.2	2.2	<p>The following odour containment and control measures will be provided for the proposed sewage treatment work at the BCP site:</p> <ul style="list-style-type: none"> The treatment work will be totally enclosed. Negative pressure ventilation will be provided within the enclosure to avoid any fugitive odorous emission from the treatment work. Further odour containment will be achieved by covering or confining the sewage channels, sewage tanks, and equipment with potential odour emission. Proper mixing will be provided at the equalization and sludge holding tanks to prevent sewage septicity. Chemical or biological deodorisation facilities with a minimum odour removal efficiency of 90% will be provided to treat potential odorous emissions from the treatment plant including sewage channels / tanks, filter press and screening facilities so as to minimize any potential odour impact to the nearby ASRs. 	To minimize potential odour impact from operation of the proposed sewage treatment work at BCP	DSD	BCP	Operation Phase	EIA recommendation
<u>Noise Impact (Construction)</u>							
4.4.1.4	3.1	<p>Adoption of Quieter PME</p> <p>Use of the recommended quieter PME such as those given in the BS5228: Part 1:2009 and presented in Table 4.14, which can be found in Hong Kong.</p>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and Noise Control Ordinance (NCO)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.4.1.4	3.1	<p>Use of Movable Noise Barrier</p> <p>The use of movable barrier for certain PME can further alleviate the construction noise impacts. In general, a 5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME can be achieved depending on the actual design of the movable noise barrier. The Contractor shall be responsible for design of the movable noise barrier with due consideration given to the size of the PME and the requirement for intercepting the line of sight between the NSRs and PME. Barrier material with surface mass in excess of 7 kg/m² is recommended to achieve the predicted screening effect.</p>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
4.4.1.4	3.1	<p>Use of Noise Enclosure/ Acoustic Shed</p> <p>The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the GW-TM.</p>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
4.4.1.4	3.1	<p>Use of Noise Insulating Fabric</p> <p>Noise insulating fabric can be adopted for certain PME (e.g. drill rig, pilling auger etc). The insulating fabric should be lapped such that there are no openings or gaps on the joints. Technical data from manufacturers state that by using the Fabric, a noise reduction of over 10 dB(A) can be achieved on noise level.</p>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.4.1.4	3.1	<p>Good Site Practice</p> <p>The good site practices listed below should be followed during each phase of construction:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
Noise Impact (Operation)							
<u>Road Traffic Noise</u>							
Table 4.42 and Figure 4.20.1 to 4.20.4	3.2	Erection of noise barrier/ enclosure along the viaduct section.	To minimize the road traffic noise along the connecting road of BCP	Contractor	Loi Tung and Fanling Highway Interchange	Before Operation	EIAO and NCO
<u>Fixed Plant Noise</u>							
Table 4.46	3.2	Specification of the maximum allowable sound power levels of the proposed fixed plants during daytime and night-time.	To minimize the fixed plant noise impact	Managing Authority of the buildings / Contractor	BCP, Administration Building and all ventilation buildings	Before Operation	EIA recommendation, EIAO and NCO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.5.2.4	3.2	<p>The following noise reduction measures shall be considered as far as practicable during operation:</p> <ul style="list-style-type: none"> Choose quieter plant such as those which have been effectively silenced; Include noise levels specification when ordering new plant (including chillier and E/M equipment); Locate fixed plant/louver away from any NSRs as far as practicable; Locate fixed plant in walled plant rooms or in specially designed enclosures; Locate noisy machines in a basement or a completely separate building; Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise. 	To minimize the fixed plant noise impact	Managing Authority of the buildings / Contractor	BCP, Administration Building and all ventilation buildings	Before Operation	EIAO and NCO
Water Quality Impact (Construction)							
5.6.1.1	4.1	<p>Construction site runoff and drainage</p> <p>The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:</p> <ul style="list-style-type: none"> 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 and erosion and sedimentation control facilities implemented. 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. The design of the temporary on-site drainage system should be undertaken by the Contractor prior to the commencement of construction. The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. 	To control site runoff and drainage; prevent high sediment loading from reaching the nearby watercourses	Contractor	Construction Works Sites	Construction Phase	Practice Note for Professional Persons on Construction Site Drainage (ProPECC Note PN 1/94)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>Temporary ditches should be provided to facilitate the runoff discharge into stormwater drainage system through a sediment/silt trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates, if practical.</p> <ul style="list-style-type: none"> ▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction. ▪ 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 during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. ▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities. ▪ If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Interception channels should be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC Note PN 1/94. ▪ The overall slope of the site should be kept to a minimum to reduce 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>the erosive potential of surface water flows.</p> <ul style="list-style-type: none"> ▪ 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 facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly 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 backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. ▪ Open stockpiles of construction materials or construction wastes on-site 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. ▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers. ▪ Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. ▪ Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries. 					
