

**JOB No.: TCS00670/13**

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

**3<sup>rd</sup> QUARTERLY ENVIRONMENTAL MONITORING &  
AUDIT SUMMARY REPORT –  
(February to April 2014)**

**PREPARED FOR**

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

**Quality Index**

<b>Date</b>	<b>Reference No.</b>	<b>Prepared By</b>	<b>Certified By</b>
30 May 2014	TCS00670/13/600/R0175v2	 Nicola Hon (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

<b>Version</b>	<b>Date</b>	<b>Description</b>
1	19 May 2014	First Submission
2	30 May 2014	Amended according to IEC's comments

This report has been prepared by Action-United Environmental Services & Consulting with all reasonable skill, care and diligence within the terms of the Agreement with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

3 June 2014

Our ref: 7076192/L16105/R/AB/AW/rh  
Your ref:

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N.T.

**By Email & Post**

Attention: Mr Simon LEUNG

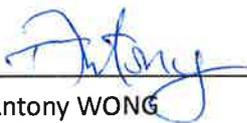
Dear Sirs

**Agreement No. CE 45/2008 (CE)**  
**Liantang/Heung Yuen Wai Boundary Control Point and Associated Works**  
**Independent Environmental Checker – Investigation**  
**Quarterly EM&A Summary Report (No. 3) – February to April 2014**

With reference to the Quarterly EM&A Report No. 3 for February to April 2014 (Version 2) certified by the ET Leader we received on 30 May 2014, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Section 13.4 of the EM&A Manual.

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

cc	CEDD/BCP	-	Mr Pui Sang LI / Mr Eric CHAN / Mr William CHEUNG	by fax: 2714 0103
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## EXECUTIVE SUMMARY

ES.01. This is the 3<sup>rd</sup> Quarterly EM&A Summary Report for the “Liantang/Heung Yuen Wai Boundary Control Point and Associated Works” under Environmental Permit No. EP-404/2011/A (hereinafter “the EP”), covering the period from **1 February to 30 April 2014** (hereinafter “Reporting Period”).

### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. 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	180
	24-hour TSP	4	64
Construction Noise	L <sub>eq(30min)</sub> Daytime	5	75
Water Quality	Water sampling	3 (Contract 3)	37*
		2 (Contract 5)	37*
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 3	13
		Contract 5	13

(\*) number of sampling day

### BREACHES OF ACTION/LIMIT LEVELS

ES.03. In the Reporting Period, no exceedance of air quality was registered. However, one (1) Limit Level exceedance and eleven (11) Action/ Limit Level exceedances were recorded for construction noise and water quality monitoring respectively. 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	0	0
	24-hour TSP	0	0	0	0	0
Construction Noise	L <sub>eq(30min)</sub> Daytime	0	1	1	Not project related	N.A.
Water Quality	DO	0	0	0	0	0
	Turbidity	0	5	5	Not project related	N.A.
	SS	1	5	6	Not project related	N.A.

### ENVIRONMENTAL COMPLAINT

ES.04. In the Reporting Period, one (1) environmental complaint was received on **16 April 2014** for Contract 3 regarding construction dust on the wheels of some vehicles leaving the construction site. Measures have been taken to ensure regular wheel washing of vehicles leaving the construction sites, the maintenance of the wheel washing facilities, and the maintenance of the cleanliness of the public roads. An investigation report has been submitted to relevant parties.

### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.05. No environmental summons or successful prosecutions were recorded in the Reporting Period.

**REPORTING CHANGES**

ES.06. No reporting changes were made in the Reporting Period.

**FUTURE KEY ISSUES**

- ES.07. 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.
- ES.08. As wet season is approaching, 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.
- ES.09. 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.
- ES.10. 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.

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## 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.
- 1.1.5. This is the 3<sup>rd</sup> Quarterly EM&A Summary Report for the “*Liantang/Heung Yuen Wai Boundary Control Point and Associated Works*” under Environmental Permit No. EP-404/2011/A, covering the period from **1 February 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:-

<b>Section 1</b>	Introduction
<b>Section 2</b>	Project Organization and Construction progress
<b>Section 3</b>	Summary of Impact monitoring Requirements
<b>Section 4</b>	Air Quality Monitoring
<b>Section 5</b>	Construction Noise Monitoring
<b>Section 6</b>	Water Quality Monitoring
<b>Section 7</b>	Waste Management
<b>Section 8</b>	Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
<b>Section 9</b>	Implementation Status of Mitigation Measures
<b>Section 10</b>	Conclusions and Recommendations

## 2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

### 2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project would be divided by the 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;
  - (b) Building works and road works by contractors of ArchSD;
  - (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 Contract 3 and Contract 5. They are summarized in below. Moreover, the master construction program of the Contract 3 and Contract 5 is enclosed in [Appendix C](#).

### Contract 2 (CV/2012/08)

- Contract 2 has awarded in December 2013 and construction work will commence on 19 May 2014.

### Contract 3 (CV/2012/09)

- Contract commenced in November 2013, the following activities were conducted in the Reporting Period.
  - 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)

- Contract awarded in April 2013 and commenced in August 2013, the following activities were conducted in the Reporting Period.
- Construction of Eastern pedestrian subway and pump room at Lin Ma Hang (LMH) Road
- 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	GW-RN0004-14	NA	--

Item	Description	License/Permit Status		
		Contract 3	Contract 5	Contract 2, 4 & 6
	Permit	Valid on 7 Jan 14 till 22 Jun 2014		
		GW-RN0109-14 Valid on 24 Feb 14 till 17 May 2014		
		GW-RN0136-14 Valid on 4 Mar 2014 till 22 Jun 2014		

### 3 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

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

#### 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
AM1	Tsung Yuen Ha Village House No. 63	BCP	Contract 5
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 of the original point AM4	LMH to Frontier Closed Area	Contract 6

Station ID	Description	Works Area	Related to the Work Contract
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 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 Road	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. 78	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 designated location	Contract 6
WM3	Downstream of River Indus	836324	842407	NA	Contract 6
WM3-Control	Upstream of River	836763	842400	Alternative location located	Contract 6

Station ID	Description	Designated / Alternative Location		Nature of the location	Related to the Work Contract
		Coordinates			
		Easting	Northing		
	Indus			at downstream 26m of the designated location	
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**

3.4.1 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

3.4.2 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

3.4.3 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

3.4.4 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
<b>24-Hr TSP</b>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
<b>1-Hour TSP</b>	
Portable Dust Meter	Sibata LD-3B Laser Dust monitor Particle Mass Profiler &

Equipment	Model
	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<sup>-1</sup>.
- 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:
- DO level in the range of 0-20 mg/l and 0-200% saturation; and
  - 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 <sup>®</sup> 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 were 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 were used 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 is 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 was 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 4<sup>0</sup>C 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. Before each round of monitoring, the dissolved oxygen probe would be calibrated by the wet bulb method.
- 3.6.15 A portable EcoSense<sup>®</sup> 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. StablCal<sup>®</sup> Standards of known NTU are used for calibration of the instrument before and after measurement.
- 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 are analyzed with Suspended Solids (SS) as specified in the *EM&A Manual* by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS analysis is determined by the laboratory upon receipt of the water samples using *APHA Standard Methods 2540D* (namely ALS Method EA-025 as accredited HOKLAS Scheme) started 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 is 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 presented in the relevant monthly EM&A reports.

### **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
AM1/ 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		
AM9a	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) <sup>Note 1 &amp; Note 2</sup>

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	67.6	33.8	12.3	14.0	38.4
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
	Limit Level	64.9	17.3	12.4	12.9	45.5

**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 F](#).

**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 properly maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.

3.9.2 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, the construction works under the project was commenced for Contract 3 and Contract 5. Therefore, air quality monitoring was only performed at 4 relevant designated locations as below:

- AM1 - Tsung Yuen Ha Village House No. 63 (relocated to AM1a Garden Farm, Tsung Yuen Ha Village on 21 March 2014);
- AM2 - Village House near Lin Ma Hang Road; and
- AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village
- AM9b - Nam Wa Po Village House No. 80

### 4.2 SUMMARY OF MONITORING RESULTS

4.2.1 Summary of air quality monitoring results during the Reporting Period are tabulated in *Table 4-1*. The relevant graphical plots throughout the Reporting Period are presented in *Appendix G*.

**Table 4-1 Summary of Air Quality Monitoring Results**

Monitoring Location	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )			24-hour TSP ( $\mu\text{g}/\text{m}^3$ )		
	Max	Min	Mean	Max	Min	Mean
AM1/ AM1a*	255	39	141	126	34	66
Record Date	11-Mar-14	9-Apr-14	Total 45 events	15-Mar-14	23-Apr-14	Total 16 events
AM2	244	31	129	143	42	80
Record Date	11-Mar-14	9-Apr-14	Total 45 events	15-Mar-14	8-Feb-14	Total 16 events
AM3	244	31	127	110	32	68
Record Date	11-Mar-14	9-Apr-14	Total 45 events	15-Mar-14	8-Apr-14	Total 16 events
AM9b	265	25	126	120	26	70
Record Date	11-Mar-14	9-Apr-14	Total 45 events	21-Mar-14	17-Apr-14	Total 16 events

\* Relocated to AM1a Garden Farm, Tsung Yuen Ha Village on 21 March 2014

4.2.2 In the Reporting Period, there were a total of 6 events of power failure incident of HVS during the course of 24-hour TSP monitoring, which happened at AM1 on 26 February, 4, and 10 March 2014, and at AM9b on 8 February, 4 and 10 March 2014. The samples were run less than 24 hours, and the results are considered invalid and for reference purposes only.

4.2.3 When contacted about the power supply issue, the resident of AM1 and AM9b explained that the power sockets were unplugged by the surrounding village residents, possibly due to noise nuisance. The situation of AM1 was rectified after the HVS was relocated to AM1a on 21 March 2014. For AM9b, the resident changed the location of the power source and the problem has been resolved immediately also.

4.2.4 Breaches of air quality A/L levels and statistical analysis of compliance for the air quality monitoring results are summarized in *Table 4-2*.

**Table 4-2 Summaries of Breaches of Air Quality A/L Levels**

Location	Exceedance	1-hour TSP	24- hour TSP	Total
AM1	Action Level	0	0	0
	Limit Level	0	0	0
AM2	Action Level	0	0	0
	Limit Level	0	0	0
AM3	Action Level	0	0	0
	Limit Level	0	0	0
AM9b	Action Level	0	0	0
	Limit Level	0	0	0

- 4.2.5 In this Reporting Period, all 1-hour TSP and 24-hour TSP monitoring results were below the Action Level. No Notification of Exceedances (NOE) of air quality criteria or corrective action was therefore required. The summary of weather conditions during the Reporting Period is presented in [Appendix H](#).

## 5 CONSTRUCTION NOISE MONITORING

### 5.1 GENERAL

5.1.1 In the Reporting Period, the construction works under the project was commenced for Contract 3 and Contract 5. Therefore, noise monitoring was only 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
- NM10 - Nam Wa Po Village House No. 78

### 5.2 SUMMARY OF MONITORING RESULTS

5.2.1 The sound level meter was set in 1m from the exterior of the building façade including noise monitoring locations NM1, NM2, NM8 and NM9. No façade correction (+3 dB(A) is added according to acoustical principles and EPD guidelines. However, free-field status is performed at NM10 and façade correction (+3 dB(A) has added according to the requirement.

5.2.2 Summary of noise monitoring results during the Reporting Period are tabulated in **Table 5-1**. The relevant graphical plots throughout the Reporting Period are presented in **Appendix G**.

**Table 5-1 Summary of Construction Noise Monitoring Results**

Monitoring Location	Leq, 30min (dB((A))	
	Max	Min
NM1	67	43
Record Date	10-Feb-14	4-Feb-14
NM2	66	57
Record Date	15-Apr-14	15-Feb-14
NM8	68	55
Record Date	3-Apr-14	5-Mar-14
NM9	68	53
Record Date	3-Apr-14	5-Mar-14
NM10(*)	<b><u>96</u></b>	60
Record Date	22-Mar-14	10-Feb-14

*Remarks: Bold and underlined indicated limit level exceedance.*

5.2.3 Breaches of construction noise A/L levels and statistical analysis of compliance for construction noise monitoring results are summarized in **Table 5-2**.

**Table 5-2 Summaries of Breaches of Construction Noise A/L Levels**

Station	Limit Level	Action Level	Received Date
NM1	0	Noise complaint	NA
NM2	0		
NM8	0		
NM9	0		
NM10	<b>1</b>		
			<b>22-Mar-14</b>

5.2.4 In this Reporting Period, there was no noise complaint (which is an Action Level exceedance) received. However, one (1) Limit Level exceedance was recorded at NM10 on 22 March 2014.

5.2.5 An investigation based on site information provided by Chun Wo found that site construction activities carried out on 22 March 2014 included air-lifting and excavation at Bored Pile Wall and slope cutting and U-channel/ berm construction at Slope 3SW-D/C80. The abovementioned construction activities are normal work which would not generated excessive noise level as monitored before. During the course of noise monitoring, other external noise source, such as excavation and concreting work undergoing by other projects, were observed. Also, high noise

level by operation of the vibratory poker during concreting was noted and it would have attributed to the measured noise levels. As such, it was concluded that the Limit Level exceedance on 22 March 2014 was not related to works under the Project.

5.2.6 The summary of weather conditions during the Reporting Period is presented in [Appendix H](#).

## 6 WATER QUALITY MONITORING

### 6.1 GENERAL

6.1.1 In the Reporting Period, the construction works under the project was commenced for Contract 3 and Contract 5. Therefore, water quality monitoring was only 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; and
- WM4-Control B – Contract 3 working site Upstream of Ma Wat Channel

### 6.2 SUMMARY OF MONITORING RESULTS

6.2.1 Summary of monitoring results during the Reporting Period are tabulated in *Tables 6-1 and 6-2*. The relevant graphical plots throughout the Reporting Period are presented in *Appendix G*.

**Table 6-1 Summary of the Water Quality Monitoring Results – Contract 5**

Statistics	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
Min	4.37	5.15	10.3	8.0	7.0	2.0
Max	15.1	12.25	941.5	800	749.5	399
Average	7.47	7.98	80.61	70.02	55.46	39.16

**Table 6-2 Summary of the Water Quality Monitoring Results – Contract 3**

Statistics	DO (mg/L)			Turbidity (NTU)			SS (mg/L)		
	WM4	WM4 - CA	WM4 - CB	WM4	WM4 - CA	WM4 - CB	WM4	WM4 - CA	WM4 - CB
Min	4.82	5.5	2.49	8.7	2.8	3.2	4.5	2.0	2.0
Max	12.3	9.6	10.27	136	104.6	63.3	65.5	125	41
Average	7.53	7.40	5.61	17.84	9.81	8.61	18.09	8.50	7.11

Noted:

WM4-CA = WM4-Control A; WM4-CB = WM4-Control B

6.2.2 Breaches of water quality A/L levels and statistical analysis of compliance for the water quality monitoring results are summarized in *Tables 6-3 and 6-4*.

**Table 6-3 Summaries of Breaches of the Existing Water Quality A/L Levels – Contract 5**

Reporting Period	No. of sample analysis in each Parameter	Exceedance	DO	Turbidity	SS
February 2014	11	Action Level	0	0	0
		Limit Level	0	0	0
March 2014	14	Action Level	0	0	1
		Limit Level	0	3	2
April 2014	12	Action Level	0	0	0
		Limit Level	0	1	1
Total	37	Action Level	0	0	1
		Limit Level	0	4	3

**Table 6-4 Summaries of Breaches of the Existing Water Quality A/L Levels – Contract 3**

Reporting Period	No. of sample analysis in each Parameter	Exceedance	DO	Turbidity	SS
February 2014	11	Action Level	0	0	0
		Limit Level	0	0	1
March 2014	14	Action Level	0	0	0
		Limit Level	0	0	0
April 2014	12	Action Level	0	0	0
		Limit Level	0	1	1
<b>Total</b>	<b>37</b>	<b>Action Level</b>	<b>0</b>	<b>0</b>	<b>0</b>
		<b>Limit Level</b>	<b>0</b>	<b>1</b>	<b>2</b>

- 6.2.3 In view of the monitoring results of Dissolved Oxygen (DO), all the measured results in the Reporting Period were higher than Action Level exceedance and no exceedances were therefore triggered.
- 6.2.4 A total of one (1) Action Level exceedance and seven (7) Limit Level exceedances of the parameters of turbidity and SS were recorded from water samples collected at WM1 during the Reporting Period, specifically on 22, 24, 31 March, and 2 April 2014. A total of three (3) Limit Level exceedances of the parameters of turbidity and SS were recorded from water samples collected at WM4 during the Reporting Period, specifically on 4 February 2014 and 2 April 2014. NOEs were issued to relevant parties upon confirmation of the results. The investigation for the causes of exceedances were completed and it concluded that the exceedances were not related to works under the Project. The detailed findings have been presented in relevant monthly EM&A reports.
- 6.2.5 The summary of weather conditions during the Reporting Period is presented in [Appendix H](#).

**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

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

**Table 7-1 Summary of Quantities of Inert C&D Materials**

Type of Waste	Contract No	Quantity				Disposal Location
		Feb 14	Mar 14	Apr 14	Total	
C&D Materials (Inert) (in '000m <sup>3</sup> )	3	1.697	3.954	1.600	7.251	-
	5	0	0	0		-
Reused in this Project (Inert) (in '000m <sup>3</sup> )	3	0.38	1.092	0.672	2.144	-
	5	0	0	0		-
Reused in other Projects (Inert) (in '000m <sup>3</sup> )	3	0	0	0	0	-
	5	0	0	0		-
Disposal as Public Fill (Inert) (in '000m <sup>3</sup> )	3	1.473	2.862	0.928	5.263	Tuen Mun 38
	5	0	0	0		-

**Table 7-2 Summary of Quantities of C&D Wastes**

Type of Waste	Contract No	Quantity				Disposal Location
		Feb 14	Mar 14	Apr 14	Total	
Recycled Metal (in '000m <sup>3</sup> )	3	0.002	0	0	0.89	By licensed collector
	5	0	0	0.87		
Recycled Paper / Cardboard Packing (in '000m <sup>3</sup> )	3	0	0	0	0	-
	5	0	0	0		-
Recycled Plastic (in '000m <sup>3</sup> )	3	0	0	0	0	-
	5	0	0	0		-
Chemical Wastes (in '000m <sup>3</sup> )	3	0.019	0	0.020	6.039	By licensed collector
	5	0	6	0		
General Refuses (in '000m <sup>3</sup> )	3	0.040	0.25	0.135	0.685	NENT
	5	0.005	0.01	0.245		NENT

7.2.3 To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.

## 8 SITE INSPECTIONS

### 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.

#### Contract 3

8.1.2 During the Reporting Period, **13** events of the joint site inspections were undertaken at Contract 3 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in **Table 8-1** and the details of site inspection can be found in relevant EM&A monthly report.

**Table 8-1 Summary of Reminders/Observations of Site Inspection – Contract 3**

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
February 2014	5, 10, 17 and 24 February 2014	10	Completed
March 2014	3, 10, 17, 24 and 31 March 2014	9	Completed
April 2014	7, 16, 22 and 28 April 2014	6	Completed

8.1.3 In the Reporting Period, no non-compliance was recorded; however, **25** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

#### Contract 5

8.1.4 During the Reporting Period, **13** events of the joint site inspections were undertaken at Contract 5 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in **Table 8-2** and the details of site inspection can be found in relevant EM&A monthly report.

**Table 8-2 Summary of Reminders/Observations of Site Inspection – Contract 5**

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
February 2014	6, 13, 20 and 27 February 2014	5	Completed
March 2014	6, 13, 20 and 27 March 2014	5	Completed
April 2014	3, 10, 17, 24 and 30 April 2014	14	Completed

8.1.5 In the Reporting Period, no non-compliance was recorded; however, **24** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

#### Other Contracts

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

## 9 NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

### 9.1 NON-COMPLIANCE

9.1.1 No environmental non-compliance was recorded in the Reporting Period.

### 9.2 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

9.2.1 For Contract 5, no environmental complaint, summons and prosecution was received in the Reporting Period. However, one complaint was received for Contract 3 on 16 April 2014 regarding construction dust on the wheels of some vehicles leaving the construction site. Measures have been taken to ensure regular wheel washing of vehicles leaving the construction sites, the maintenance of the wheel washing facilities, and the maintenance of the cleanliness of the public roads. An investigation report has been submitted to relevant parties.

9.2.2 The statistical summary table of environmental complaint, summons and prosecution are 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
February 2014	3	0	0	NA
	5	0	1	Construction Dust (1)
March 2014	3	0	0	NA
	5	0	1	Construction Dust (1)
April 2014	3	1	1	Construction Dust (1)
	5	0	1	Construction Dust (1)

**Table 9-2 Statistical Summary of Environmental Summons**

Reporting Period	Contract No	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
February 2014	3	0	0	NA
	5	0	0	NA
March 2014	3	0	0	NA
	5	0	0	NA
April 2014	3	0	0	NA
	5	0	0	NA

**Table 9-3 Statistical Summary of Environmental Prosecution**

Reporting Period	Contract No	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
February 2014	3	0	0	NA
	5	0	0	NA
March 2014	3	0	0	NA
	5	0	0	NA
April 2014	3	0	0	NA
	5	0	0	NA

9.2.3 Since the construction works at the Contract 2, Contract 4 and Contract 6 are not yet commenced, no environmental complaint, summons and prosecution are received in the Reporting Period accordingly.

## 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 J*.

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

## **11 CONCLUSIONS AND RECOMMENDATIONS**

### **11.1 CONCLUSIONS**

- 11.1.1 This is the 3<sup>rd</sup> Quarterly EM&A Summary Report presenting the monitoring results and inspection findings for the Reporting Period from **1 February to 30 April 2014**.
- 11.1.2 No 1-hour TSP and 24-hour TSP monitoring results that triggered the Action or Limit Level was recorded in this Reporting Period.
- 11.1.3 No noise complaint (which is an Action Level exceedance) was received. However, there was one (1) Limit Level exceedance in construction noise measurement recorded in this Reporting Period on 22 March 2014. Investigations concluded that the exceedance was not due to works under the Project.
- 11.1.4 For water quality monitoring, no Action/Limit Levels exceedance was triggered according to the set out water quality criteria in Dissolved Oxygen. However, a total of one (1) Action Level exceedance and seven (7) Limit Level exceedances of the parameters of turbidity and SS were recorded from water samples collected at WM1 during the Reporting Period, specifically on 22, 24, 31 March, and 2 April 2014. A total of three (3) Limit Level exceedances of the parameters of turbidity and SS were recorded from water samples collected at WM4 during the Reporting Period, specifically on 4 February 2014 and 2 April 2014. NOEs were issued to relevant parties upon confirmation of the results. The investigation for the causes of exceedances were completed and it concluded that the exceedances were not related to works under the Project.
- 11.1.5 During the Reporting Period, 13 events of joint site inspections for Contract 3 and Contract 5 were undertaken to evaluate the site environmental performance. No adverse environmental impacts were observed during the weekly site inspection and environmental audit of the Reporting Period, indicating the implemented mitigation measures for air quality, construction noise and water quality were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.
- 11.1.6 In the Reporting Period, no notification of summons or successful prosecution under the Project was received. However, one complaint for Contract 3 was received on 16 April 2014 regarding construction dust on the wheels of some vehicles leaving the construction site. Measures have been taken to ensure regular wheel washing of vehicles leaving the construction sites, the maintenance of the wheel washing facilities, and the maintenance of the cleanliness of the public roads. An investigation report has been submitted to relevant parties.

### **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 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.
- 11.2.3 Mosquito control measures should be continued to prevent mosquito breeding on site.
- 11.2.4 To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.

## **Appendix A**

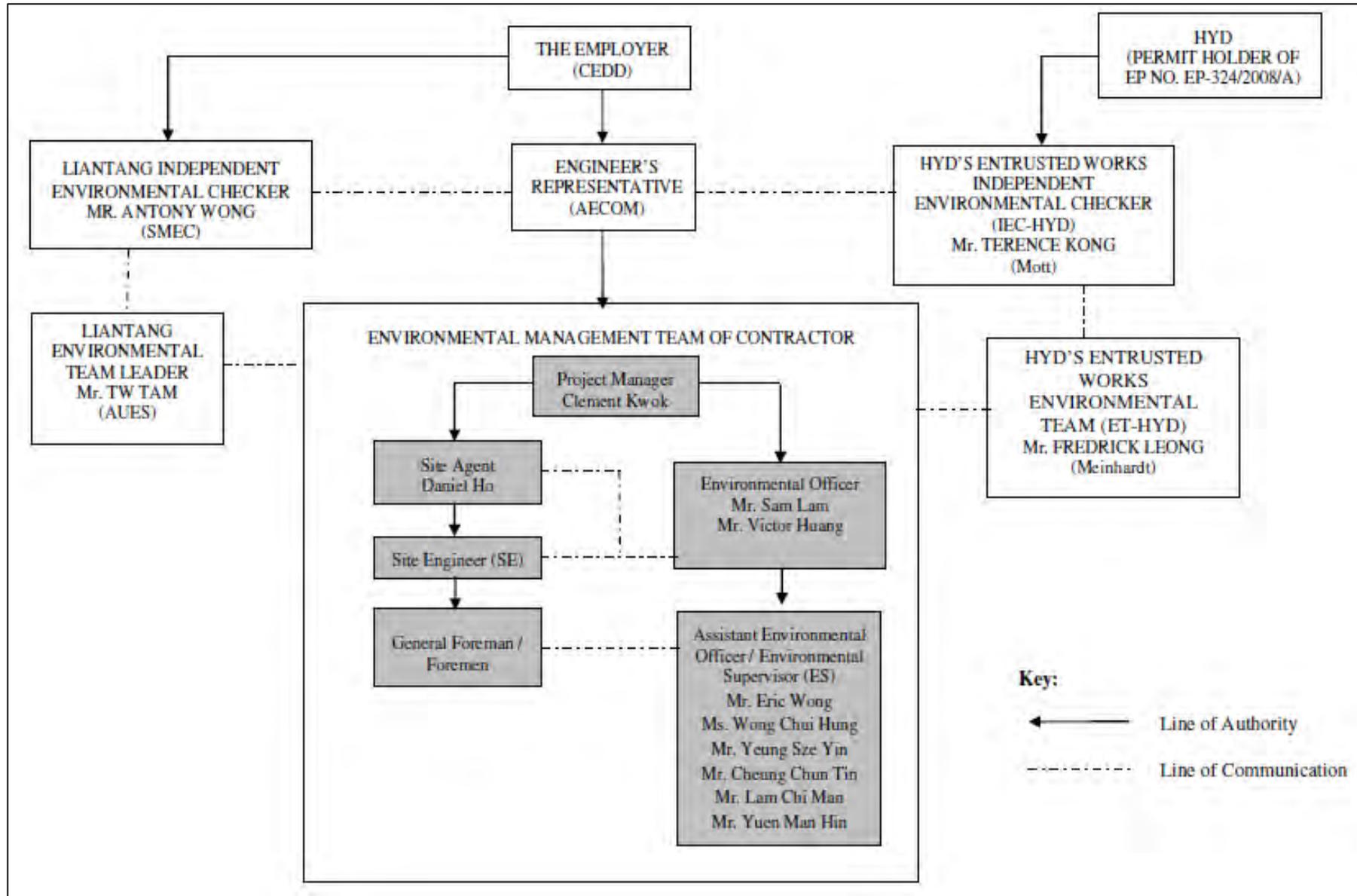
### **Layout plan of the Project**



## **Appendix B**

### **Environmental Management Organization Chart**

**Contract 3**



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

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No</b>	<b>Fax No.</b>
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*

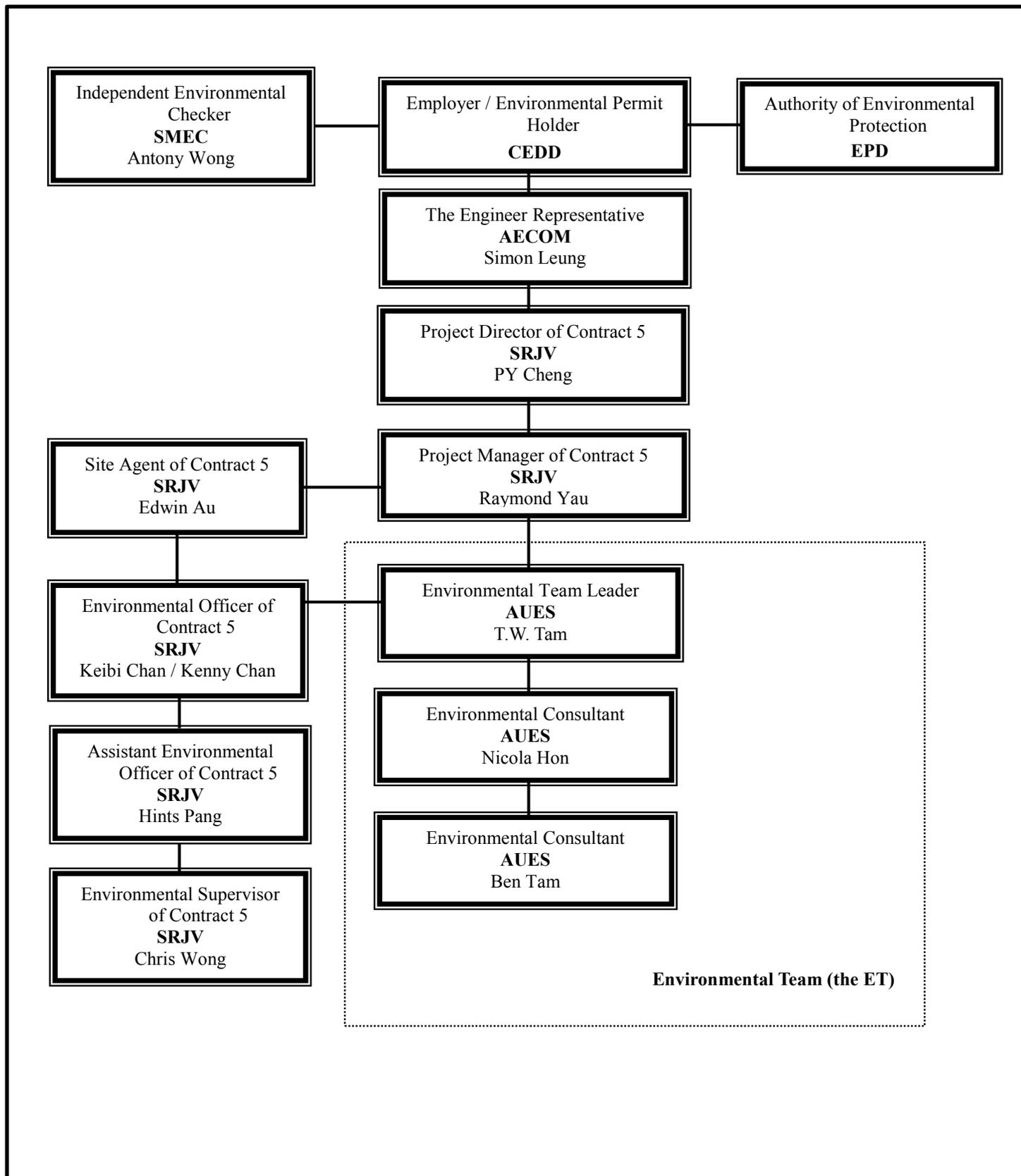
*AECOM (Engineer) – AECOM Asia Co. Ltd.*

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

*SMEC (IEC) – SMEC Asia Limited*

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

**Contract 5**



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

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No.</b>	<b>Fax No.</b>
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	Gantt Chart (2014-2019)																																																									
							A	S	O	N	D	Jan	Feb	Mar	Apr	May	Jun	Jul	A	S	O	N	D	Jan	Feb	Mar	Apr	May	Jun	Jul	A	S	O	N	D	Jan	Feb	Mar	Apr	May	Jun	Jul	A	S	O	N	D	Jan	Feb	Mar	Apr	May	Jun	Jul	A	S	O	N	D	Jan	Feb	Mar	Apr	May
B-3040	Plant Mobilization for Piling Rig (Plant 5)	25	25	29-Nov-13*	30-Dec-13	35	[Green Bar] Plant Mobilization for Piling Rig (Plant 5)																																																									
B-3010	Plant Mobilization for Piling Rig (Plant 2)	25	25	16-Dec-13*	16-Jan-14	8	[Green Bar] Plant Mobilization for Piling Rig (Plant 2)																																																									
B-3020	Plant Mobilization for Piling Rig (Plant 3)	25	25	27-Jan-14*	03-Mar-14	2	[Green Bar] Plant Mobilization for Piling Rig (Plant 3)																																																									
B-3030	Plant Mobilization for Piling Rig (Plant 4)	25	25	27-Jan-14*	03-Mar-14	2	[Green Bar] Plant Mobilization for Piling Rig (Plant 4)																																																									
B-1000	ADMS Installation inside MTRCL Railway	21	21	05-Mar-14	28-Mar-14	77	[Green Bar] ADMS Installation inside MTRCL Railway																																																									
B-1010	Demonstration to MTRCL	1	1	29-Mar-14	29-Mar-14	77	[Milestone] Demonstration to MTRCL																																																									
B-1020	Base-line Monitoring	7	7	31-Mar-14	08-Apr-14	77	[Green Bar] Base-line Monitoring																																																									
B-2030	Completion of CLP Overhead 11KV Cable Diversion at Area B	0	0			28	[Milestone] Completion of CLP Overhead 11KV Cable Diversion at Area B																																																									
B-2000	CLP 11KV Cable Diversion at Area C	80	80	27-Jan-14	13-May-14	144	[Green Bar] CLP 11KV Cable Diversion at Area C																																																									
B-2010	CLP LV Cable Diversion at Area D	80	80	27-Jan-14	13-May-14	19	[Green Bar] CLP LV Cable Diversion at Area D																																																									
B-2040	Completion of CLP 11KV Cable Diversion at Area C	0	0			144	[Milestone] Completion of CLP 11KV Cable Diversion at Area C																																																									
B-2050	Completion of CLP LV Cable Diversion at Area D	0	0			19	[Milestone] Completion of CLP LV Cable Diversion at Area D																																																									
B-3050	Relocation of Plant including Pre-drilling Works	14	14	16-Mar-16	05-Apr-16	20	[Green Bar] Relocation of Plant including Pre-drilling Works																																																									
<b>Foundation &amp; Pier Construction</b>		861	847	20-Nov-13 A	13-Oct-16	21																																																										
<b>Bridge A</b>		827	827	14-Dec-13	13-Oct-16	20																																																										
BA-12-1000	Pier AA12 - Piling Works	24	24	14-Dec-13	14-Jan-14	13	[Green Bar] Pier AA12 - Piling Works																																																									
BA-05-1000	Pier AA5 - Piling Works	12	12	17-Jan-14	30-Jan-14	8	[Green Bar] Pier AA5 - Piling Works																																																									
BA-12-1010	Pier AA12 - Pile Test	14	14	15-Feb-14	03-Mar-14	46	[Green Bar] Pier AA12 - Pile Test																																																									
BA-05-1010	Pier AA5 - Pile Test	14	14	04-Mar-14	19-Mar-14	16	[Green Bar] Pier AA5 - Pile Test																																																									
BA-13-1000	Pier AA13 - Piling Works	24	24	22-Feb-14	21-Mar-14	55	[Green Bar] Pier AA13 - Piling Works																																																									
BA-17-1000	Pier AA17 - Piling Works	24	24	24-Feb-14	22-Mar-14	8	[Green Bar] Pier AA17 - Piling Works																																																									
BA-12-1020	Pier AA12 - Pile Cap	30	30	14-Mar-14	22-Apr-14	37	[Green Bar] Pier AA12 - Pile Cap																																																									
BA-05-1020	Pier AA5 - Pile Cap	30	30	20-Mar-14*	28-Apr-14	16	[Green Bar] Pier AA5 - Pile Cap																																																									
BA-13-1010	Pier AA13 - Pile Test	14	14	17-Apr-14	08-May-14	55	[Green Bar] Pier AA13 - Pile Test																																																									
BA-17-1010	Pier AA17 - Pile Test	14	14	22-Apr-14	09-May-14	19	[Green Bar] Pier AA17 - Pile Test																																																									
BA-14-1000	Pier AA14 - Piling Works	12	12	17-May-14	30-May-14	141	[Green Bar] Pier AA14 - Piling Works																																																									
BA-04-1000	Pier AA4 - Piling Works	12	12	27-May-14	10-Jun-14	8	[Green Bar] Pier AA4 - Piling Works																																																									
BA-05-1030	Pier AA5 - Pier Construction	17	17	26-May-14	14-Jun-14	16	[Green Bar] Pier AA5 - Pier Construction																																																									
BA-17-1020	Pier AA17 - Pile Cap	30	30	10-Jun-14	14-Jun-14	19	[Green Bar] Pier AA17 - Pile Cap																																																									
BA-02-2000	Pier AA2E - Piling Works	12	12	04-Jun-14	17-Jun-14	22	[Green Bar] Pier AA2E - Piling Works																																																									
BA-03-1000	Pier AA3 - Piling Works	12	12	07-Jun-14	20-Jun-14	8	[Green Bar] Pier AA3 - Piling Works																																																									
BA-12-1030	Pier AA12 - Pier Construction	31	31	20-May-14	25-Jun-14	126	[Green Bar] Pier AA12 - Pier Construction																																																									
BA-09-1000	Pier AA9 - Piling Works	24	24	04-Jun-14	02-Jul-14	2	[Green Bar] Pier AA9 - Piling Works																																																									
BA-02-1000	Pier AA2W - Piling Works	12	12	20-Jun-14	04-Jul-14	22	[Green Bar] Pier AA2W - Piling Works																																																									
BA-13-1020	Pier AA13 - Pile Cap	30	30	30-May-14	05-Jul-14	37	[Green Bar] Pier AA13 - Pile Cap																																																									
BA-15-1000	Pier AA15 - Piling Works	24	24	09-Jun-14	07-Jul-14	221	[Green Bar] Pier AA15 - Piling Works																																																									
BA-14-1010	Pier AA14 - Pile Test	14	14	26-Jun-14	12-Jul-14	211	[Green Bar] Pier AA14 - Pile Test																																																									
BA-04-1010	Pier AA4 - Pile Test	14	14	07-Jul-14	22-Jul-14	23	[Green Bar] Pier AA4 - Pile Test																																																									
BA-01-1000	Abutment AA1 - Piling Works	24	24	02-Jul-14	29-Jul-14	22	[Green Bar] Abutment AA1 - Piling Works																																																									
BA-02-2010	Pier AA2E - Pile Test	14	14	14-Jul-14	29-Jul-14	82	[Green Bar] Pier AA2E - Pile Test																																																									
BA-03-1010	Pier AA3 - Pile Test	14	14	17-Jul-14	01-Aug-14	31	[Green Bar] Pier AA3 - Pile Test																																																									



- Actual Work
- Remaining Work
- Summary Bar
- Critical Remaining Work
- Milestone

**CEDD Contract No. CV/2012/09**

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

**Initial Works Programme Rev 4**

Date	Revision	Checked	Approved
29-Jan-14	Rev4	Sam	Daniel
21-Dec-13	Rev3	Dennis	Daniel
23-Oct-13	Rev2	Dennis	Daniel
17-Sep-13	Rev1	Dennis	Daniel
09-Jul-13	Rev0	Anselm	Daniel



















## 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	<b>Key Dates</b>	<b>1110 days</b>	<b>28/3/2013</b>	<b>10/4/2016</b>	<b>0%</b>																			
2	1.1	<b>Contract Award &amp; Commencement</b>	<b>15 days</b>	<b>28/3/2013</b>	<b>11/4/2013</b>	<b>100%</b>																			
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	<b>Site Possession Date</b>	<b>330 days</b>	<b>11/4/2013</b>	<b>7/3/2014</b>	<b>0%</b>																			
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	<b>Section Completion Date</b>	<b>976 days</b>	<b>8/8/2013</b>	<b>10/4/2016</b>	<b>0%</b>																			
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	<b>Stage Completion Date</b>	<b>60 days</b>	<b>8/8/2013</b>	<b>7/10/2013</b>	<b>100%</b>																			
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	<b>Preliminaries and Statuary / Contractual Submissions</b>	<b>424 days</b>	<b>11/4/2013</b>	<b>9/6/2014</b>	<b>92%</b>																			
48	2.1	<b>Site Establishment</b>	<b>399 days</b>	<b>11/4/2013</b>	<b>15/5/2014</b>	<b>89%</b>																			
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	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
53	2.2	<b>Applications to Government Department</b>	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	<b>Temporary Traffic Arrangement (TTA) Scheme for temp. LMH Rd</b>	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	<b>Liaison with Utility Undertakers</b>	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	<b>Environmental Baseline &amp; Impact Monitoring</b>	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	<b>Stage of the Works</b>	180 days	11/4/2013	7/10/2013	100%																													
79	3.1	<b>Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road</b>	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	<b>Construction of temporary vehicular bridge "B"</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	<b>Construction of temporary Lin Ma Hang Road</b>	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	<b>Stage II of the Works - Temporary ArchSD Depot (LMH2)</b>	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	<b>Section of the Works</b>	1095 days	12/4/2013	10/4/2016	27%																													
95	4.1	<b>Section I of the Works - Ground Investigation field works (Drg. 7101A-7111A)</b>	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	<b>Section II of the Works - All laboratory tests for Section I</b>	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%																													













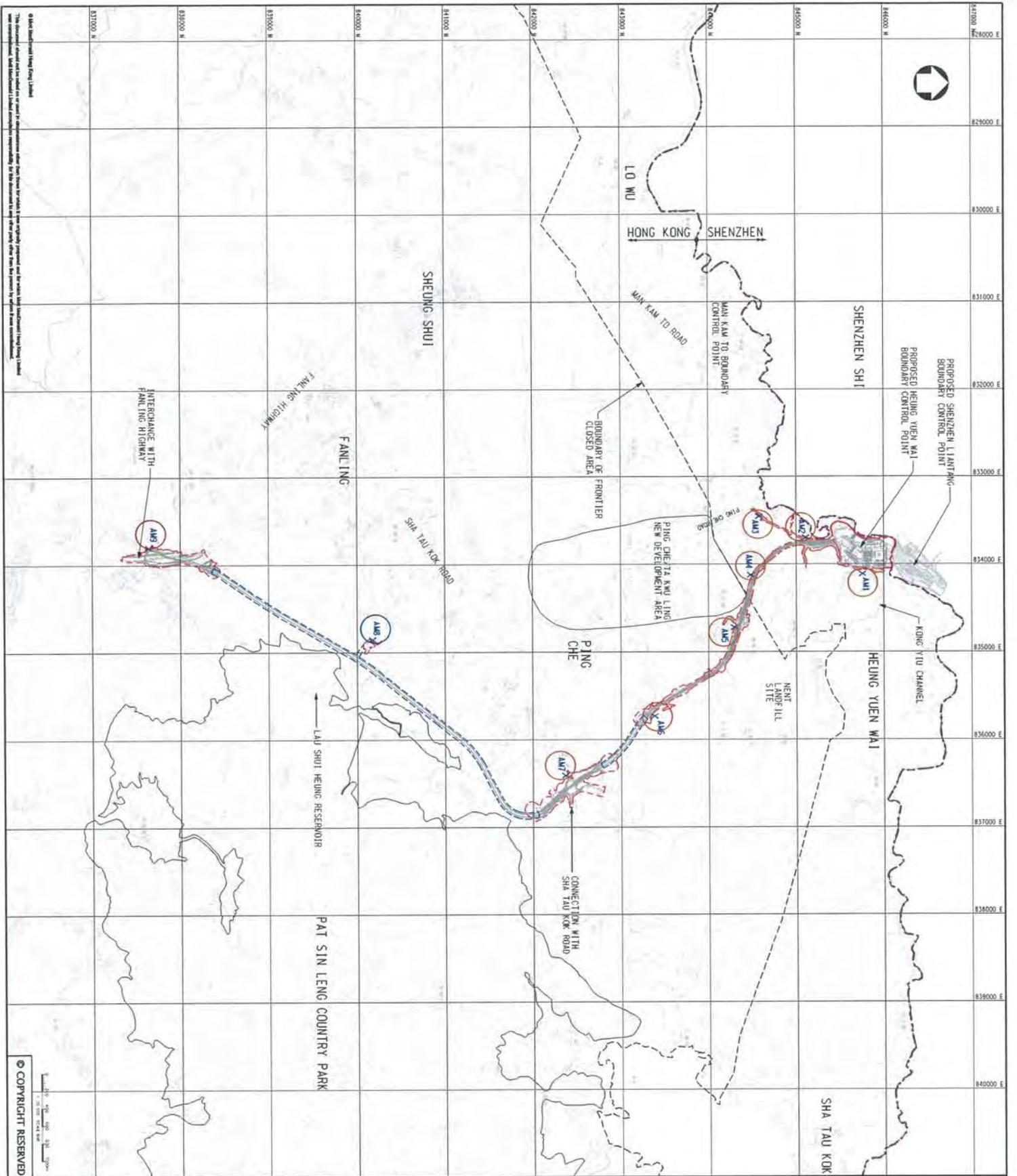




ID	WBS	Task Name	Duration	Start	Finish	% Complete	2013												2014												20					
							1st Half						2nd Half						1st Half						2nd Half											
							Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
544	4.12.10	Access road to be re-constructed / upgraded at RS3 (Drg/1203)	111 days	20/11/2014	10/3/2015	0%																														
545	4.13	<b>Section XIV of the Works - Trees preservation and protection</b>	<b>730 days</b>	<b>12/4/2013</b>	<b>11/4/2015</b>	<b>44%</b>																														
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	<b>Section XV of the Works - Landscape soft works (including transplant trees to permanent locations)</b>	<b>332 days</b>	<b>15/5/2014</b>	<b>11/4/2015</b>	<b>0%</b>																														
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	<b>Section XVI of the Works - Establishment works for landscape soft works</b>	<b>365 days</b>	<b>12/4/2015</b>	<b>10/4/2016</b>	<b>0%</b>																														

## **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

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**CEDD**  
 CIVIL ENGINEERING  
 AND DEVELOPMENT  
 DEPARTMENT

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

Task: PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

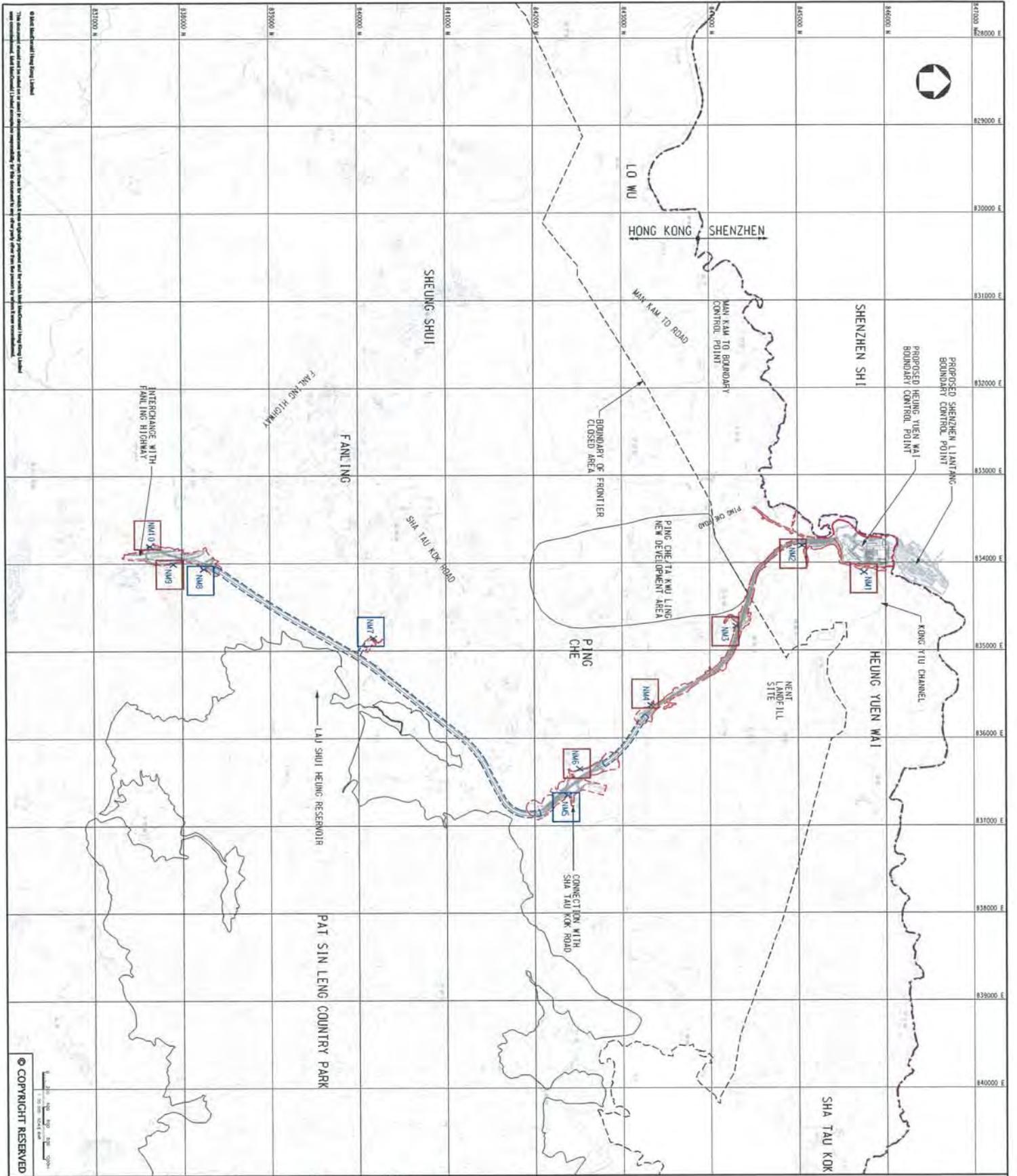
PI	NO. TO	DATE	DESCRIPTION	BY	CHKD
1	101	10/10/2008	PRELIMINARY	Y. CHAN	Y. CHAN

Discipline	DC	Eng/Arch	EC
Design	DC	Approved	EC
Drawings	DC	Approved	EC
Cost Est.	DC	Approved	EC
Program	DC	Approved	EC

Scale of A1: 1:20000  
 Date: 10/10/2008  
 Drawing No: CE45/2008(CE3) 24/09/08  
 Project: PRE

FIGURE 2.1

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

PI	REV TO	DATE	DESCRIPTION	DC	HT
Rev	Issue	Drawn	Description	CHKD	APPRD

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**CEPD**

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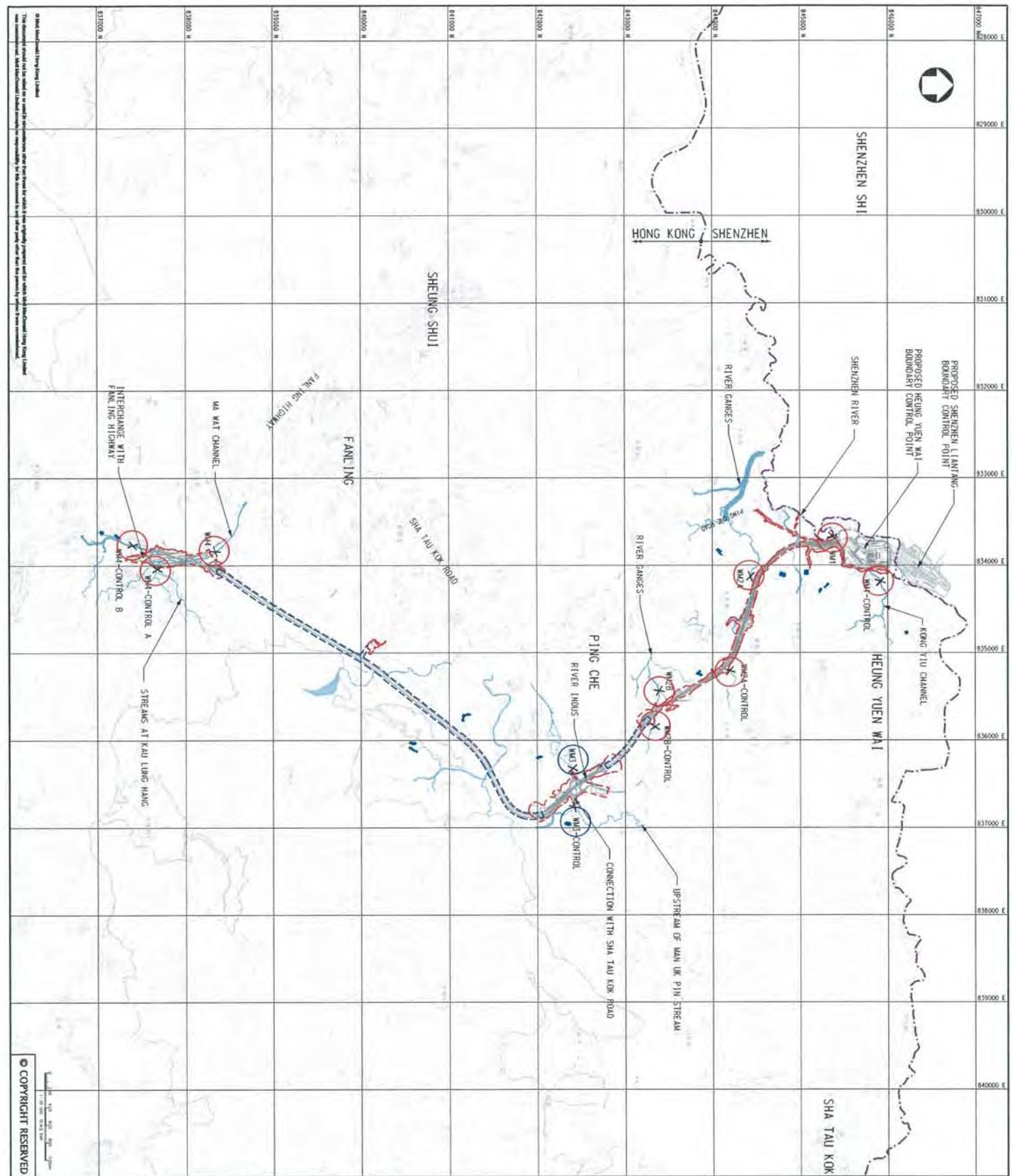
AGREEMENT NO. CE45/2008(CE)  
 LIANTANG/HONG KONG BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

**PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS**

Checked by	Checked on	Checked by	Checked on
DC	DC	DC	DC
CHKD	CHKD	CHKD	CHKD
APPRD	APPRD	APPRD	APPRD
Scale: 1:20000	Scale: 1:20000	Scale: 1:20000	Scale: 1:20000
Figure No: 25522B	Figure No: 25522B	Figure No: 25522B	Figure No: 25522B
Project No: CE45/2008(CE)	Project No: CE45/2008(CE)	Project No: CE45/2008(CE)	Project No: CE45/2008(CE)
Drawn by: P1	Drawn by: P1	Drawn by: P1	Drawn by: 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 NORTING: 83531.693
WMA-C	83148.462 83516.642
WMA-D	83132.153 83443.917
WMA-E	83556.329 83420.157
WMA-F	83514.744 83394.606
WMA-G	83506.878 83343.625
WMA-H	83623.622 83204.977
WMA-I	83663.419 83255.507
WMA-J	83340.703 83344.842
WMA-K	83403.937 83768.995
WMA-L	83369.123 83746.936

**Mott MacDonald**

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 2/F, 200 The Landmark Centre  
 100, Queen's Road East  
 HONG KONG

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	HC	GENERAL REVISION	HC	HT
T1	OCT 10	HC	ISSUE FOR FIRST ISSUE	HC	HT

**CEDD** CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Scale: 1:20000

Project: CE45/2008 (CE)

Drawing No: P2

FIGURE 4.1

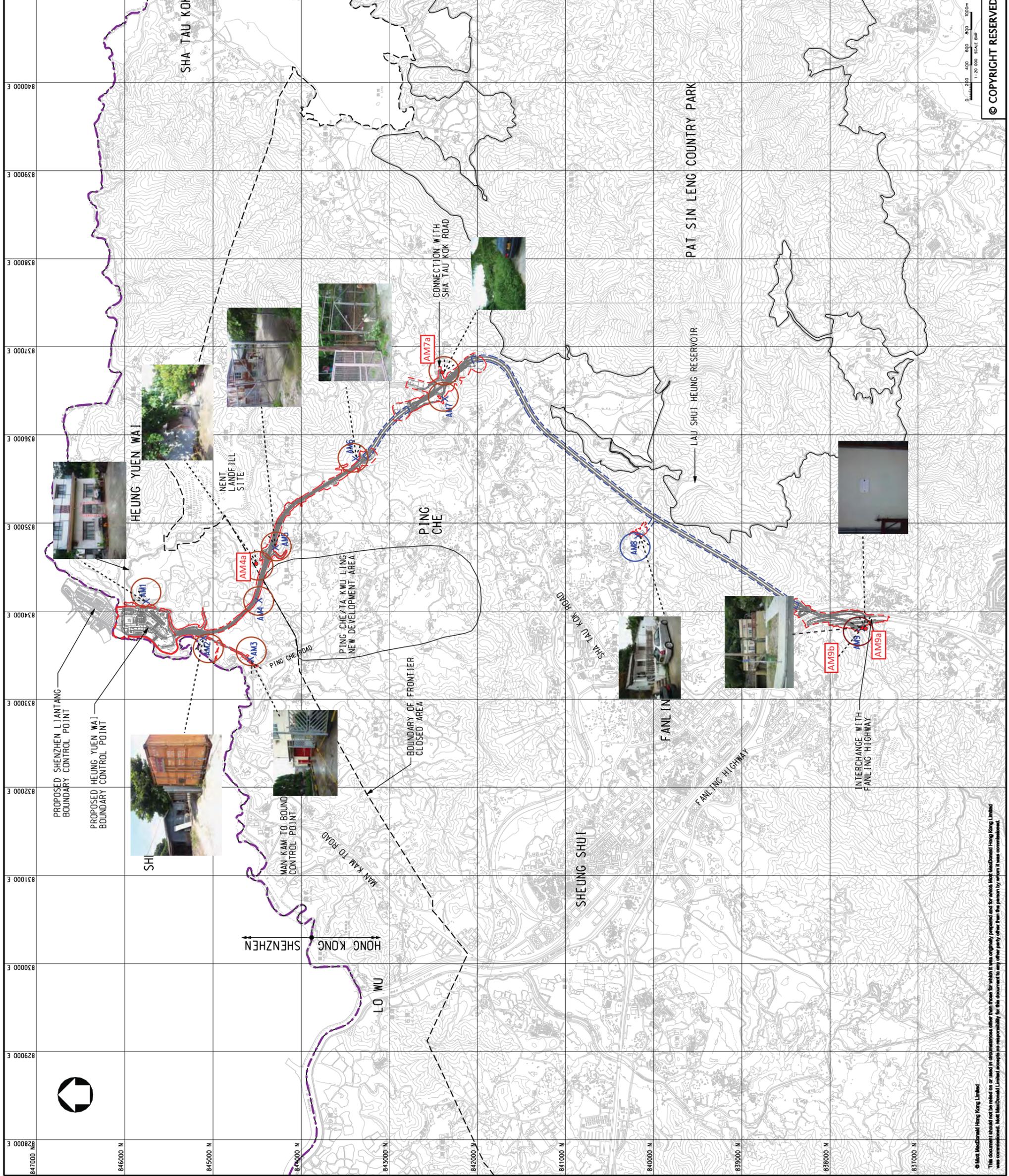
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## **Appendix E**

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

**LEGEND:**

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



847000 E  
846000 N  
845000 N  
844000 N  
843000 N  
842000 N  
841000 N  
840000 N  
839000 N  
838000 N  
837000 N

828000 E  
829000 E  
830000 E  
831000 E  
832000 E  
833000 E  
834000 E  
835000 E  
836000 E  
837000 E  
838000 E  
839000 E  
840000 E  
841000 E  
842000 E  
843000 E  
844000 E  
845000 E  
846000 E  
847000 E

PROPOSED SHENZHEN LIANTANG BOUNDARY CONTROL POINT  
PROPOSED HEUNG YUEN WAI BOUNDARY CONTROL POINT  
SHI  
MAN KAM TO BOUND CONTROL POINT  
SHEN ZHEN  
HONG KONG  
LO WU

HEUNG YUEN WAI  
NENT LANDFILL SITE  
PING CHE  
PING CHE TA KWU LING NEW DEVELOPMENT AREA  
BOUNDARY OF FRONTIER CLOSED AREA  
SHEUNG SHUI  
FAN LING  
INTERCHANGE WITH FAN LING HIGHWAY  
AM1  
AM2  
AM3  
AM4  
AM4a  
AM4b  
AM4c  
AM7a  
AM7b  
AM7c  
AM8  
AM9a  
AM9b  
LAU SHUI HEUNG RESERVOIR  
PAT SIN LENG COUNTRY PARK  
SHA TAU KOK ROAD  
PING CHE ROAD  
MAN KAM TO ROAD  
FAN LING HIGHWAY  
CONNECTION WITH SHA TAU KOK ROAD  
LAU SHUI HEUNG RESERVOIR

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

20/F Two Landmark East  
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Fax: +852 2627 1823  
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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

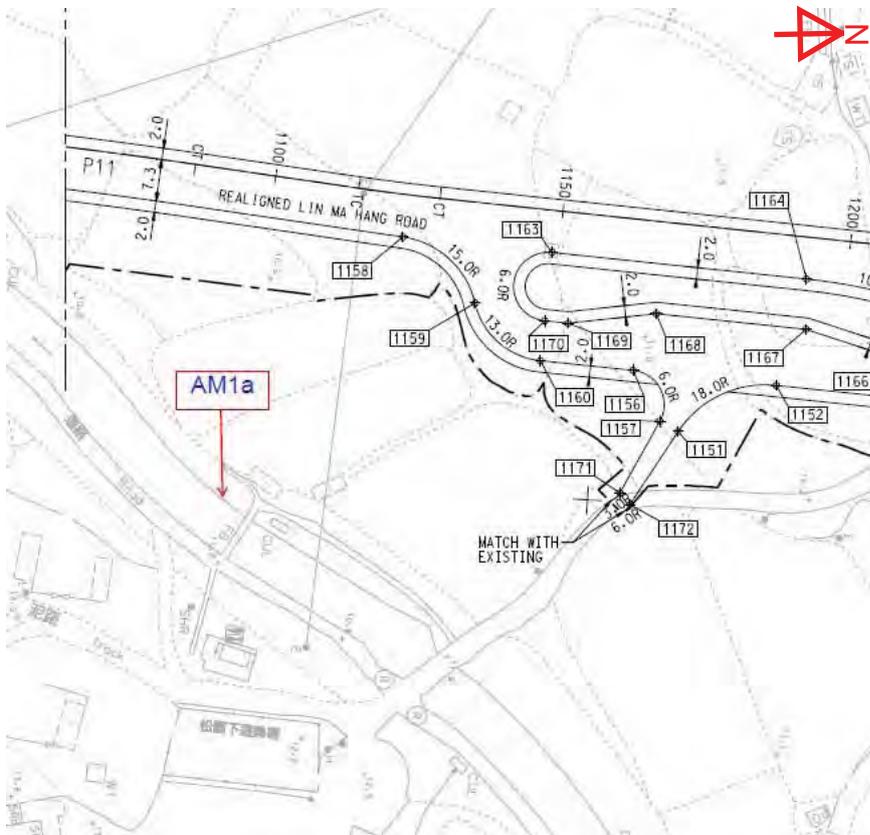
Title  
PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

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

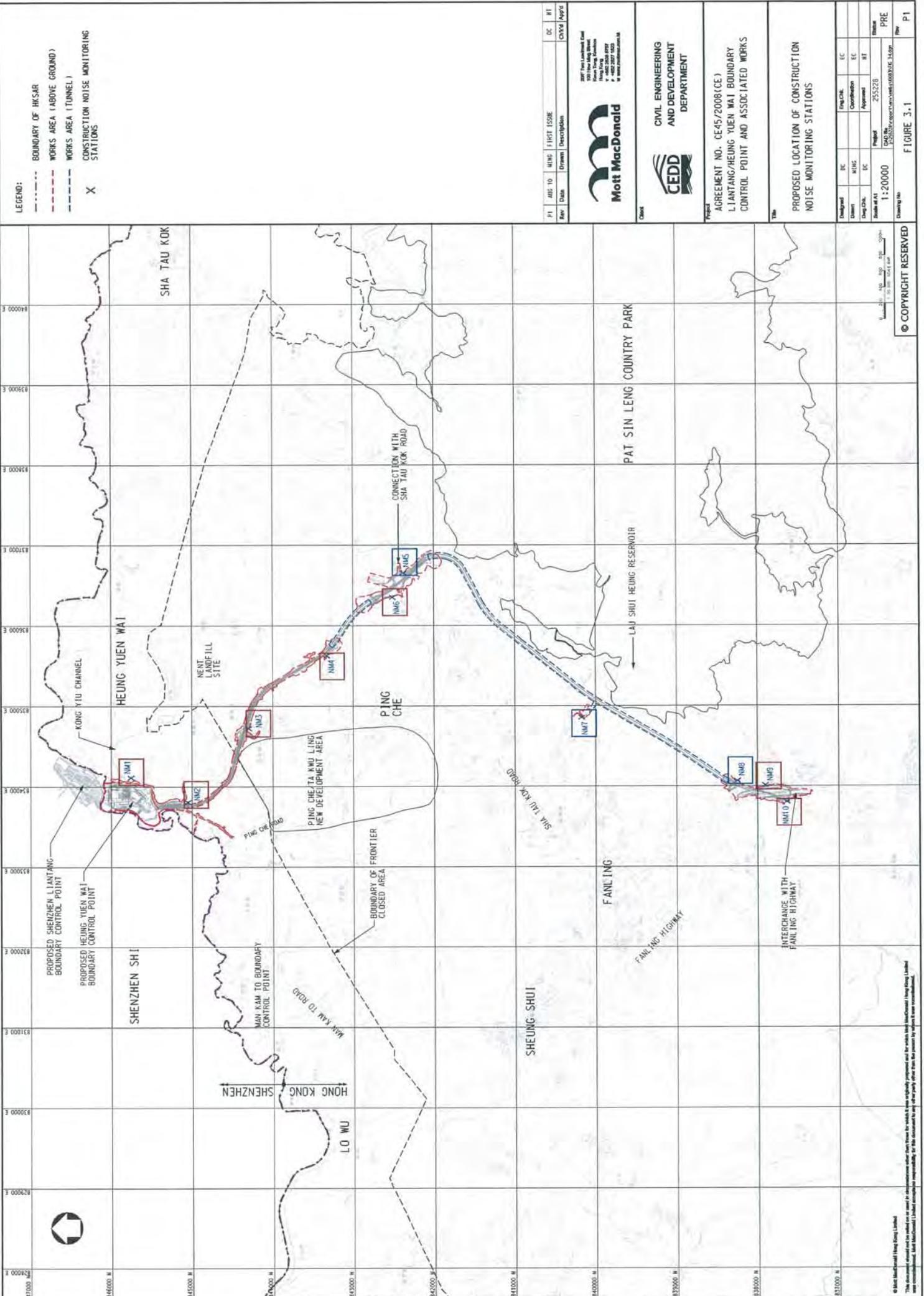
**Annex B - Photo Record for Proposed Monitoring Location AM1a**



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 HKSAR
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X CONSTRUCTION NOISE MONITORING STATIONS

PI	ADD TO	DATE	BY	DESCRIPTION	DC	RT



CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designated	DC	DC	DC	DC	DC	DC
DC	DC	DC	DC	DC	DC	DC

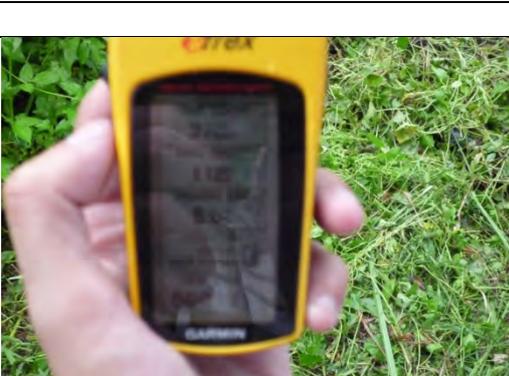
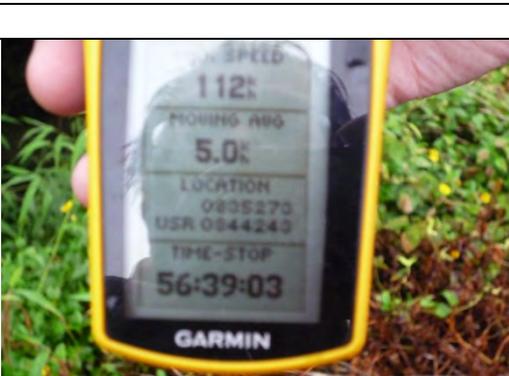
FIGURE 3-1

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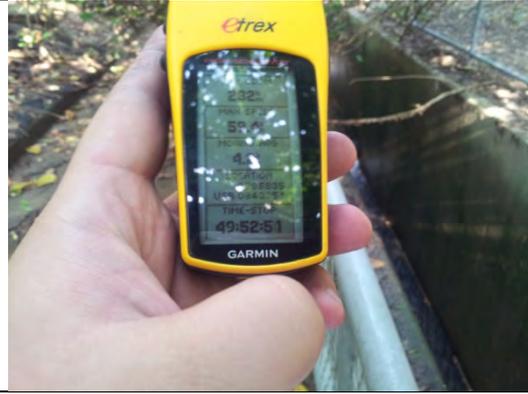


**Photographic Records for Water Quality Monitoring Location**

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

### **Event and Action Plan**

### Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
<b>Action Level</b>				
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.
<b>Limit Level</b>				
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"> <li>1. Notify ER, IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the IEC and Contractor on remedial measures required;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Advise the ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC and ER;</li> <li>2. Implement noise mitigation proposals.</li> </ol>	
Limit Level	<ol style="list-style-type: none"> <li>1. Inform IEC, ER, Contractor and EPD;</li> <li>2. Repeat measurements to confirm findings;</li> <li>3. Increase monitoring frequency;</li> <li>4. Identify source and investigate the cause of exceedance;</li> <li>5. Carry out analysis of Contractor's working procedures;</li> <li>6. Discuss with the IEC, Contractor and ER on remedial measures required;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Submit further proposal if problem still not under control;</li> <li>5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.</li> </ol>	

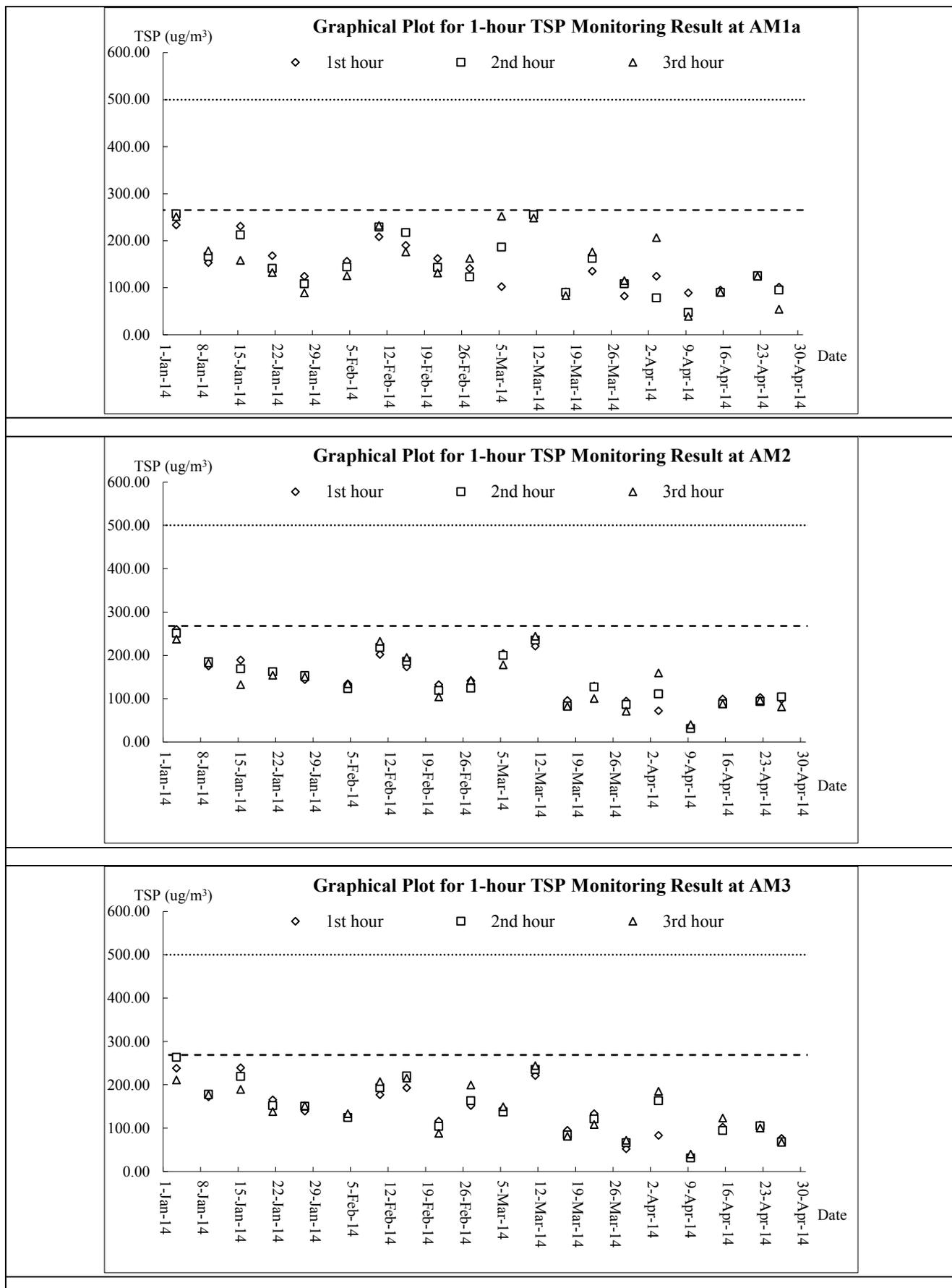
### Event and Action Plan for Water Quality

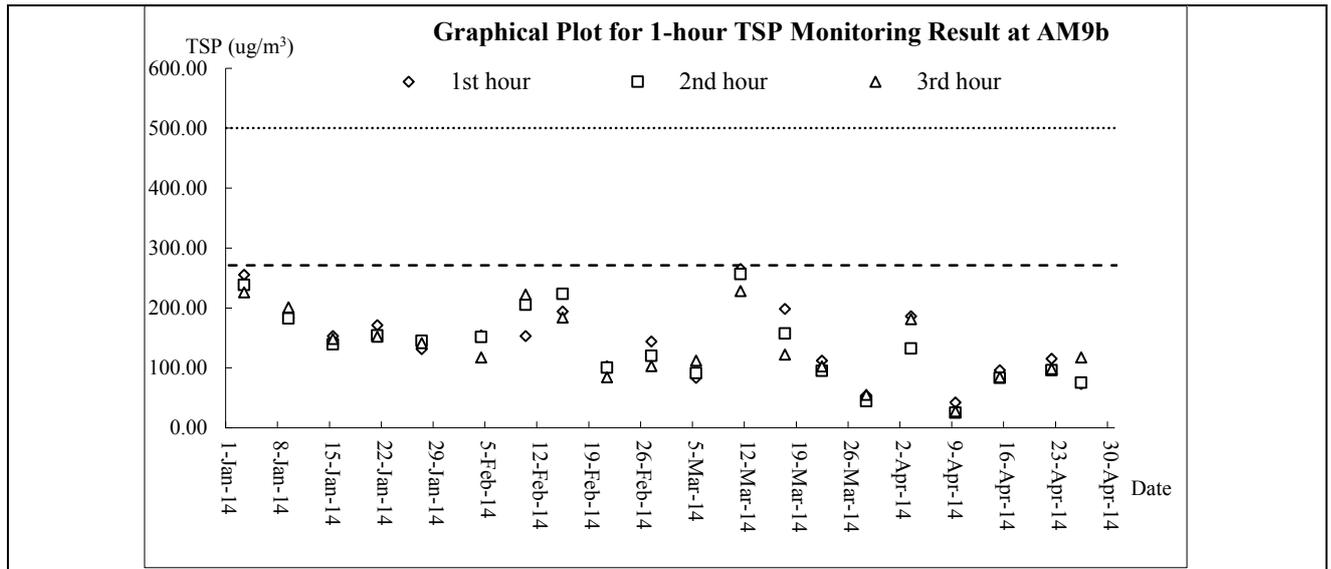
EVENT	ET	IEC	ER	ACTION CONTRACTOR
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify reasons for non-compliance and sources of impact;</li> <li>Inform IEC and Contractor;</li> <li>Check monitoring data,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

## **Appendix G**

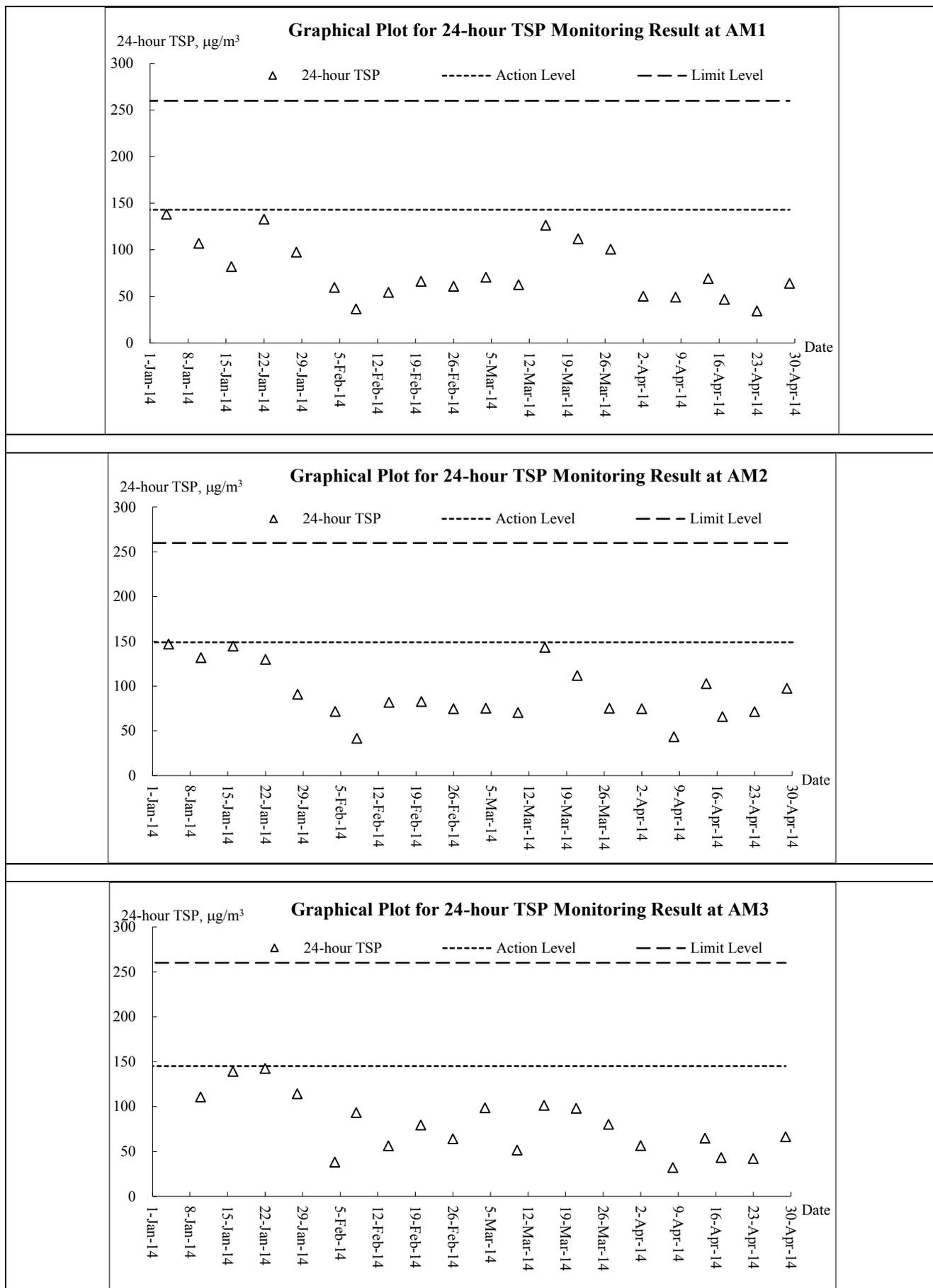
### **Graphical Plots for Monitoring Result**

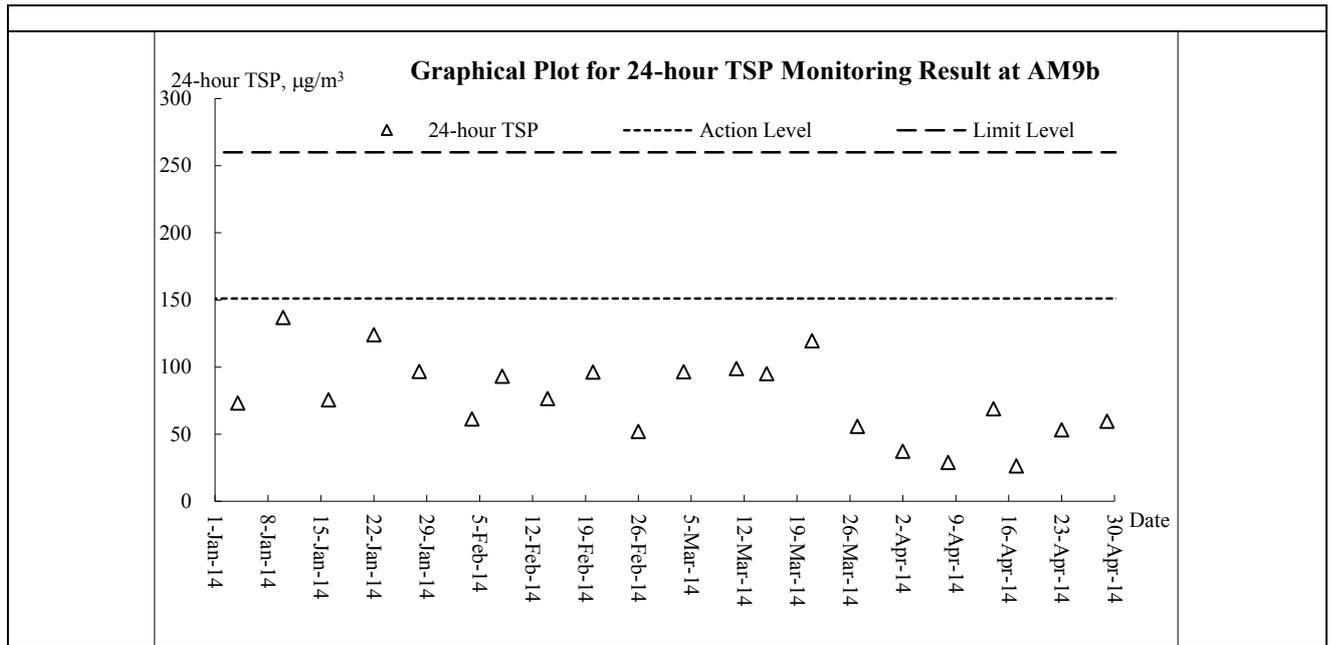
## Air Quality – 1-hour TSP



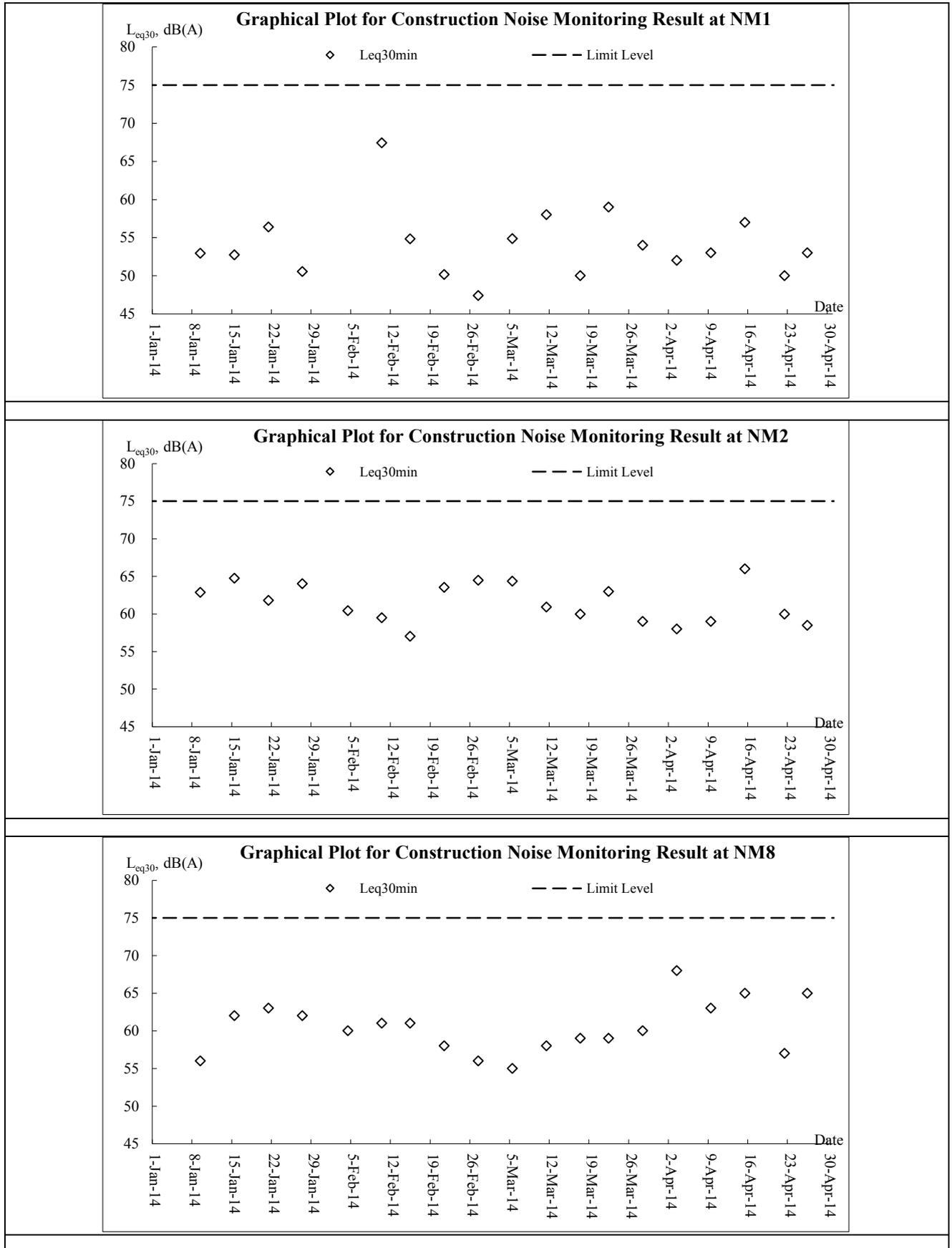


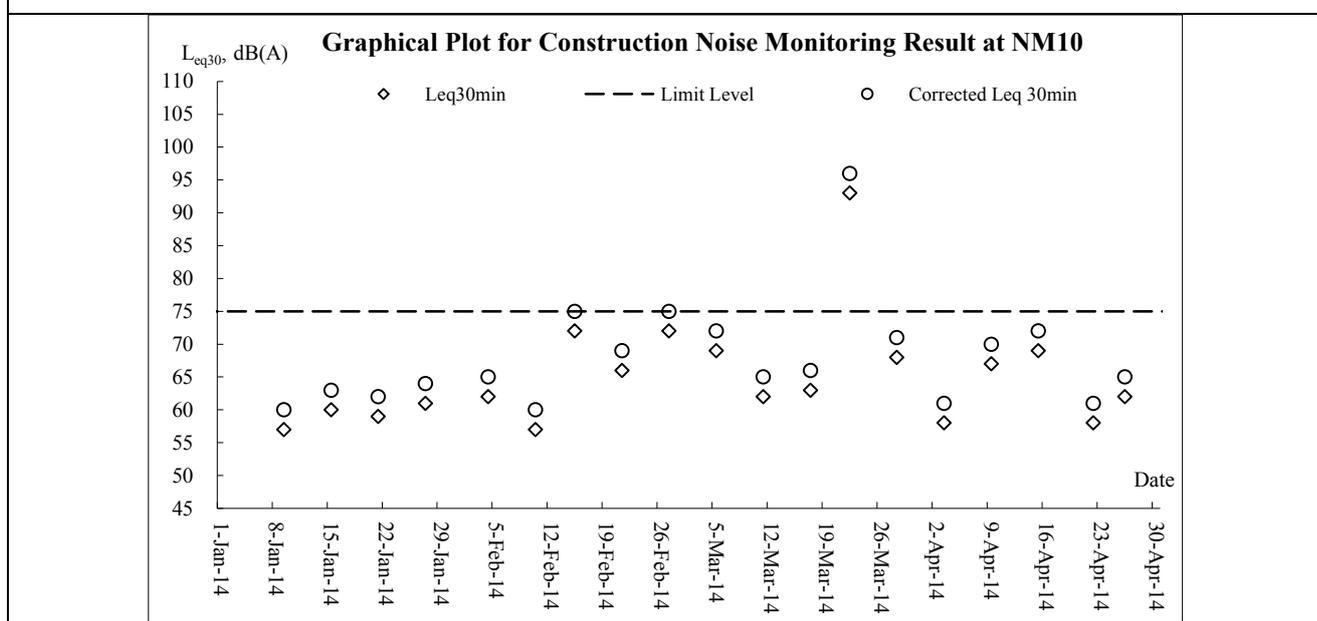
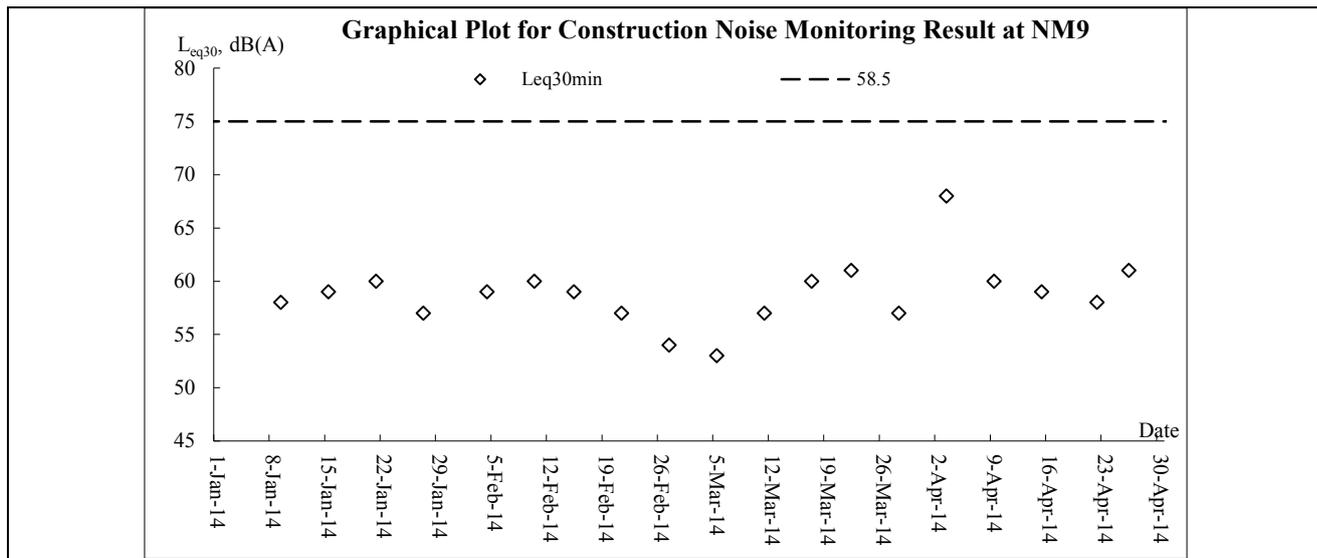
## Air Quality – 24-hour TSP



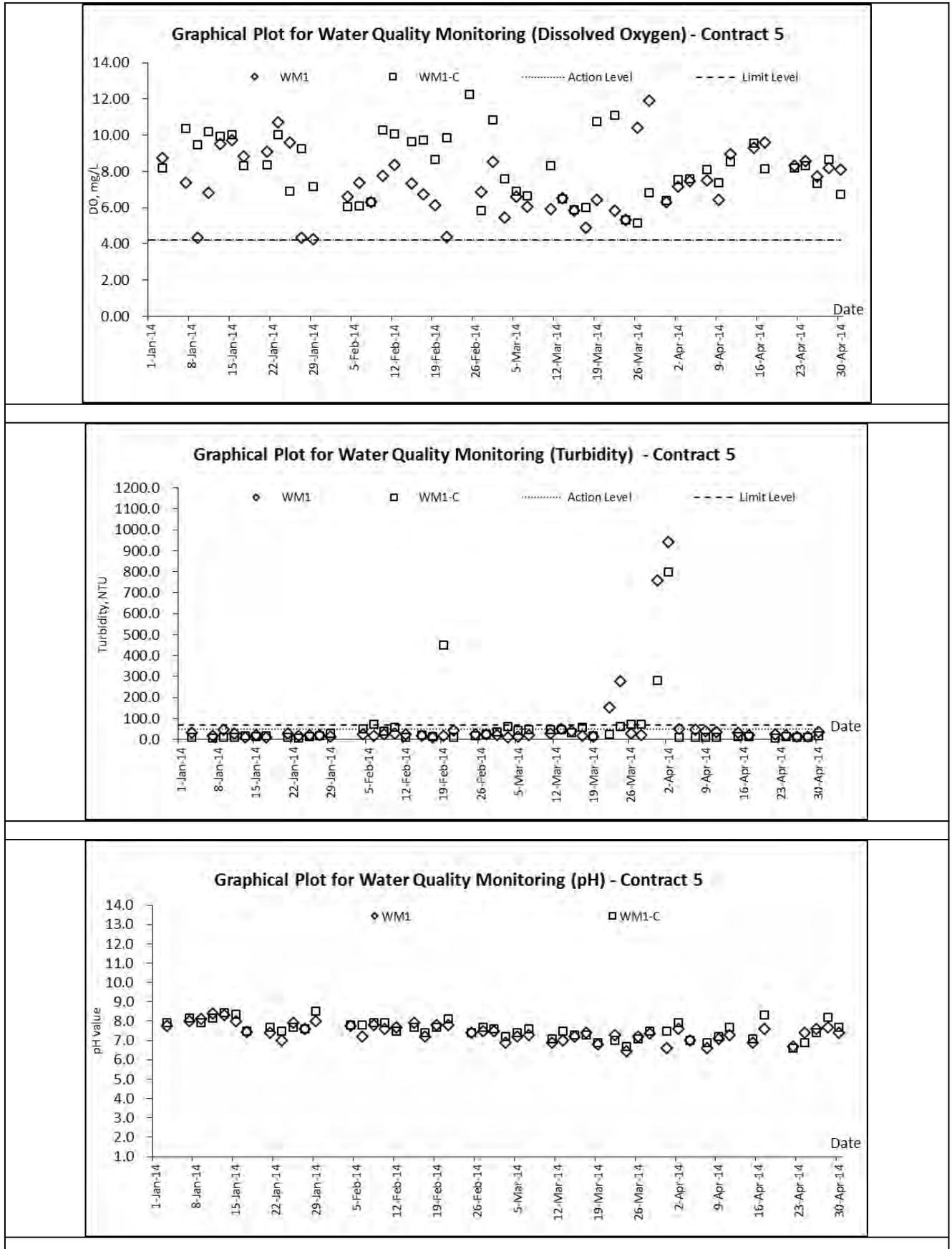


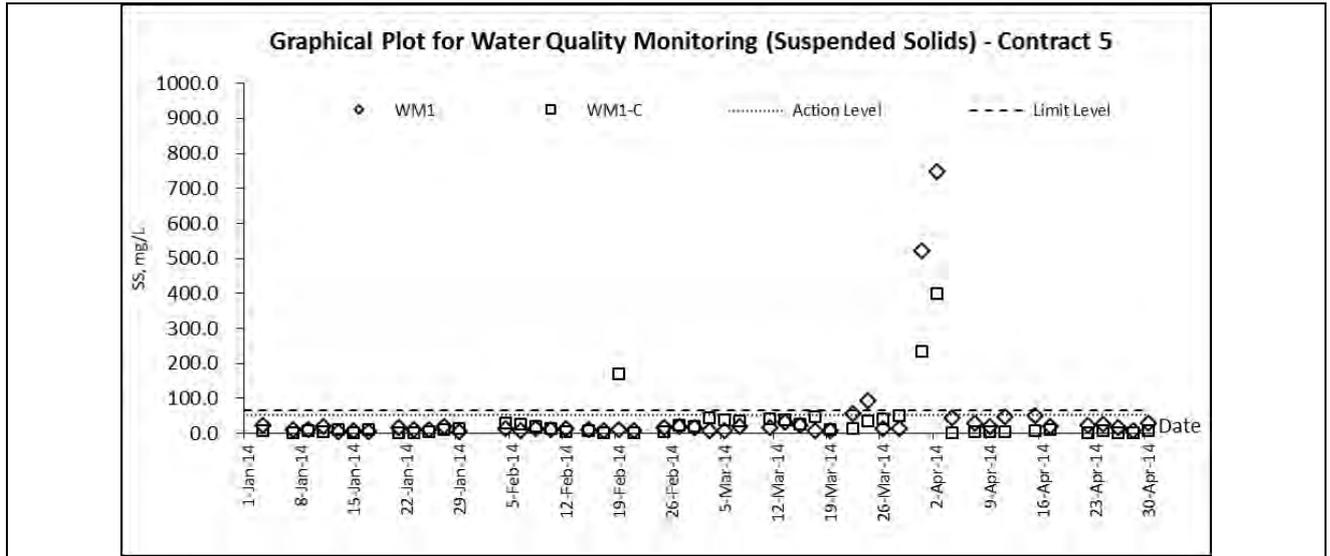
## Noise



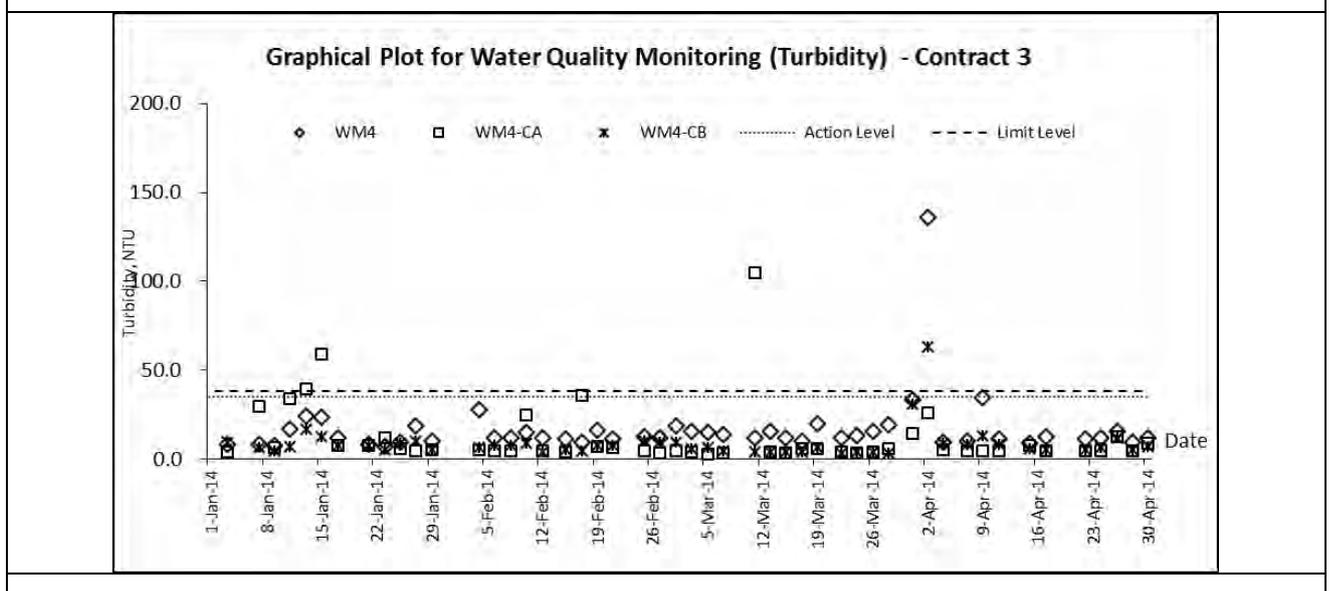
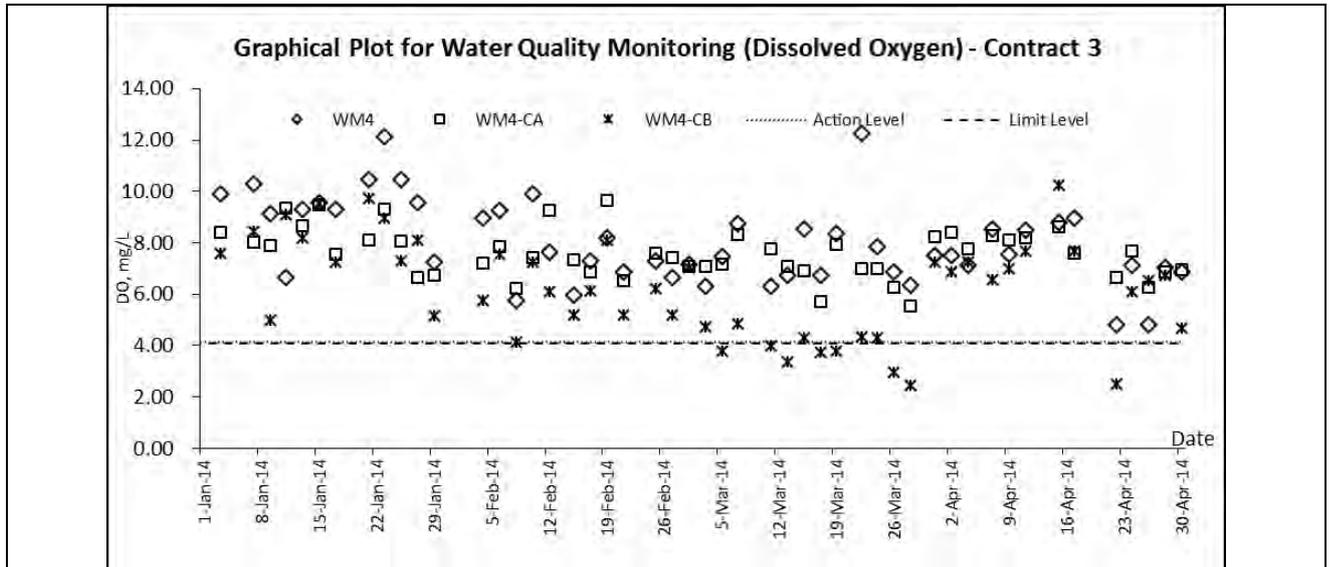


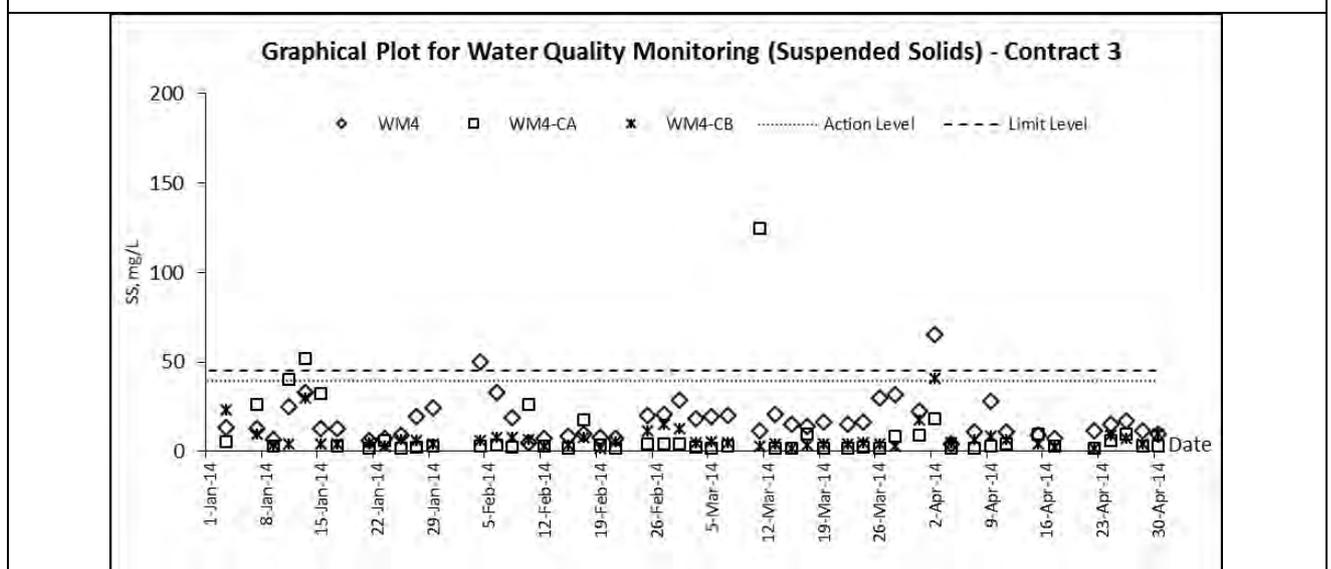
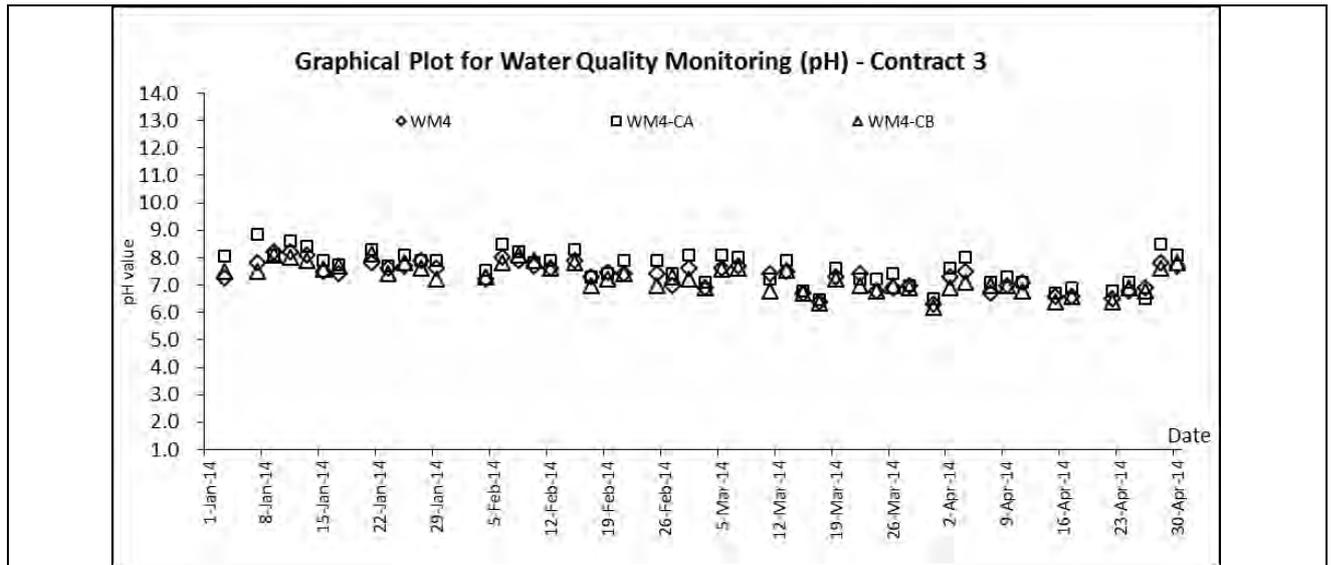
## Water Quality - Contract 5





### Water Quality - Contract 3





## **Appendix H**

### **Weather information**

## Weather Condition Extracted from HKO

### **The weather of February 2014**

With several rounds of transition between warm and cold air masses along the coast of Guangdong, the weather of Hong Kong in February 2014 was marked by fluctuating temperatures. The mild episodes in the first and last weeks of the month contrasted sharply against the chilly weather that prevailed in mid-February. On the whole, February 2014 was cooler than usual with a monthly mean temperature of 15.5 degrees, 1.3 degrees below the normal figure of 16.8 degrees. February 2014 was also drier than normal. The monthly rainfall of 39.5 millimetres was about 27 percent below the normal figure of 54.4 millimetres. Without any measurable rainfall in January 2014, the accumulated rainfall of 39.5 millimetres in the first two months of the year was only about half of the normal figure of 78.9 millimetres for the same period.

### **The weather of March 2014**

March 2014 was characterized by gloomy weather during the first-half of the month and heavy rain episodes towards the end of the month. While the monthly total duration of bright sunshine of 86.0 hours was slightly below normal by 5 percent, there were only 5.0 hours of bright sunshine from 1 to 15 March. The month was also cooler and wetter than usual. The monthly mean temperature of 18.7 degrees was 0.4 degree below the normal figure of 19.1 degrees. The total rainfall of the month was 207.6 millimetres, more than double of the normal figure of 82.2 millimetres. About 99 percent of the monthly rainfall fell between 29 and 31 March. The accumulated rainfall of 247.1 millimetres since 1 January was about 53 percent above the normal figure of 161.3 millimetres for the same period.

### **The weather of April 2014**

Pending to updated from HKO.

*Remark: The meteorological data during the Reporting Period is presented in the relevant monthly EM&A report.*

## **Appendix I**

### **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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )
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											
<b>Sub-total</b>	<b>7.660</b>	<b>1.000</b>	<b>2.144</b>	<b>0.000</b>	<b>5.672</b>	<b>0.400</b>	<b>0.002</b>	<b>0.000</b>	<b>0.010</b>	<b>0.039</b>	<b>0.550</b>
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	<b>7.660</b>	<b>1.000</b>	<b>2.144</b>	<b>0.000</b>	<b>5.672</b>	<b>0.400</b>	<b>0.002</b>	<b>0.000</b>	<b>0.010</b>	<b>0.039</b>	<b>0.550</b>

- Note:**
1. Assume the density of soil fill is 2 ton/m<sup>3</sup>.
  2. Assume the density of rock and broken concrete is 2.5 ton/m<sup>3</sup>.
  3. Assume each truck of C&D wastes is 5m<sup>3</sup>.
  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/m<sup>3</sup>.

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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
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
<b>APRIL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.664</b>	<b>0.87</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.245</b>
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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
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 = 8m<sup>3</sup>
  - 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 J**

**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?
<b>Air Quality Impact (Construction)</b>							
3.6.1.1	2.1	<p><b>General Dust Control Measures</b></p> <p>The following dust suppression measures should be implemented:</p> <ul style="list-style-type: none"> <li>■ 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</li> <li>■ 80% of stockpile areas should be covered by impervious sheets</li> <li>■ Speed of trucks within the site should be controlled to about 10 km/hr</li> <li>■ All haul roads within the site should be paved to avoid dust emission due to vehicular movement</li> </ul>	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><b>Best Practice for Dust Control</b></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"> <li>■ The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust.</li> <li>■ 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.</li> <li>■ Any piles of materials accumulated on or around the work areas should be cleaned up regularly.</li> <li>■ 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.</li> <li>■ The material should be handled properly to prevent fugitive dust emission before cleaning.</li> </ul> <p><i>Disturbed Parts of the Roads</i></p> <ul style="list-style-type: none"> <li>■ Each and every main temporary access should be paved with</li> </ul>	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"> <li>Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul> <p><i>Exposed Earth</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Loading, Unloading or Transfer of Dusty Materials</i></p> <ul style="list-style-type: none"> <li>All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.</li> </ul> <p><i>Debris Handling</i></p> <ul style="list-style-type: none"> <li>Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.</li> <li>Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.</li> </ul> <p><i>Transport of Dusty Materials</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Wheel washing</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Use of vehicles</i></p> <ul style="list-style-type: none"> <li>Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> <li>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.</li> </ul>					

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"> <li>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.</li> </ul> <p><i>Blasting</i></p> <ul style="list-style-type: none"> <li>The areas within 30m from the blasting area should be wetted with water prior to blasting.</li> </ul>					
<b><u>Air Quality Impact (Operation)</u></b>							
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"> <li>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.</li> <li>Further odour containment will be achieved by covering or confining the sewage channels, sewage tanks, and equipment with potential odour emission.</li> <li>Proper mixing will be provided at the equalization and sludge holding tanks to prevent sewage septicity.</li> <li>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.</li> </ul>	To minimize potential odour impact from operation of the proposed sewage treatment work at BCP	DSD	BCP	Operation Phase	EIA recommendation
<b><u>Noise Impact (Construction)</u></b>							
4.4.1.4	3.1	<p><b>Adoption of Quieter PME</b></p> <p>Use of the recommended quieter PME such as those given in the BS5228: Part 1:2009 and presented in <b>Table 4.14</b>, 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><b>Use of Movable Noise Barrier</b></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/m<sup>2</sup> 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><b>Use of Noise Enclosure/ Acoustic Shed</b></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><b>Use of Noise Insulating Fabric</b></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><b>Good Site Practice</b></p> <p>The good site practices listed below should be followed during each phase of construction:</p> <ul style="list-style-type: none"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme;</li> <li>• Mobile plant, if any, should be sited as far from NSRs as possible;</li> <li>• 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;</li> <li>• 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</li> <li>• Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
<b>Noise Impact (Operation)</b>							
<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"> <li>Choose quieter plant such as those which have been effectively silenced;</li> <li>Include noise levels specification when ordering new plant (including chillier and E/M equipment);</li> <li>Locate fixed plant/louver away from any NSRs as far as practicable;</li> <li>Locate fixed plant in walled plant rooms or in specially designed enclosures;</li> <li>Locate noisy machines in a basement or a completely separate building;</li> <li>Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and</li> <li>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.</li> </ul>	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
<b>Water Quality Impact (Construction)</b>							
5.6.1.1	4.1	<p><b>Construction site runoff and drainage</b></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"> <li>At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works 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.</li> <li>The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas.</li> </ul>	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"> <li>▪ 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.</li> <li>▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ The overall slope of the site should be kept to a minimum to reduce</li> </ul>					

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		<p>the erosive potential of surface water flows.</p> <ul style="list-style-type: none"> <li>▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul>					
5.6.1.1	4.1	<p><b>Good site practices for works within water gathering grounds</b></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"> <li>▪ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments.</li> <li>▪ 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.</li> <li>▪ All surplus spoil should be removed from water gathering grounds as soon as possible.</li> <li>▪ Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks.</li> <li>▪ Regular cleaning of silt traps should be carried out to ensure proper operation at all time.</li> <li>▪ All excavated or filled surfaces which have the risk of erosion should always be protected form erosion.</li> <li>▪ Facilities for washing the wheels of vehicles before leaving the site should be provided.</li> <li>▪ Any construction plant which causes pollution to catchwaters or catchments due to the leakage of oil or fuel should be removed off site immediately.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Drainage plans should be submitted for approval by the Director of</li> </ul>			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"> <li>▪ An unimpeded access through the waterworks access road should always be maintained.</li> <li>▪ Earthworks near catchwaters or streamcourses should only be carried out in dry season between October and March,</li> <li>▪ Advance notice must be given before the commencement of works on site quoting WSD's approval letter reference.</li> </ul>					
5.6.1.2	4.1	<p><b>Good site practices of general construction activities</b></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><b>Sewage effluent from construction workforce</b></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><b>Hydrogeological Impact</b></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
<b><u>Water Quality Impact (Operation)</u></b>							
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?
<b><u>Sewage and Sewerage Treatment Impact (Construction)</u></b>							
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
<b><u>Sewage and Sewerage Treatment Impact (Operation)</u></b>							
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
<b><u>Waste Management Implication (Construction)</u></b>							
7.6.1.1	6	<p><b>Good Site Practices</b></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"> <li>▪ 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</li> <li>▪ Training of site personnel in proper waste management and chemical handling procedures</li> <li>▪ Provision of sufficient waste disposal points and regular collection of waste</li> <li>▪ 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</li> <li>▪ General refuse shall be removed away immediately for disposal. As</li> </ul>	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"> <li>▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road</li> <li>▪ Covers and water spraying system should be provided for the stockpiled C&amp;D material to prevent dust impact or being washed away</li> <li>▪ Designate different locations for storage of C&amp;D material to enhance reuse</li> <li>▪ Well planned programme for transportation of C&amp;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&amp;D material is not anticipated</li> <li>▪ 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</li> <li>▪ Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains</li> </ul>					
7.6.1.2	6	<p><b>Waste Reduction Measures</b></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"> <li>▪ 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</li> <li>▪ 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</li> <li>▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials</li> <li>▪ Plan and stock construction materials carefully to minimise amount</li> </ul>	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"> <li>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.</li> </ul>					
7.6.1.3	6	<p><b>C&amp;D Materials</b></p> <p>In order to minimise impacts resulting from collection and transportation of C&amp;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&amp;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&amp;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"> <li>A Waste Management Plan should be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction Site; and</li> <li>In order to monitor the disposal of C&amp;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.</li> </ul>	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><b>General refuse</b></p> <p>General refuse should be stored in enclosed bins or compaction units separated from other C&amp;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><b>Chemical waste</b></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