5.6.1.1	4.1	<p>Good site practices for works within water gathering grounds</p> <p>The following conditions should be complied, if there is any works to be carried out within the water gathering grounds:</p>	To minimize water quality impacts to the water gathering grounds	Contractor	Construction Works Sites within the water gathering	Construction Phase	ProPECC Note PN 1/94

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<ul style="list-style-type: none"> ▪ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments. ▪ No earth, building materials, oil or fuel, soil, toxic materials or any materials that may possibly cause contamination to water gathering grounds are allowed to be stockpiled on site. ▪ All surplus spoil should be removed from water gathering grounds as soon as possible. ▪ Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks. ▪ Regular cleaning of silt traps should be carried out to ensure proper operation at all time. ▪ All excavated or filled surfaces which have the risk of erosion should always be protected form erosion. ▪ Facilities for washing the wheels of vehicles before leaving the site should be provided. ▪ Any construction plant which causes pollution to catchwaters or catchments due to the leakage of oil or fuel should be removed off site immediately. ▪ No maintenance activities which may generate chemical wastes should be undertaken in the water gathering grounds. Vehicle maintenance should be confined to designated paved areas only and any spillages should be cleared up immediately using absorbents and waste oils should be collected in designated tanks prior to disposal off site. All storm water run-off from these areas should be discharged via oil/petrol separators and sand/silt removal traps. ▪ Any soil contaminated with fuel leaked from plant should be removed off site and the voids arising from removal of contaminated soil should be replaced by suitable material approved by the Director of Water Supplies. ▪ Provision of temporary toilet facilities and use of chemicals or insecticide of any kind are subject to the approval of the Director of Water Supplies. ▪ Drainage plans should be submitted for approval by the Director of 			grounds		

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>Water Supplies.</p> <ul style="list-style-type: none"> ▪ An unimpeded access through the waterworks access road should always be maintained. ▪ Earthworks near catchwaters or streamcourses should only be carried out in dry season between October and March, ▪ Advance notice must be given before the commencement of works on site quoting WSD's approval letter reference. 					
5.6.1.2	4.1	<p>Good site practices of general construction activities</p> <p>Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials should be kept covered when not being used.</p> <p>Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby stormwater drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</p>	To minimize water quality impacts	Contractor	All construction works sites	Construction phase	EIA Recommendation
5.6.1.3	4.1	<p>Sewage effluent from construction workforce</p> <p>Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.</p>	To minimize water quality impacts	Contractor	All construction works sites with on-site sanitary facilities	Construction phase	EIA Recommendation and Water Pollution Control Ordinance (WPCO)
5.6.1.4	4.1	<p>Hydrogeological Impact</p> <p>Grout injection works would be conducted before blasting, for sealing a limited area around the tunnel with a grout of a suitable strength for controlling the potential groundwater inflows. The pre-injection grouting method would be supplemented by post-injection grouting where necessary to further enhance the groundwater inflow control. On-site treatment for the groundwater ingress pumped out would be required to remove any contamination by grouting materials before discharge off-site.</p>	To minimize water quality impacts	Contractor	Construction works sites of the drill and blast tunnel	Construction phase	EIA Recommendation and WPCO
<u>Water Quality Impact (Operation)</u>							
No mitigation measure is required.							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
<u>Sewage and Sewerage Treatment Impact (Construction)</u>							
6.7	5	The sewage generated by the on-site workforce should be collected in chemical toilets and disposed of off-site by a licensed waste collector.	To minimize water quality impacts	Contractor	All construction works sites with on-site sanitary facilities	Construction phase	EIA recommendation and WPCO
<u>Sewage and Sewerage Treatment Impact (Operation)</u>							
6.6.3	5	Sewage generated by the BCP and Chuk Yuen Village Resite will be collected and treated by the proposed on-site sewage treatment facility using Membrane Bioreactor treatment with a portion of the treated wastewater reused for irrigation and flushing within the BCP.	To minimize water quality impacts	DSD	BCP	Operation phase	EIA recommendation and WPCO
6.5.3	5	Sewage generated from the Administration Building will be discharged to the existing local sewerage system.	To minimize water quality impacts	DSD	Administration Building	Operation phase	EIA recommendation and WPCO
<u>Waste Management Implication (Construction)</u>							
7.6.1.1	6	<p>Good Site Practices</p> <p>Adverse impacts related to waste management such as potential hazard, air, odour, noise, wastewater discharge and public transport as mentioned in section 3.4.7.2 (ii)(c) of the Study Brief are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site ▪ Training of site personnel in proper waste management and chemical handling procedures ▪ Provision of sufficient waste disposal points and regular collection of waste ▪ Dust suppression measures as required under the Air Pollution Control (Construction Dust) Regulation should be followed as far as practicable. Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by covering trucks or in enclosed containers ▪ General refuse shall be removed away immediately for disposal. As 	To minimize adverse environmental impact	Contractor	Construction works sites (general)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; Waste Disposal (Chemical Wastes) (General) Regulation; and ETWB TC(W) No. 19/2005, Environmental Management on Construction Site

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>such odour is not anticipated to be an issue to distant sensitive receivers</p> <ul style="list-style-type: none"> ▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road ▪ Covers and water spraying system should be provided for the stockpiled C&D material to prevent dust impact or being washed away ▪ Designate different locations for storage of C&D material to enhance reuse ▪ Well planned programme for transportation of C&D material to lessen the off-site traffic impact. Well planned delivery programme for offsite disposal and imported filling material such that adverse noise impact from transporting of C&D material is not anticipated ▪ Site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” should be adopted as far as practicable, such as cleaning and maintenance of drainage systems regularly ▪ Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains 					
7.6.1.2	6	<p>Waste Reduction Measures</p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal ▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force ▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials ▪ Plan and stock construction materials carefully to minimise amount 	To reduce the quantity of wastes	Contractor	Construction works sites (General)	Construction Phase	EIA recommendation and Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>of waste generated and avoid unnecessary generation of waste</p> <ul style="list-style-type: none"> In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes. 					
7.6.1.3	6	<p>C&D Materials</p> <p>In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials should be reused on-site as backfilling material as far as practicable. The surplus rock and other inert C&D material would be disposed of at the Government's Public Fill Reception Facilities (PFRFs) at Tuen Mun Area 38 for beneficial use by other projects in the HKSAR as the last resort. C&D waste generated from general site clearance and tree felling works would require disposal to the designated landfill site. Other mitigation requirements are listed below:</p> <ul style="list-style-type: none"> A Waste Management Plan should be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction Site; and In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system (e.g. ETWB TCW No. 31/2004) should be included. 	To minimize impacts resulting from C&D material	Contractor	Construction Works Sites (General)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; and ETWB TCW No. 31/2004
7.6.1.4	6	<p>General refuse</p> <p>General refuse should be stored in enclosed bins or compaction units separated from other C&D material. A reputable waste collector is to be employed by the Contractor to remove general refuse from the site separately. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' litter.</p>	To minimize impacts resulting from collection and transportation of general refuse for off-site disposal	Contractor	Construction works sites (General)	Construction phase	Waste Disposal Ordinance and Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation
7.6.1.5	6	<p>Chemical waste</p> <p>If chemical wastes are produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical</p>	To minimize impacts resulting from collection and transportation of chemical waste for off-site disposal	Contractor	Construction works sites (General)	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation and Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes