

**JOB No.: TCS00670/13**

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

**MONTHLY ENVIRONMENTAL MONITORING AND AUDIT  
REPORT (NO.13) – AUGUST 2014**

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

<b>Date</b>	<b>Reference No.</b>	<b>Prepared By</b>	<b>Certified By</b>
12 September 2014	TCS00670/13/600/R0238v2	 Nicola Hon (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

<b>Version</b>	<b>Date</b>	<b>Remarks</b>
1	10 September 2014	First Submission
2	12 September 2014	Amended according to IEC's comments on 12 September 2014

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12 September 2014

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**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  
Monthly EM&A Report (No. 13) – August 2014**

With reference to the Monthly EM&A Report No. 13 for August 2014 (Version 2) certified by the ET Leader provided to us on 12 September 2014, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-404/2011/A.

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

Yours faithfully  
For and on behalf of  
SMC Asia Limited



**Antony WONG**  
Independent Environmental Checker

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## EXECUTIVE SUMMARY

ES01 This is the 13<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 August 2014** (hereinafter ‘the Reporting Period’).

### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES02 To facilitate the project management and implementation, Liantang/Heung Yuen Wai Boundary Control Point and Associated Works of the Project is divided five CEDD contracts including Contract 2 (CV/2012/08), Contract 3 (CV/2012/09), Contract 4 (TCSS), Contract 5 (CV/2013/03) and Contract 6 (CV/2013/08).

ES03 Currently, the construction works has been undertaken for Contract 2, Contract 3 and Contract 5. 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	6	90
	24-hour TSP	6	30
Construction Noise	$L_{eq(30min)}$ Daytime	8	40
Water Quality	Water sampling	5	13(*)
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 2	5
		Contract 3	4
		Contract 5	4

(\*) Monitoring day

### BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES04 In the Reporting Period, no exceedance in air quality monitoring was registered. However, one (1) Limit Level exceedance and twelve (12) Action/ Limit Level exceedances for noise and water quality monitoring were recorded respectively. The summary of breach of environmental performance is shown below.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation Result	Corrective Actions
Air Quality	1-hour TSP	0	0	0	-	-
	24-hour TSP	0	0	0	-	-
Construction Noise	$L_{eq(30min)}$ Daytime	0	1	1	• Due to cumulative noise by C2 and other workshop nearby	Enhance noise mitigation measures
Water Quality	DO	0	0	0	-	-
	Turbidity	1	5	6	• Exceedances recorded at WM1 were not project related.	NA
	SS	1	5	6	• Exceedances recorded at WM4 were under investigation.	NA

**ENVIRONMENTAL COMPLAINT**

- ES05 In this Reporting Period, no environmental complaint in relation to the EM&A Programme was recorded.

**NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

- ES06 No environmental summons or successful prosecutions were recorded in the Reporting Period.

**REPORTING CHANGE**

- ES07 No reporting changes were made in the Reporting Period.

**SITE INSPECTION**

- ES08 In this Reporting Period, joint site inspection to evaluate the site environmental performance at **Contract 2** has been carried out by the RE, IEC, ET and the Contractor on **1, 8, 15, 22 and 29 August 2014**. No non-compliance was noted.
- ES09 In the Reporting Period, joint site inspection to evaluate the site environmental performance at **Contract 3** has been carried out by the RE, IEC, ET and the Contractor on **4, 13, 18 and 25 August 2014**. No non-compliance was noted.
- ES10 In the Reporting Period, joint site inspection to evaluate the site environmental performance at **Contract 5** has been carried out by the RE, IEC, ET and the Contractor on **7, 14, 21 and 28 August 2014**. No non-compliance was noted.

**FUTURE KEY ISSUES**

- ES11 During rainy season, muddy water or other water pollutants from sites surface flow to local stream such as Kong Yiu Channel and Ma Wat Channel or public area will be key environment issue to pay attention. Water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should be fully implemented.
- ES12 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.
- ES13 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.

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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. As part of the EM&A program, the baseline monitoring has carried out between **13 June 2013** and **12 July 2013** for all parameters including air quality, noise and water quality before construction work commencement. The Baseline Monitoring Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. Also, the Project baseline monitoring report which verified by the IEC has been submitted to EPD on **16 July 2013** for endorsement. The major construction works of the Project was commenced on **16 August 2013** in accordance with the EP Section 5.3 stipulation.
- 1.1.5 This is **13<sup>th</sup>** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **31 August 2014**.

### 1.2 REPORT STRUCTURE

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

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

- Section 8*    *Site Inspections*
- Section 9*    *Environmental Complaints and Non-Compliance*
- Section 10*   *Implementation Status of Mitigation Measures*
- Section 11*   *Conclusions and Recommendations*

## 2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

### 2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project would be divided by the 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 was commenced 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 been 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 is still yet awarded. Major Scope of Work of the Contract 6 would be included below:

- construction of an approximately 4.6km long dual two-lane connecting road (with about 0.6km of at-grade road, 3.3km of viaduct and 0.7km of tunnel) connecting the BCP with the proposed Sha Tau Kok Road Interchange and the associated ventilation buildings;
- associated diversion/modification works at access roads to the resite of Chuk Yuen Village;
- provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village;
- construction of a pedestrian subway linking the BCP to Lin Ma Hang Road;
- provisioning of the affected facilities including Wo Keng Shan Road garden; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

**2.2 PROJECT ORGANIZATION**

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

Civil Engineering and Development Department (CEDD)

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

Environmental Protection Department (EPD)

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

Engineer or Engineers Representative (ER)

2.2.4 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

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

The Contractor(s)

2.2.5 There will be one contractor for each individual works contract. The Contractor(s) should report to the ER. The duties and responsibilities of the Contractor are:

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

Environmental Team (ET)

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

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

Independent Environmental Checker (IEC)

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

- Provide proactive advice to the ER and the Project Proponent on EM&A matters related to

the project, independent from the management of construction works, but empowered to audit the environmental performance of construction

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

## 2.3 CONCURRENT PROJECTS

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

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

## 2.4 CONSTRUCTION PROGRESS

2.4.1 In the Reporting Period, the major construction activity conducted under the Project is located in Contracts 2, 3 and 5 and they are summarized in below. Moreover, the master construction program of the Contracts 2, 3 and 5 is enclosed in *Appendix C*.

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

The contract commenced in May 2014. In this Reporting Period, construction activities conducted are listed below:

- Project wide – Site installation
- Project wide – Minor Structures Demolition and removal of boulders
- North Portal – Site formation and slope stabilization work
- North Portal – Site investigation, site installation for tunnel excavation.
- North Portal – Tree transplantation and Remaining tree felling work
- Mid Vent Portal – Slope stabilization
- Mid Vent Portal – Tunnel excavation
- Mid Vent Portal – Erection of noise barrier on existing hoarding
- Mid Vent Portal – Site formation work
- South Portal – Temporary bridge foundation works
- South Portal – Tree transplantation and remaining tree felling work
- South Portal – Site investigation works

Contract 3 (CV/2012/09)

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

- Cable detection and trial trenches
- Tree Felling Works
- Pre-drilling works
- Bored pile and bored pile wall construction
- Slope upgrading works
- Noise barrier installation
- Water pipe installation
- Mini pile construction
- Local diversion of DN1400
- Lay Dia.1050 storm drains
- Pile Cap
- Piling works for Bridge E
- Receiving & Jacking Pit
- Retaining Structure
- Road works at Fanling Highway
- Sewer works at TWSRW
- Soil nail construction
- RC structure of new valve control & Telemetry House
- Demolition of Huts

Contract 4 (Contract number to be assigned)

- The contract has not yet been awarded.

Contract 5 (CV/2013/03)

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

- Preparation works for Depressed Road at BCP3
- Construction of Eastern pedestrian subway and pump room at Lin Ma Hang (LMH)
- Construction of Western pedestrian subway and staircase at Lin Ma Hang
- Abutment construction works at Bridge J
- Construction of retaining wall No.1 & 2a
- Pipe Jacking for CLP cable across Kong Yuen River (pit no. 2)
- Preparation works for CLP cable ducting of 3 nos. of steel sleeve pipe across Kong Yuen River
- Drainage works at existing / proposed Lin Ma Hang Road
- Drainage works at BCP area
- Water works at existing / proposed Lin Ma Hang Road
- Formation Works at BCP Area
- Pruning/ felling/ transplanting of existing tree
- Environmental impact monitoring
- Preparation works for soil cement slope along BCP Area.
- Installation of Underground utilities (CLP cables) at proposed LMH road.
- Diversion of Underground utilities (CLP cables) at existing LMH road.

Contract 6 (CV/2013/08)

- The contract has not yet been 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, Loi Tung and the workshops in Fanling
- 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	
<b>Contract 2</b>			
1	Air pollution Control (Construction Dust) Regulation	Ref No.: 368864	31 Dec 2013
2	Chemical Waste Producer Registration	<i>North Portal</i> Waste Producers Number: No. 5213-652-D2523-01 <i>Mid-Vent Portal</i> Waste Producers Number: No. 5213-634-D2524-01 <i>South Portal</i> Waste Producers Number: No. 5213-634-D2526-01	Valid from 25 Mar 2014  Valid from 25 Mar 2014  Valid from 9 Apr 2014
3	Water Pollution Control Ordinance - Discharge License	No.WT00018374-2014  No.: W5/1I389  No.: W5/1I390  No.: W5/1I391  No.: W5/1I392	Valid from 3 Mar 2014 to 28 Feb 2019  Valid from 28 Mar 2014 to 31 Mar 2019  Valid from 24 Mar 2014 to 31 Mar 2019 Surrendered, effective 19 June 2014  Valid from 28 Mar 2014 to 31 Mar 2019  Valid from 28 Mar 2014 to 31 Mar 2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7019105	Valid from 8 Jan 2014
5	Construction Noise Permit	GW-RN0268-14	Valid 24 Apr 2014 - 22 Oct 2014
		GW-RN0303-14	Valid 21 May 2014 - 6 Nov 2014
		GW-RN0432-14	Valid 11 Jul 2014 - 6 Jan 2015
		GW-RN0430-14	Valid 8 Jul 2014 - 29 Dec 2014
		GW-RN0488-14	Valid 19 Aug 2014 - 7 Feb 2015
		GW-RN0539-14	Valid 29 Aug 2014 -

Item	Description	License/Permit Status	
			30 Sep 2014
<b>Contract 3</b>			
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 362101	Notification received by EPD on 17 Jul 2013
2	Chemical Waste Producer Registration	Waste Producers Number: No.:5113-634-C3817-01	Valid form 7 Oct 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
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017914	Valid form 2 Aug 13 till the end of Contract
5	Construction Noise Permit	GW-RN0397-14	Valid on 29 Jun 2014 till 28 Dec 2014
		GW-RN0445-14	Valid on 28 Jul 2014 till 25 Jan 2015
		GW-RN0485-14	Valid on 5 Aug 2014 till 5 Feb 2015
		GW-RN0511 14	Valid on 25 Aug 2014 till 28 Sep 2014
		GW-RN0513-14	Valid on 22 Aug 2014 till 28 Sep 2014
<b>Contract 5</b>			
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 359338	Notified EPD on 13 May 2013
2	Chemical Waste Producer Registration	Waste Producers Number No.: 5213-642-S3735-01	Valid form 8 Jun 2013 till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	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. 7017351	Valid form 29 Apr 13 till the end of Contract
5	Construction Noise Permit	NA	NA

### 3 SUMMARY OF IMPACT MONITORING REQUIREMENTS

#### 3.1 GENERAL

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

3.1.2 A summary of construction phase EM&A requirements are presented in the sub-sections below.

#### 3.2 MONITORING PARAMETERS

3.2.1 The EM&A program of construction phase monitoring shall cover the following environmental issues:

- Air quality;
- Construction noise; and
- Water quality

3.2.2 A summary of the monitoring parameters is presented in *Table 3-1*.

**Table 3-1 Summary of EM&A Requirements**

Environmental Issue	Parameters
Air Quality	<ul style="list-style-type: none"> <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	<b>In-situ Measurements</b> <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>
	<b>Laboratory Analysis</b> <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
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

Station ID	Description	Works Area	Related to the Work Contract
AM4a	A village house located at about 160m east side of the original point AM4	LMH to Frontier Closed Area	Contract 6
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
AM7b <sup>@</sup>	Loi Tung Village House	Sha Tau Kok Road	Contract 2
AM8	Po Kat Tsai Village No. 4	Po Kat Tsai	Contract 2
AM9b <sup>#</sup>	Nam Wa Po Village House No. 80	Fanling	Contract 3

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

<sup>\*</sup> 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. It was approved by EPD (EPD's ref.: (6) in EP 2/N7/A/52 Pt.12 dated 9 Jun 2014).

<sup>@</sup> Proposal for the change of air quality monitoring location from AM7a to AM7b was submitted to EPD on 4 June 2014 after verified by the IEC. It was approved by EPD (EPD's ref.: (7) in EP 2/N7/A/52 Pt.12 dated 9 Jun 2014).

**Table 3-3 Impact Monitoring Stations - Construction Noise**

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

**Table 3-4 Impact Monitoring Stations - Water Quality**

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
WM1	Downstream of Kong Yiu Channel	833 679	845 421	Alternative location located at upstream 51m of the designated location	Contract 5
WM1-Control	Upstream of Kong Yiu Channel	834 185	845 917	NA	Contract 5
WM2A	Downstream of River Ganges	834 204	844 471	Alternative location located at downstream 81m of the designated location	Contract 6

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
WM2A-Control	Upstream of River Ganges	835 270	844 243	Alternative location located at upstream 78m of the designated location	Contract 6
WM2B	Downstream of River Ganges	835 433	843 397	NA	Contract 6
WM2B-Control	Upstream of River Ganges	835 835	843 351	Alternative location located at downstream 31m of the designated location	Contract 6
WM3	Downstream of River Indus	836 324	842 407	NA	Contract 6
WM3-Control	Upstream of River Indus	836 763	842 400	Alternative location located at downstream 26m of the designated location	Contract 6
WM4	Downstream of Ma Wat Channel	833 850	838 338	Alternative location located at upstream 11m of the designated location	Contract 3
WM4-Control A	Kau Lung Hang Stream	834 028	837 695	Alternative location located at downstream 28m of the designated location	Contract 3
WM4-Control B	Upstream of Ma Wat Channel	833760	837395	Alternative location located at upstream 15m of the designated location	Contract 3

### 3.4 MONITORING FREQUENCY AND PERIOD

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

#### Air Quality Monitoring

3.4.1 Frequency of impact air quality monitoring is as follows:

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

#### Noise Monitoring

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

#### Water Quality Monitoring

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

**3.5 MONITORING EQUIPMENT**

*Air Quality Monitoring*

- 3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve.
- 3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.
- 3.5.3 All equipment to be used for air quality monitoring is listed in **Table 3-5**.

**Table 3-5 Air Quality Monitoring Equipment**

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

*Wind Data Monitoring Equipment*

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

*Noise Monitoring*

- 3.5.7 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m s<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-31 or Rion NL-52
Calibrator	B&K Type 4231
Portable Wind Speed Indicator	Testo Anemometer

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

Water Quality Monitoring

3.5.10 DO and water temperature should be measured in-situ by a DO/temperature meter. The instrument should be portable and weatherproof using a DC power source. It should have a membrane electrode with automatic temperature compensation complete with a cable. The equipment should be capable of measuring:

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

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

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

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

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

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

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

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

**Table 3-7 Water Quality Monitoring Equipment**

Equipment	Model
Water Depth Detector	Eagle Sonar or tape measures
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends or teflon/stainless steel bailer or self-made sampling bucket

Equipment	Model
Thermometer & DO meter	YSI PRO20 Handheld Dissolved Oxygen Instrument
pH meter	AZ8685 pH pen-style meter
Turbidimeter	Hach 2100Q
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-liter plastic cool box with Ice pad

### 3.6 MONITORING METHODOLOGY

#### 1-hour TSP Monitoring

3.6.1 The 1-hour TSP monitor was a brand named “Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter” which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:

- (a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;
- (b.) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
- (c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

3.6.2 The 1-hour TSP meter is used within the valid period as follow manufacturer’s Operation and Service Manual.

#### 24-hour TSP Monitoring

3.6.3 The equipment used for 24-hour TSP measurement is Thermo Andersen Model GS2310 TSP high volume air sampling system, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The High Volume Air Sampler (HVS) consists of the following:

- (a.) An anodized aluminum shelter;
- (b.) A 8”x10” stainless steel filter holder;
- (c.) A blower motor assembly;
- (d.) A continuous flow/pressure recorder;
- (e.) A motor speed-voltage control/elapsed time indicator;
- (f.) A 7-day mechanical timer, and
- (g.) A power supply of 220v/50 Hz

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

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

#### Noise Monitoring

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

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

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

#### Water Quality

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

#### *Sampling Procedure*

- 3.6.10 A Digital Global Positioning System (GPS) is used to identify the designated monitoring stations prior to water sampling. A portable, battery-operated echo sounder is used for the determination of water depth at each station. At each station, water sample would be collected from 0.1m below water surface or the water surface to prevent the river bed sediment for stirring.
- 3.6.11 The sample container will be rinsed with a portion of the water sample. The water sample then will be transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.
- 3.6.12 Before sampling, general information such as the date and time of sampling, weather condition as well as the personnel responsible for the monitoring would be recorded on the field data sheet.
- 3.6.13 A ‘Willow’ 33-liter plastic cool box packed with ice will be used to preserve the water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box is maintained at a temperature as close to 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.
- 3.6.15 A portable AZ Model 8685 pH pen-style meter is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1.
- 3.6.16 A portable Hach 2100Q Turbidimeter is used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU.
- 3.6.17 All in-situ measurement equipment are calibrated by HOKLAS accredited laboratory of three month interval.

#### Laboratory Analysis

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

### **3.7 EQUIPMENT CALIBRATION**

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

- 3.7.3 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.
- 3.7.4 All water quality monitoring equipment would be calibrated by HOKLAS accredited laboratory of three month intervals.
- 3.7.5 The calibration certificates of all monitoring equipment used for the impact monitoring program in the Reporting Period and the HOKLAS accredited certificate of laboratory are attached in *Appendix F*.

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

- 3.8.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to the approved Environmental Monitoring and Audit Manual, the air quality, construction noise and water quality criteria were set up, namely Action and Limit levels are listed in *Tables 3-8, 3-9 and 3-10*.

**Table 3-8 Action and Limit Levels for Air Quality Monitoring**

Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1a	265	143	500	260
AM2	268	149		
AM3	269	145		
AM4a	267	148		
AM5	268	143		
AM6	269	148		
AM7b	275	156		
AM8	269	144		
AM9b	271	151		

**Table 3-9 Action and Limit Levels for Construction Noise**

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A) <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
		AND 120% of upstream control station of the same day				
	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
		AND 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
		AND 130% of upstream control station of the same day				

---

**Remarks:**

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

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

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

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

**3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL**

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

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

#### 4 AIR QUALITY MONITORING

##### 4.1 GENERAL

4.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 2, 3 and 5 and air quality monitoring was performed at **6** relevant designated locations as below:

- AM1a - Garden Farm, Tsung Yuen Ha Village;
- AM2 - Village House near Lin Ma Hang Road;
- AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village;
- AM7b – Loi Tung Village;
- AM8 - Po Kat Tsai Village;
- AM9b - Nam Wa Po Village House No. 80

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

##### 4.2 AIR QUALITY MONITORING RESULTS IN REPORTING MONTH

4.2.1 In the Reporting Period, a total of **90** events of 1-hour TSP and **30** events of 24-hours TSP monitoring were carried out and the monitoring results are summarized in *Tables 4-1 to 4-6*. The detailed 24-hour TSP monitoring data are presented in *Appendix I* and the relevant graphical plots are shown in *Appendix J*.

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	49	6-Aug-14	10:50	33	26	32
12-Aug-14 *	35	12-Aug-14	10:44	45	34	41
14-Aug-14	39	18-Aug-14	10:40	37	37	44
20-Aug-14	22	23-Aug-14	10:52	39	33	49
26-Aug-14	17	29-Aug-14	10:45	23	19	16
Average (Range)	<b>32 (17-49)</b>	Average (Range)		<b>34 (16-49)</b>		

\*24-hr TSP monitoring was rescheduled from 8 Aug to 12 Aug due to power failure of HVS.

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	63	6-Aug-14	10:47	46	35	36
8-Aug-14	56	12-Aug-14	10:38	58	39	48
14-Aug-14	52	18-Aug-14	10:30	42	28	30
20-Aug-14	14	23-Aug-14	10:43	34	34	50
26-Aug-14	113	29-Aug-14	10:39	35	25	23
Average (Range)	<b>60 (14-113)</b>	Average (Range)		<b>38 (23-58)</b>		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	81	6-Aug-14	10:40	32	31	36
8-Aug-14	59	12-Aug-14	10:30	76	55	52
14-Aug-14	58	18-Aug-14	10:20	47	36	39
20-Aug-14	25	23-Aug-14	10:41	25	27	107

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
26-Aug-14	50	29-Aug-14	10:33	34	34	30
Average (Range)	<b>55</b> (25-81)	Average (Range)		<b>44</b> (225-107)		

**Table 4-4 Summary of 24-hour and 1-hour TSP Monitoring Results – AM7b**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	93	4-Aug-14	12:40	51	40	94
8-Aug-14	39	9-Aug-14	10:48	66	63	67
14-Aug-14	33	15-Aug-14	10:15	37	40	39
20-Aug-14	20	21-Aug-14	10:44	15	13	13
26-Aug-14	32	27-Aug-14	11:00	36	30	21
Average (Range)	<b>43</b> (20-93)	Average (Range)		<b>42</b> (13 – 94)		

**Table 4-5 Summary of 24-hour and 1-hour TSP Monitoring Results – AM8**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	50	4-Aug-14	12:55	35	27	44
8-Aug-14	35	9-Aug-14	11:13	24	18	27
14-Aug-14	28	15-Aug-14	10:25	28	20	18
20-Aug-14	25	21-Aug-14	10:31	16	16	21
26-Aug-14	22	27-Aug-14	10:29	30	26	21
Average (Range)	<b>32</b> (22-50)	Average (Range)		<b>25</b> (16 – 44)		

**Table 4-6 Summary of 24-hour and 1-hour TSP Monitoring Results – AM9b**

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Aug-14	45	6-Aug-14	10:10	57	69	48
8-Aug-14	34	12-Aug-14	10:15	38	29	32
14-Aug-14	26	18-Aug-14	10:16	32	30	23
20-Aug-14	26	23-Aug-14	10:46	33	36	25
26-Aug-14	18	29-Aug-14	10:18	24	20	28
Average (Range)	<b>30</b> (18-45)	Average (Range)		<b>35</b> (20-69)		

- 4.2.2 During the Reporting Period, one (1) event of power failure of the HVS for 24-hour TSP monitoring was occurred at AM1a on 8 August 2014. The provision of power supply was rectified by the Contractor on 12 August and make up of sample was carried out on the same day.
- 4.2.3 As shown in *Tables 4-1 to 4-6*, the 24-hour and 1-hour TSP monitoring results were below the Action/ Limit Level. No Notification of Exceedances (NOE) of air quality criteria or corrective action was therefore required.
- 4.2.4 The meteorological data during the impact monitoring days are summarized in *Appendix K*.

## 5 CONSTRUCTION NOISE MONITORING

### 5.1 GENERAL

5.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 2, 3 and 5 and noise monitoring was performed at 8 relevant designated locations as below:

- NM1 - Tsung Yuen Ha Village House No. 63;
- NM2 - Village House near Lin Ma Hang Road;
- NM5 - Village House, Loi Tung
- NM6 - Tai Tong Wu Village House 2
- NM7 - Po Kat Tsai Village
- NM8 - Village House, Tong Hang;
- NM9 - Village House, Kiu Tau Village; and
- NM10 - Nam Wa Po Village House No. 80

5.1.2 The noise monitoring schedule is presented in *Appendix H* and the monitoring results are summarized in the following sub-sections.

### 5.2 NOISE MONITORING RESULTS IN REPORTING MONTH

5.2.1 In the Reporting Period, a total of 40 event noise measurements were carried out at the designated locations. The sound level meter was set in 1m from the exterior of the building façade including noise monitoring locations NM1, NM2, NM5, NM6, NM7, NM8 and NM9. Therefore, no façade correction (+3 dB(A)) is added according to acoustical principles and EPD guidelines. However, free-field status was performed at NM10. So, façade correction (+3 dB(A)) has added according to the requirement in this month. The noise monitoring results at the designated locations are summarized in *Table 5-1*. The detailed noise monitoring data are presented in *Appendix I* and the relevant graphical plots are shown in *Appendix J*.

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

Construction Noise Level ( $L_{eq,30min}$ ), dB(A)									
Date	NM1	NM2	NM8	NM9	(*)NM10	Date	NM5	NM6	NM7
6-Aug-14	58	62	59	54	67	4-Aug-14	54	61	68
12-Aug-14	53	61	58	54	70	9-Aug-14	57	61	<b>83</b>
18-Aug-14	54	62	59	56	66	15-Aug-14	55	62	66
23-Aug-14	56	60	58	57	70	21-Aug-14	59	61	66
29-Aug-14	57	60	70	56	67	27-Aug-14	55	62	65
<b>Limit Level</b>	<b>75 dB(A)</b>								

Remarks

(\*) façade correction (+3 dB(A)) is added according to acoustical principles and EPD guidelines  
 Bold and underlined indicated Limit Level exceedance

5.2.2 As shown in *Table 5-1*, except for NM7, the noise level measured at all designated monitoring locations were below 75dB(A). In addition, there was no noise complaints (Action Level exceedance) received by the RE, Contractor or CEDD in the Reporting Period.

5.2.3 Regarding to the exceedance recorded at NM7, Notification on Exceedances (NOEs) was issued to relevant parties including Contractor of C2, RE, IEC and EPD upon confirmation the results. The investigation for the cause of exceedance was completed and the investigation results are presented in below sections.

#### Investigation for Noise Exceedances at NM7

5.2.4 As observed by the ET's monitoring staff, concreting for transformer room was undertaken at Mid Vent during the course of noise measurement and truck entering and leaving the site was also recorded. As advised by DHK, the engaged Power Mechanical Equipment (PME) included concrete truck, concrete pump truck and poker.

- 5.2.5 In view of the vicinity, external factor which contributed to the noise level was noted and they are included:-
- Shun Yuen construction workshop (circular saw cutting, hammering);
  - Chun Wo construction workshop (heavy lifting);
  - Steel fabrication workshop (grinding and hammering);
  - WSD watermains road work (breaking work);
  - Non DHK's heavy vehicles entering and leaving the above work areas.
- 5.2.6 The external noise source was already existed during baseline period, except for WSD's activity. It is considered the exceedance was caused by cumulated noise of the Contract, nearby workshops and nearby construction activities. Additional noise monitoring was conducted on 12 Aug and normal site works such as cutting and formwork were in progress. The monitoring result is 63db(A) which revealed the noise level was returned to normal which below the noise criteria.
- 5.2.7 DHK explained that it is not practicable to install temporary noise barrier as the work is carried out near the site entrance. Erection of noise barrier at there would obstruct the access road. Concreting for transformer room is a one day event and it had completed on 9 Aug 2014. DHK was recommended to adopt good site practice to minimize the construction noise impact where similar work would be conducted in near future:-
- a) DHK will erect 3.6m height of noise barrier on the west side of the site (Mid Vent) to minimize potential noise impact to the public which is in progress.
  - b) Do not operate machines continuously, i.e) to take intermittent break.
  - c) To avoid operating plants concurrently, such as limit heavy vehicles entering and leaving the site while carrying out concreting near the entrance.
  - d) To turn off any idle equipment on site.

## 6 WATER QUALITY MONITORING

### 6.1 GENERAL

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

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

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

### 6.2 RESULTS OF WATER QUALITY MONITORING

6.2.1 In the Reporting Period, a total of **13** sampling days were performed for water quality monitoring at Contracts 3 and 5. The key monitoring parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in *Tables 6-1 and 6-2*. Breaches of water quality monitoring criteria are shown in *Table 6-3*. Detailed monitoring database including in-situ measurements and laboratory analysis data are shown in *Appendix I* and the relevant graphical plot are shown in *Appendix J*.

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

Date	Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB
2-Aug-14	7.91	6.83	7.49	14.7	4.4	9.1	8.5	6.5	7.0
4-Aug-14	7.57	7.72	7.27	34.6	15.2	7.7	23.0	8.0	6.0
6-Aug-14	7.36	7.67	6.32	31.9	34.2	12.3	39.0	18.5	5.0
9-Aug-14	6.02	6.46	4.57	19.8	6.1	9.4	22.5	4.0	11.0
12-Aug-14	6.31	7.18	3.93	<b>54.1</b>	5.5	11.7	<b>44.0</b>	2.5	11.0
14-Aug-14	6.77	6.79	5.14	19.9	7.7	15.0	15.0	4.5	13.5
16-Aug-14	7.19	6.74	5.20	17.5	4.7	11.4	16.0	3.0	11.5
18-Aug-14	7.22	6.61	5.09	27.3	14.9	12.4	18.0	11.0	10.0
21-Aug-14	7.34	6.85	5.04	15.1	33.7	8.3	11.5	43.5	8.5
23-Aug-14	6.33	5.50	4.14	10.5	23.5	11.9	8.0	55.5	12.5
25-Aug-14	6.77	6.72	4.10	9.9	56.2	17.5	8.5	19.5	15.5
27-Aug-14	8.13	7.12	5.28	8.6	7.3	6.1	4.5	8.0	3.0
29-Aug-14	8.21	7.32	5.62	10.4	5.5	11.0	7.0	7.0	6.5

Remark:

- bold and underlined indicated Limit Level exceedance.*
- bold and italic indicated Action Level exceedance*

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

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
2-Aug-14	8.18	7.94	41.3	10.5	27.0	2.0
4-Aug-14	6.82	2.96	27.1	over ranged	17.5	302.5
6-Aug-14	7.18	5.79	34.5	55.0	7.5	21.5
9-Aug-14	7.29	6.37	27.0	13.1	26.5	4.5
12-Aug-14	7.80	5.08	24.4	16.7	25.0	7.5
14-Aug-14	6.70	6.52	<b>105.0</b>	15.3	51.0	6.0
16-Aug-14	6.44	6.81	46.6	14.8	<b>81.5</b>	8.0
18-Aug-14	7.67	5.55	<b>69.0</b>	15.9	<b>69.0</b>	9.0
21-Aug-14	5.88	6.99	<b>87.8</b>	25.0	<b>73.0</b>	13.0
23-Aug-14	6.77	7.64	<b>76.9</b>	15.8	<b>76.0</b>	11.0

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
25-Aug-14	6.56	6.92	<b><i>55.4</i></b>	7.5	<b><i>70.5</i></b>	2.5
27-Aug-14	7.52	8.27	41.8	11.6	51.5	5.0
29-Aug-14	7.49	9.82	26.1	9.0	15.0	2.0

Remark:

- i. ***bold and underlined indicated Limit Level exceedance.***
- ii. ***bold and italic indicated Action Level exceedance***

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

Location	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
WM1	0	0	1	4	0	5	1	9
WM4	0	0	0	1	1	0	1	1
<b>No of Exceedance</b>	0	0	1	5	1	5	2	10

6.2.2 In view of the monitoring results of Dissolved Oxygen (DO) at WM1 and WM4, all the measured results were higher than Action Level.

6.2.3 For turbidity and SS, a total of 12 Action/ Limit Level exceedances were recorded at WM1 and WM4. The Notification on Exceedances (NOEs) were issued to all relevant parties upon confirmation the results. The investigation results are briefly summarized in below.

**Investigation for Exceedance at WM1 on 25 July 2014 (follow up for last Reporting Period)**

6.2.4 According to the site information by the Contractor, construction of retaining wall and formation of Boundary Control Point (BCP) area was conducted. All the construction activities were land based and did not disturb the water environment.

6.2.5 During the course of water sampling, no water discharge from the site was found at WM1 and Kong Yiu Channel. According to the records by the Hong Kong Observatory, 4.5 mm and 3.0 mm of rainfall were recorded on 24 & 25 July 2014 at Ta Kwu Ling Automatic Weather Station respectively. Water sampling was carried out after rain and the suspended solids level was likely due to riverbed disturbed by the rain.

6.2.6 There were no exceedances recorded in subsequent monitoring results under non-rainy weather. In view of the above circumstance, the water quality in the channel was likely to be deteriorated after rain. It is concluded that the exceedance was unlikely due to works under the Project.

**Investigation for Exceedances at WM1 on 14 August 2014**

6.2.7 According to the site daily by the Contractor, construction of retaining wall and formation of Boundary Control Point (BCP) area was conducted. All the construction activities were land based and did not disturb the water environment.

6.2.8 During the course of water sampling, turbid water was observed at WM1 and Kong Yiu Channel after rain. Water sampling was carried out after rain and the turbidity level was likely due to riverbed disturbed by the rain.

6.2.9 Moreover, large quantity of fish, which flushed from upstream after heavy rainfall a day before, was observed at WM1. The fish stirred up the sediment from river bed which also increased the turbidity and suspended solid levels of the stream course.

6.2.10 In view of the above circumstance, the water quality in the channel was likely to be deteriorated

after rain and fish movement. It is concluded that the exceedance was not due to works under the Project.

**Investigation for Exceedances at WM1 on 16, 18, 21, 23 and 25 August 2014**

- 6.2.11 According to the site information by the Contractor, construction of retaining wall and formation of Boundary Control Point (BCP) area was conducted. All the construction activities were land based and did not disturb the water environment.
- 6.2.12 During the course of water sampling, no run-off water from the site was observed at WM1 and Kong Yiu Channel. According to our monitoring team, large quantity of fish was observed at WM1 on 16, 18, 21, 23 and 25 August 2014. The fish stirred up the sediment from river bed which influenced the suspended solids (SS) level of the stream course
- 6.2.13 In view of the above circumstance, the water quality in the channel was likely to be deteriorated due to fish movement. It is concluded that the exceedances on 16, 18, 21, 23 and 25 August 2014 were not due to works under the Project

**Investigation for Exceedances at WM4 on 12 August 2014**

- 6.2.14 As observed by the ET's monitoring staff, no construction works under Contract 3 was conducted at the section of Tai Wo Road Service Road East near WM4.
- 6.2.15 During the course of water sampling, turbid water was observed at WM4. In view of the surrounding, muddy water was found discharging from an outfall near construction site of Contract 2, which located around 50m upstream of WM4.
- 6.2.16 In view of the above, it was consider that the exceedances were not related the construction work under Contract 3.
- 6.2.17 Cause of exceedance related to Contract 2 is under investigation and it will be updated in next Reporting Period.

**7 WASTE MANAGEMENT**

**7.1 GENERAL WASTE MANAGEMENT**

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

**7.2 RECORDS OF WASTE QUANTITIES**

7.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

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

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

Type of Waste	Contract 2		Contract 3		Contract 5		Total Quantity
	Quantity	Disposal Location	Quantity	Disposal Location	Quantity	Disposal Location	
C&D Materials (Inert) (in '000m <sup>3</sup> )	0	--	5.504	--	0	--	5.504
Reused in this Project (Inert) (in '000 m <sup>3</sup> )	0.7325	--	0.732	--	0	--	1.4645
Reused in other Projects (Inert) (in '000 m <sup>3</sup> )	51.3053	C5	0	--	0	--	51.3053
Disposal as Public Fill (Inert) (in '000 m <sup>3</sup> )	4.4013	Tuen Mun 38	4.772	Tuen Mun 38	0	--	9.1733

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

Type of Waste	Contract 2		Contract 3		Contract 5		Total Quantity
	Quantity	Disposal Location	Quantity	Disposal Location	Quantity	Disposal Location	
Recycled Metal (in '000m <sup>3</sup> )	0	-	0	-	0	-	0
Recycled Paper / Cardboard Packing (in '000m <sup>3</sup> )	0	-	0	-	0	--	0
Recycled Plastic (in '000m <sup>3</sup> )	0	-	0.005	Licensed collector	0	--	0.005
Chemical Wastes (in '000m <sup>3</sup> )	0	-	0.009	Licensed collector	0	--	0.009
General Refuses (in '000m <sup>3</sup> )	0.0774	NENT	0.220	NENT	0.03	NENT	0.3274

**8 SITE INSPECTION**

**8.1 REQUIREMENTS**

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

**8.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH**

**The Contract 2**

8.2.1 In the Reporting Period, joint site inspection for Contract 2 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **1, 8, 15, 22 and 29 August 2014**. No non-compliance was noted.

8.2.2 The findings / deficiencies of **Contract 2** that observed during the weekly site inspection are listed in **Table 8-1**.

**Table 8-1 Site Observations for Contract 2**

<b>Date</b>	<b>Findings / Deficiencies</b>	<b>Follow-Up Status</b>
29 August 2014 (last Reporting Period)	<ul style="list-style-type: none"> <li>Tree inside the site area without label was observed at North Portal. The Contractor was reminded to provide proper label to identify the tree condition inside the site area.</li> </ul>	<ul style="list-style-type: none"> <li>Tree tag has been provided for the surveyed trees.</li> </ul>
1 August 2014	<ul style="list-style-type: none"> <li>It was reminded to the Contractor that de-silting facilities should be well maintained which ensure the discharge water from site complies with the discharge license requirement. (North Portal)</li> </ul>	<ul style="list-style-type: none"> <li>Noted by the Contractor.</li> </ul>
8 August 2014	<ul style="list-style-type: none"> <li>Free standing chemical containers without drip tray were observed, the contractor was reminded to provide drip tray for all chemical container in the site area to prevent leakage. (Mid-Vent)</li> </ul>	<ul style="list-style-type: none"> <li>The chemical containers were removed.</li> </ul>
15 August 2014	<ul style="list-style-type: none"> <li>The contractor was reminded to keep maintain the by-pass stream in the site area to prevent any muddy surface runoff discharged into the existing stream.</li> </ul>	<ul style="list-style-type: none"> <li>Sand bag and tarpaulin sheets was erected to prevent muddy surface runoff discharged into the bypass stream</li> </ul>
22 August 2014	<ul style="list-style-type: none"> <li>The contractor was reminded that air compressor using on site should provide valid noise emission label. (South Portal)</li> <li>Lifting ring for the concrete block should be filled with sand to prevent stagnant water accumulation. (South Portal)</li> </ul>	<ul style="list-style-type: none"> <li>The air compressor was removed from site.</li> <li>The lifting ring on the concrete block has been filled with sand.</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
29 August 2014	<ul style="list-style-type: none"> <li>Tree protection zone was not installed properly. The contractor was reminded that all retaining tree should set up in the protection zone. Moreover, if the protection zone will be affected by muddy surface run-off, sand bags should be provided to divert the muddy surface run-off. (North Portal and South Portal)</li> </ul>	<ul style="list-style-type: none"> <li>Tree protection zone have been set up in both North and South Portal.</li> </ul>

**The Contract 3**

8.2.3 In the Reporting Period, joint site inspection for Contract 3 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **4, 13, 18 and 25 August 2014**. No non-compliance was noted.

8.2.4 The findings / deficiencies of **Contract 3** that observed during the weekly site inspection are listed in **Table 8-2**.

**Table 8-2 Site Observations for Contract 3**

Date	Findings / Deficiencies	Follow-Up Status
4 August 2014	<ul style="list-style-type: none"> <li>No adverse environmental issue was observed.</li> </ul>	N.A.
13 August 2014	<ul style="list-style-type: none"> <li>A drip tray without plug was observed under a generator, the Contractor should provide plugs for all drip trays to prevent leakage of oil and land contamination.</li> </ul>	<ul style="list-style-type: none"> <li>A plug was provided for the trip tray.</li> </ul>
18 August 2014	<ul style="list-style-type: none"> <li>Dusty haul road was observed, the Contractor should improve dust mitigation measures such as water spraying and control vehicle speed limit. (SA12)</li> <li>Oil stain was observed, the Contractor should clean the oil stain with proper cleaning agent to prevent further contamination. (SA4).</li> </ul>	<ul style="list-style-type: none"> <li>Control vehicle speed limit has been set up for the haul road.</li> <li>Oil stain has been removed</li> </ul>
25 August 2014	<ul style="list-style-type: none"> <li>Chemical drum without drip tray was observed, the Contractor should place the chemical drum in proper storage area after used with drip tray underneath.</li> </ul>	<ul style="list-style-type: none"> <li>The chemical drum has been removed.</li> </ul>

**The Contract 5**

8.2.5 In the Reporting Period, joint site inspection for Contract 5 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **7, 14, 21 and 28 August 2014**. No non-compliance was noted.

8.2.6 The findings / deficiencies of **Contract 5** that observed during the weekly site inspection are listed in **Table 8-3**.

**Table 8-3 Site Observations for Contract 5**

Date	Findings / Deficiencies	Follow-Up Status
7 August 2014	<ul style="list-style-type: none"> <li>• The Contractor should remove and clean up the silt at wheel washing bay in frequent basis to maintain the efficiency. (Location: BCP1)</li> </ul>	<ul style="list-style-type: none"> <li>• Worker was provided for the silt cleaning at the wheel washing bay.</li> </ul>
14 August 2014	<ul style="list-style-type: none"> <li>• Worker was provided for the silt cleaning at the wheel washing bay.</li> <li>• The Contractor was reminded to maintain cleanliness on the pedestrian road at LMH Road.</li> </ul>	<ul style="list-style-type: none"> <li>• Tool box talk was provided to the labour to improve wheel washing performance and effectiveness.</li> <li>• The pedestrian road at LMH road was cleaned and no sand/soil was observed on the road.</li> </ul>
21 August 2014	<ul style="list-style-type: none"> <li>• No adverse environmental issue was observed.</li> </ul>	N.A.
28 August 2014	<ul style="list-style-type: none"> <li>• Free standing chemical containers were observed in the LMH site office, the Contractor should provide drip tray to prevent leakage.</li> <li>• The Contractor was reminded to pay attention on the dust control and muddy water at the site/entrance of LMH site office.</li> </ul>	<ul style="list-style-type: none"> <li>• To be followed in next Repeorting Period.</li> </ul>

8.2.7 Overall, general housekeeping such as daily site tidiness and cleanliness should be maintained for all Contracts in accordance with the PS requirements. Moreover, cleaning the wheel washing bay in regular basis is reminded. For chemical waste management, the Contractor was reminded to set up proper storage area for all chemical waste before dispose of site.

**Other Contracts**

8.2.8 Since the construction works at the Contract 4 and Contract 6 have not yet been commenced, no site inspection is performed for these Contracts.

**9 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE**

**9.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION**

9.1.1 In the Reporting Period, no environmental complaint, summons and prosecution under the EM&A Programme was lodged for Contracts 2, 3 and 5.

**Investigation of Environmental Complaint for last Reporting Period**

9.1.2 A complaint was received from Ms. Wong, a villager near North Portal main gate of Contract 2, regarding dust generation from site haul road (TA01) at North Portal Site on 17 July 2014. According to the site information provided by DHK, transportation of spoils by the concerned haul road was recorded in July 2014. During weekly site inspection conducted by ET in June and July 2014, it was observed that the concerned haul road was unpaved and fugitive dust generated by vehicle movement was likely to occur without sufficient dust mitigation measures. DHK has been repeatedly reminded to enhance the dust control measures at the haul road.

9.1.3 It is considered that the complaint was related to the transportation work under the project. DHK has taken dust mitigation measures such as watering by water truck applied on the haul road as recommended in the Implementation Schedule (IS) of the EM&A Manual. It is doubted the mitigation measures is sufficient when heavy vehicle such as truck pass by. DHK was strongly requested to improve the dust control measures apply on the haul road in order to minimise the dust impact to villager nearby.

9.1.4 DHK was advised to enhance the dust mitigation measures as following:-

- To increase the frequency of watering by water truck on haul road
- To install the sprinkler system at sensitive area along the haul road
- To set up speed limit control for vehicle using the haul road

9.1.5 ET has followed up the implementation of the mitigation measures carried out by DHK:-

- DHK explained that it is not practicable to increase the frequency of watering by water truck on haul road to more than 8 times per day as excessive water would be cumulated which damage the road base.
- During site inspection on 1 August 2014, sprinkler system has been installed at sensitive locations along the haul road.
- Speed limit of the construction site is set to be 5 km/hr.

9.1.6 No further complaint was received in this Reporting Period and the ET will regular check if the implemented dust mitigation measures are effective.

9.1.7 The statistical summary table of environmental complaint is presented in *Tables 9-1, 9-2 and 9-3*.

**Table 9-1 Statistical Summary of Environmental Complaints**

Reporting Period	Contract No	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 31 July 2014	Contract 2	0	3	(2) Water Quality
06 Nov 2013 – 31 July 2014	Contract 3	0	2	(1) Construction Dust (1) Water Quality
16 Aug 2013 – 31 July 2014	Contract 5	0	1	(1) Construction Dust
1 – 31 August 2014	Contract 2	0	3	(2) Water Quality (1) Construction Dust
	Contract 3	0	2	(1) Construction Dust (1) Water quality
	Contract 5	0	1	(1) Construction Dust

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

Reporting Period	Contract No	Environmental Summons Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 31 July 2014	Contract 2	0	0	NA
06 Nov 2013 – 31 July 2014	Contract 3	0	0	NA
16 Aug 2013 – 31 July 2014	Contract 5	0	0	NA
1 – 31 August 2014	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA

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

Reporting Period	Contract No	Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 31 July 2014	Contract 2	0	0	NA
06 Nov 2013 – 31 July 2014	Contract 3	0	0	NA
16 Aug 2013 – 31 July 2014	Contract 5	0	0	NA
1 – 31 August 2014	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA

**The Other Contracts**

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

**10 IMPLEMENTATION STATUS OF MITIGATION MEASURES**

**10.1 GENERAL REQUIREMENTS**

10.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in *Appendix M*.

10.1.2 All contracts under the Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by Contracts 3 and 5 in this Reporting Period are summarized in *Table 10-1*.

**Table 10-1 Environmental Mitigation Measures**

Issues	Environmental Mitigation Measures
Water Quality	<ul style="list-style-type: none"> <li>Wastewater to be treated by the filtration systems i.e. sedimentation tank or AquaSed before to 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> <li>A cleaning truck was regularly performed on the public road to prevent fugitive dust emission</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>

**10.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH**

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

**Contract 2**

- Project wide – Asbestos removal, minor structure demolition and removal of boulders
- Project wide – GI Field Works
- Mid Vent Portal – Adit Construction
- Mid Vent Portal – Tunnel excavation
- Mid Vent Portal – Top heading canopies
- North Portal – Site formation and slope stabilization works
- North Portal – Tree transplantation and remaining tree felling work
- North Portal – Tunnel excavation and top heading canopies
- South Portal – Temporary bridge foundation works (ramp, columns and main deck installation)
- South Portal – Tree transplantation and remaining tree felling works
- South Portal – Drainage works

**Contract 3**

- ADMS installation
- Trim pile head & extension of piles for bored pile wall
- Cable detection and trial trenches

- Pre-drilling works and piling works for viaduct
- Catch fence installation
- Mini pile construction
- Tree felling works
- Pile cap works
- Slope upgrading works
- Noise barrier works
- Laying of concrete pipe works
- Water pipe installation
- Pier Construction
- Piling works for Bridge E
- Site formation
- Receiving & Jacking Pit
- Retaining Structure
- Road works at Fanling highway
- Sewer works at TWSRW
- Socket H-pile installation
- Soil nail construction
- Diversion of DN600 & DN1400
- Trenchless excavation
- RC structure of new valve control & Telemetry House
- Traffic diversion for Fanling Highway
- Demolition of central barrier at Fanling Highway
- Diversion of existing cycle track

#### **Contract 5**

- Construction of retaining wall No.1
- Construction of retaining wall No. 2a & 2b
- Piling works at footbridge
- Construction of Western pedestrian subway at Lin Ma Hang
- Pipe jacking across Kong Yuen River
- Transplantation, Pruning/felling of existing tree
- Drainage works at proposed and existing LMH Road
- Formation Works at BCP Area
- Construction of Depressed Road at BCP3
- Filing Works for ArchHD permanent office
- Construction of substructure of Bridge J
- Water works at proposed and existing LMH Road
- Pipe Jacking for CLP cable across Kong Yuen River(pit no.2)
- Construction of Eastern pedestrian subway and pump room at Lin Ma Hang
- Construction of soil cement slope along BCP area
- Construction of superstructure of Bridge J
- Drainage works at BCP area
- Construction of soil cement slope along BCP Area
- Road works(kerb laying) for proposed LMH road
- Installation of Underground utilities (CLP cables) at proposed LMH road
- Diversion of Underground utilities (CLP cables) at existing LMH road.

### **10.3 KEY ISSUES FOR THE COMING MONTH**

- 10.3.1 Key issues to be considered in the coming month for Contracts 2, 3 and 5 include:
- Implementation of control measures for rainstorm;
  - Regular clearance of stagnant water during wet season;

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

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

## 11 CONCLUSIONS AND RECOMMENDATIONS

### 11.1 CONCLUSIONS

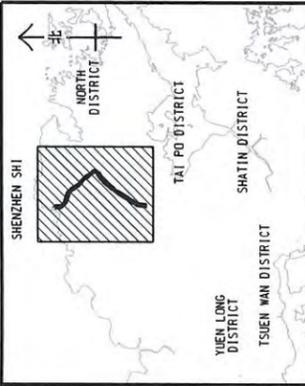
- 11.1.1 This is 13<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 31 August 2014.
- 11.1.2 No 24-hour or 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.
- 11.1.3 No noise complaint (which is an Action Level exceedance) was received. However, one (1) noise exceedance was recorded at NM7 on 9 August. Investigation for the cause of exceedance has completed and it was concluded that the exceedance was due to cumulative noise by the works under Contract 2 as well as the external noise from other workshop and construction works nearby. The Contractor was advised to adopt good site practice to minimize the construction noise impact where similar work would be conducted in near future.
- 11.1.4 For water quality monitoring, a total twelve (12) Action/ Limit Level exceedances in parameters of turbidity and SS were recorded. The Notification on Exceedances (NOEs) was issued to all relevant parties. Investigation findings concluded that the exceedances detected at WM1 were all not due to the Project works. For the exceedance recorded at WM4, investigation result revealed that the exceedance was not related to the works under Contract 3.
- 11.1.5 No notification of summons or successful prosecution under the EM&A Programme of the Project was received in the reporting period for Contract 2, 3 and 5.
- 11.1.6 No environmental complaint under the EM&A Programme of the Project was received in the reporting period for Contract 2, 3 and 5.
- 11.1.7 During the Reporting Period, five (5), four (4) and five (5) events of joint site inspection by the RE, IEC, ET and Main-contractor were carried out for Contracts 2, 3 and 5 respectively in accordance with the EM&A Manual stipulation. No non-compliance observed during the site inspection. The environmental performance of the Project of Contracts 2, 3 and 5 was therefore considered as satisfactory.

### 11.2 RECOMMENDATIONS

- 11.2.1 During wet season, muddy water or other water pollutants from site surface runoff into Kong Yiu Channel and Ma Wat Channel will be key environment issue. Water quality mitigation measures to prevent surface runoff into nearby water bodies should be fully implemented.
- 11.2.2 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.
- 11.2.3 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EM&A requirement.
- 11.2.4 Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be kept to prevent mosquito breeding on site.

## **Appendix A**

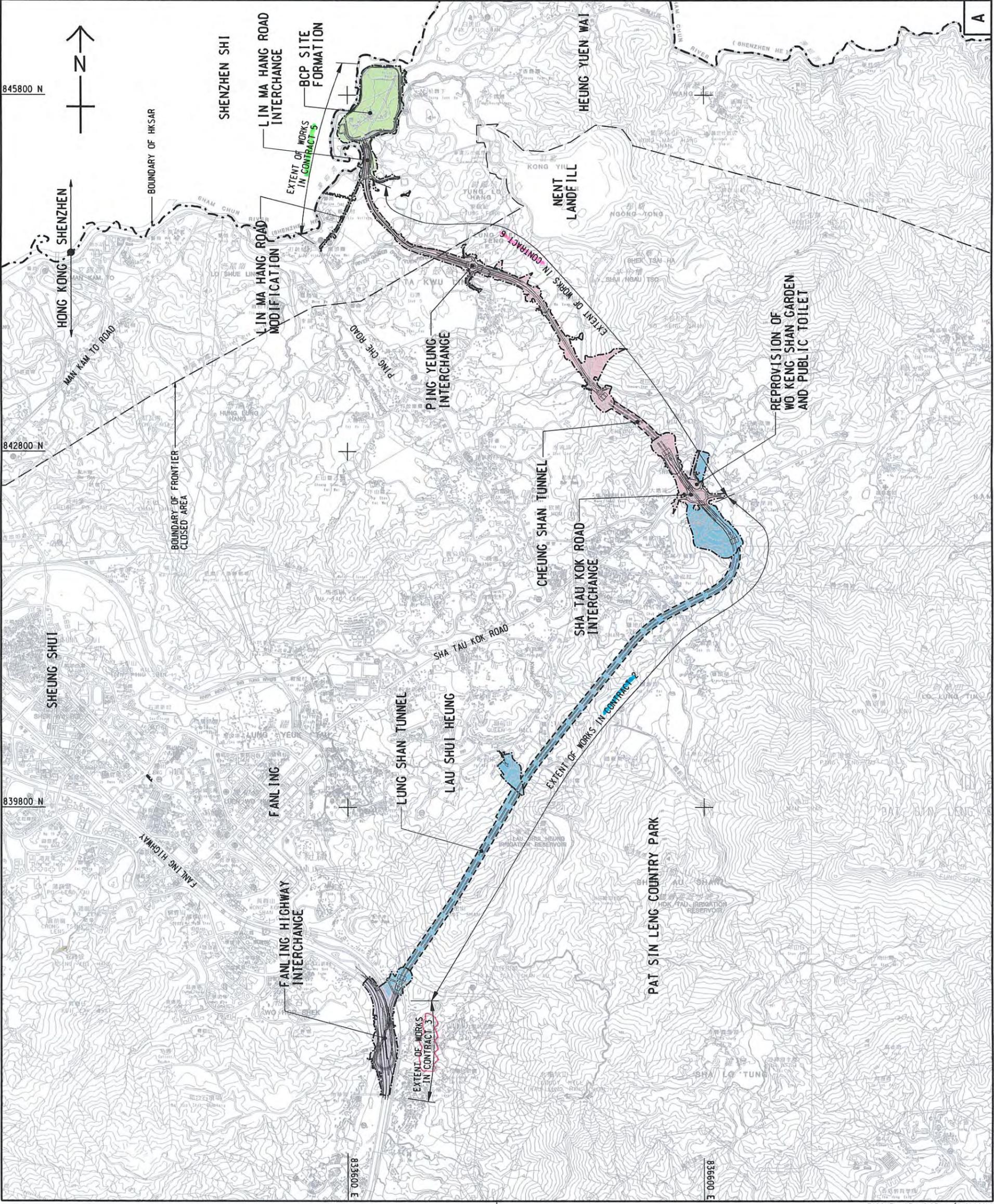
### **Layout plan of the Project**



**LEGEND:**

- SITE BOUNDARY
- UNDERGROUND WORKS SITE BOUNDARY

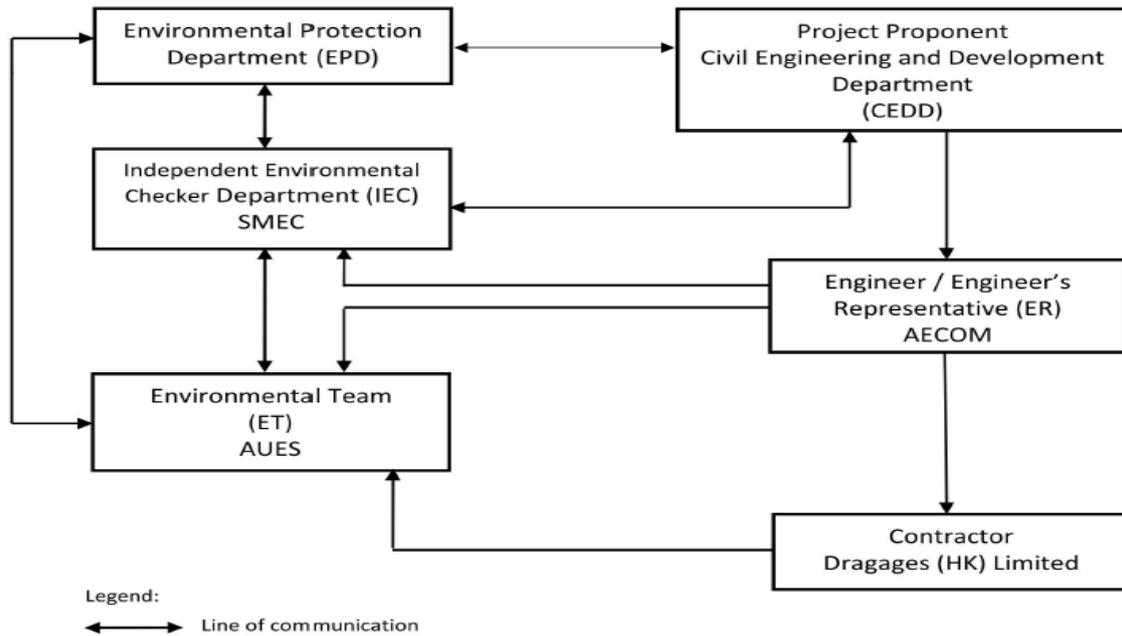
土木工程拓展署 Civil Engineering and Development Department	
LANTIAN/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS (SITE FORMATION AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION	
<b>PROJECT LAYOUT PLAN</b>	
DRGNO. 60212563/PLP/001	圖號編號 60212563/PLP/001
DRAWN BY ZJ CHECKED BY A1 SCALE 1 : 15000	繪圖人 朱建 校核人 吳國強 縮尺 1 : 15000
METRES	公尺
© COPYRIGHT RESERVED 版權 所有	



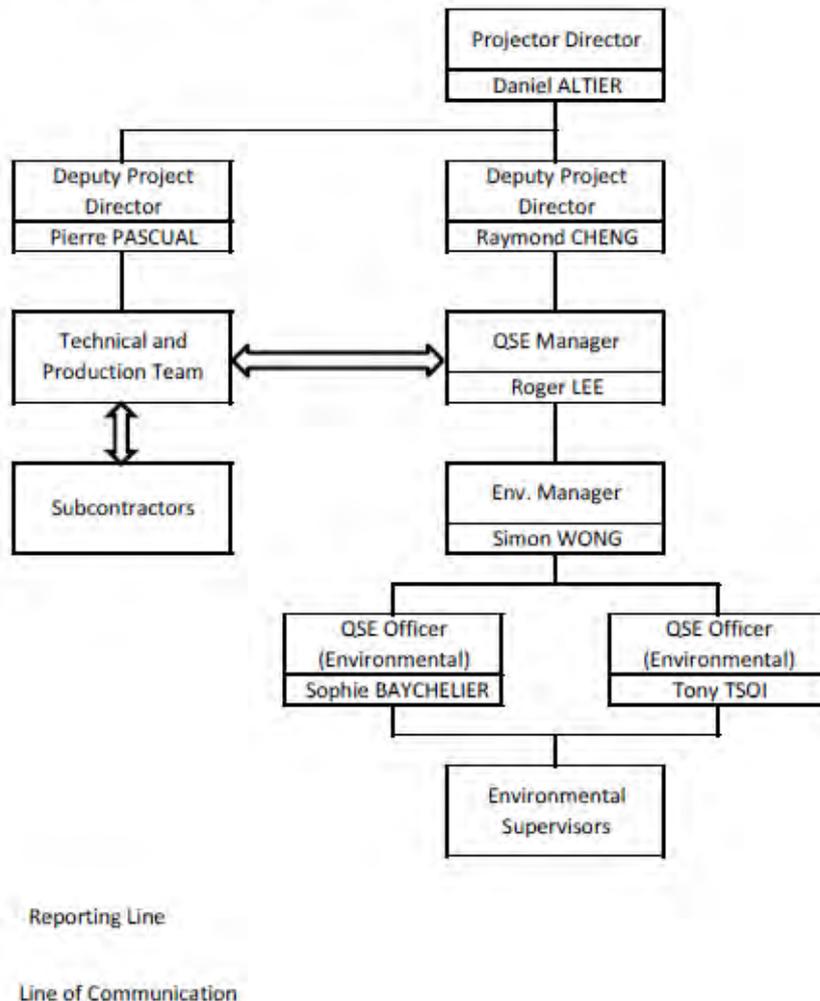
## **Appendix B**

### **Organization Chart**

**Project Organization Structure**



**Structure Within Dragages (HK) Limited**



**Environmental Management Organization for Contract 2 - (CV/2012/08)**

**Contact Details of Key Personnel for Contract 2 - CV/2012/08**

<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	Gregory Lo	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
DHK	Project Director	Daniel Altier	2171 3004	2171 3299
DHK	Deputy Project Manager	Raymond Cheng / Pierre Pascual	2171 3004	2171 3299
DHK	QSE Manager	Roger Lee	6293 8726	2171 3299
DHK	Environmental Manager (Environmental Officer)	Simon Wong	9281 4346	2171 3299
DHK	QSE Officer ( Environmental)	Sophie Baycheuer	6321 5001	2171 3299
DHK	QSE Officer ( Environmental)	Tony Tsoi	6028 5623	2171 3299
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:

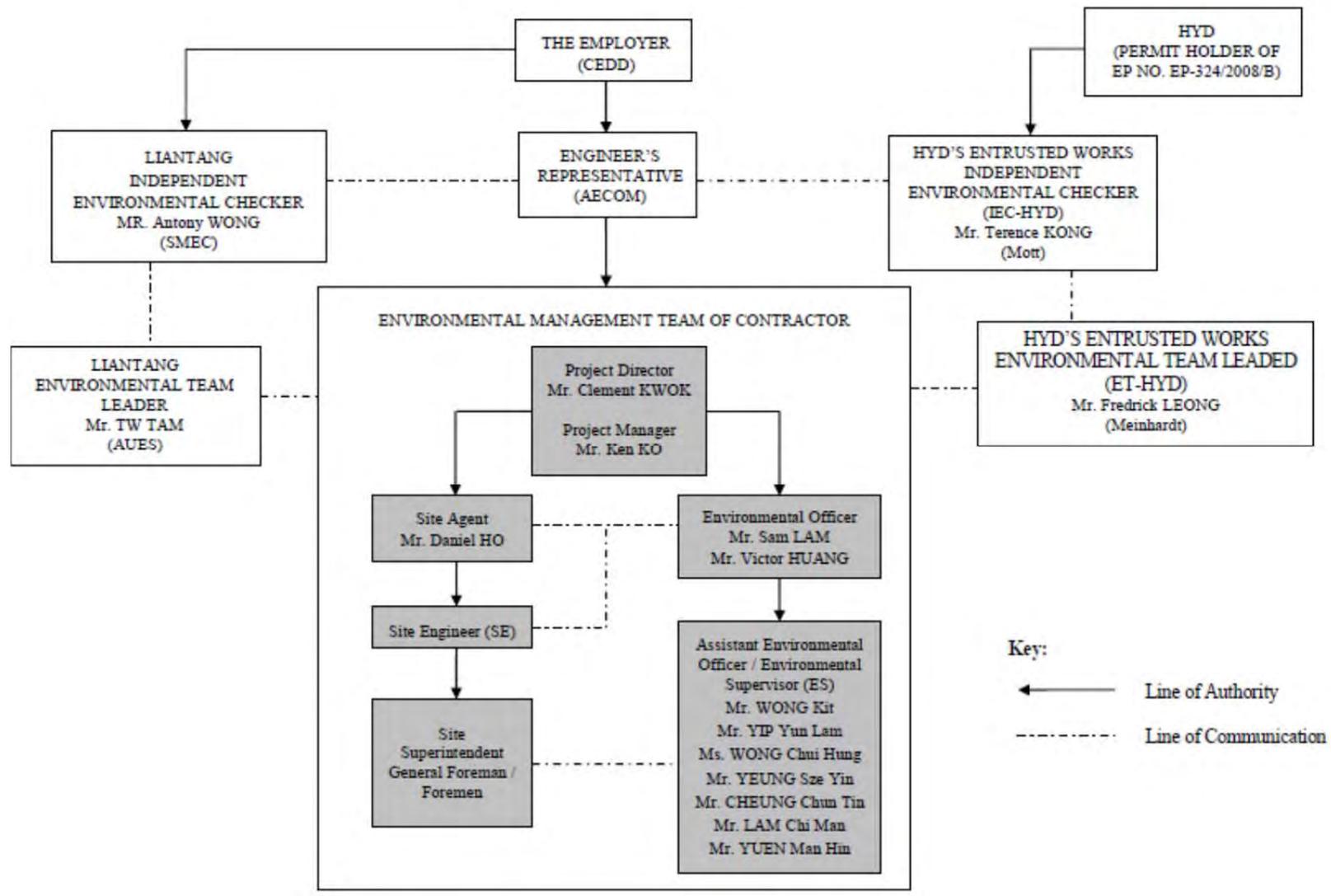
*CEDD (Employer) – Civil Engineering and Development Department*

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

*DHK(Main Contractor) –Dragages Hong Kong Ltd.*

*SMEC (IEC) – SMEC Asia Limited*

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



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

**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	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
Chun Wo	Project Director	Clement Kwok	3758 8735	2638 7077
Chun Wo	Project Manager	Ken Ko	2638 6136	2638 7077
Chun Wo	Site Agent	Daniel Ho	2638 6144	2638 7077
Chun Wo	Environmental Officer	Sam Lam/ Victor Huang	2638 6115	2638 7077
Chun Wo	Environmental Supervisor	Wong Kit	2638 6125	2638 7077
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

**Legend:**

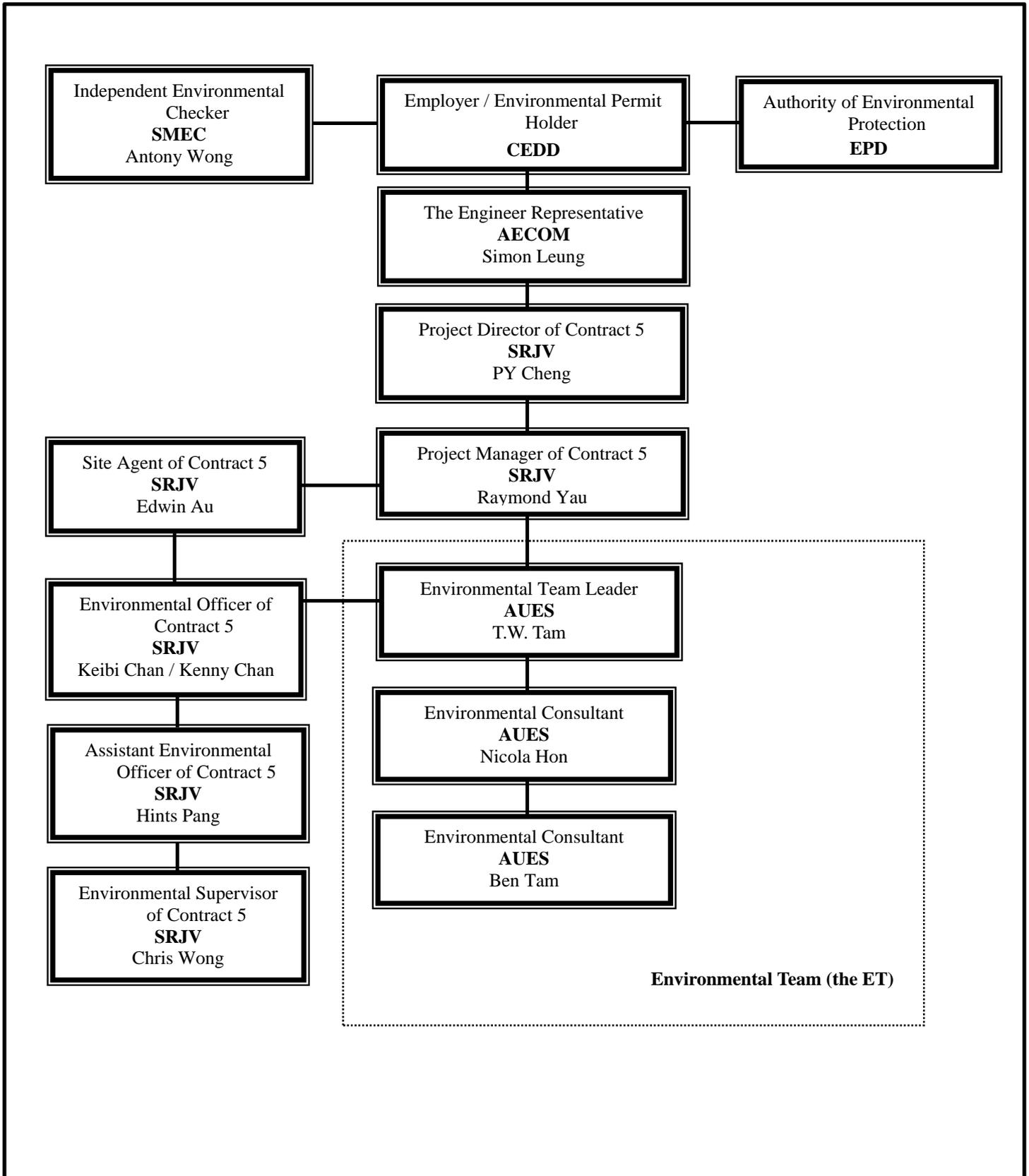
*CEDD (Employer) – Civil Engineering and Development Department*

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

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

*SMEC (IEC) – SMEC Asia Limited*

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



Environmental Management Organization – CV/2013/03

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

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
AECOM	Engineer's Representative	Simon Leung	2674 2273	2674 7732
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 2

Activity ID	Activity Name	Workshop Duration	BL Project Start	BL Project Finish	2014	Aug	Sep	Oct	Nov
<b>Total</b>			893 20-Dec-13	30-Mar-17					
<b>HKLTH Works Programme update 20-Aug-2014</b>									
<b>2 General</b>									
<b>Programme</b>									
<b>Works Programme</b>									
A24050	Works Programme		30-May-14	18-Oct-14					
A24065	Engineer's Comment for Works Programme		30-May-14	29-Jul-14					
A24066	Further Information for Works Programme (if necessary)		30-Jul-14	28-Aug-14					
A24067	Engineer's Approval of Works Programme		21-Aug-14	18-Sep-14					
			30-Sep-14	18-Oct-14					
<b>Ground Investigation</b>									
			230 13-Mar-14	18-Dec-14					
<b>GI Works</b>									
DSN01 8605	GI: Field Works (including pre-drilling works)		200 13-Mar-14	13-Nov-14					
DSN01 8606	GI: Tests & Reports (Contract Boreholes)		30 14-Nov-14	18-Dec-14					
<b>Project Wide Procurement</b>									
A01001834	Explosives, Accessories, and Services		103 29-Apr-14	30-Aug-14					
A01001836	Supply of Concrete		66 14-Jun-14	30-Aug-14					
A01001837	Supply of Steel Reinforcement		66 29-Apr-14	18-Jul-14					
			66 29-Apr-14	18-Jul-14					
<b>Geotechnical Interpretative Report 1st Revision</b>									
			46 14-Apr-14	12-Jun-14					
			46 14-Apr-14	12-Jun-14					
<b>DDA Submission</b>									
GR2021 960	Preparation of DDA with ICE Certification for resubmission to ERICEIP		18 14-Apr-14	09-May-14					
GR2022060	ERIP's Approval		28 10-May-14	12-Jun-14					
<b>Geotechnical Interpretative Report 2nd Revision</b>									
			65 22-Sep-14	08-Dec-14					
			65 22-Sep-14	08-Dec-14					
GR21021890	Preparation of DDA for final submission to ERICEIP		65 22-Sep-14	08-Dec-14					
<b>Project Wide E&amp;M</b>									
<b>E&amp;M Design Works for Civil Design Interface</b>									
PDAE1050	Establish E&M Procurement Matrix & Pre-Qualification Process		312 04-Feb-14	18-Feb-15					
PDAE1020	Review Ovi Programme & Develop E&M Programme		88 16-Apr-14	04-Aug-14					
PDAE1060	Overall Technical Review of E&M System		260 04-Feb-14	16-Dec-14					
PDAE1070	Review Ovi Design Submission on Tunnel Space Profiling & Vent Buildings		260 04-Feb-14	16-Dec-14					
PDAE1080	Ovi Provisions Check for Utility Cable Through in Tunnels		112 09-Apr-14	25-Aug-14					
PDAE1090	Ovi Provisions Check for E&M Installations in Tunnels		118 05-May-14	23-Sep-14					
PDAE1110	Spacial Study and Installation Coordination for Tunnel Cable Brackets		92 13-Jun-14	30-Sep-14					
PDAE1120	E&M Structural Openings Check in Tunnel and Cross Passage		90 05-Jun-14	19-Sep-14					
PDAE1130	E&M Spatial Study and Structural Provisions Check for Ventilation Buildings		110 29-Aug-14	10-Jan-15					
PDAE1140	E&M Spatial Study and Structural Provisions Check for Administration Building		125 20-Sep-14	18-Feb-15					
PDAE1150	Design, Verification and Development for Tunnel Ventilation System		170 07-May-14	26-Nov-14					
PDAE1160	Design, Verification and Development for Tunnel Lighting System		128 07-May-14	08-Oct-14					
<b>E&amp;M Design &amp; Engineering Works</b>									
<b>Engineering Design Submission</b>									
PD_RS_DS	Fire Service System Submission and Approval by the Engineer		340 17-Apr-14	12-Jun-15					
PD_CM_DS	CMCC System Submission and Approval by the Engineer		230 21-Jul-14	30-Apr-15					
PD_EC_DS	Tunnel Ventilation System Submission and Approval by the Engineer		340 17-Apr-14	12-Jun-15					
PD_EC_DS.a	Environmental Control System Submission and Approval by the Engineer		230 21-Jul-14	30-Apr-15					
PD_EL_DS	Electrical System Submission and Approval by the Engineer		230 21-Jul-14	30-Apr-15					
PD_EV_DS	ELV System Submission and Approval by the Engineer		230 21-Jul-14	30-Apr-15					
PD_PD_DS	Plumbing & Drainage System Submission and Approval by the Engineer		230 21-Jul-14	30-Apr-15					
<b>Equipment Selection &amp; Submission</b>									
PD_PO1090	Electrical Services System Submission and Approval by the Engineer		382 01-Aug-14	14-Dec-15					
PD_PO1150	Tunnel Ventilation System Submission and Approval by the Engineer		338 27-Oct-14	14-Dec-15					
			228 07-Nov-14	15-Aug-15					

		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2 <b>TITLE</b> 3-Months Rolling Programme		<b>DOCUMENT NO.</b> LTH/DHK/PSR/PW/PLP/00014/A <b>REVISION</b> A <b>SCALE</b> A3 <b>PAPER SIZE</b> N/A <b>PAGE</b> 1 of 9	
<b>CLIENT</b> 		<b>MAIN CONTRACTOR</b> 		<b>DESCRIPTION</b> Monthly Report No.8 20/8/2014 RAN PREPARED CHECKED APPROVED DAL	

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2014	Aug	Sep	Oct	Nov
PD/PO1480	EIV System Submission and Approval by the Engineer	294	01-Aug-14	29-Jul-15					
PD/PO1910	P&ID System Submission and Approval by the Engineer	169	01-Nov-14	30-May-15					
PD/PO2010	FS System Submission and Approval by the Engineer	278	01-Nov-14	09-Oct-15					
<b>3 South Portal Area</b>									
<b>3.0 South Portal Site Possession Contract Dates</b>									
A2-450	LS12 (near South Portal)	123	20-Apr-14	20-Apr-14					
A2-470	LS2 (near South Vent. Demolition & Noise Barrier)	0	20-Apr-14						
<b>3.1 South Portal Subcontract &amp; Procurement</b>									
SPS&P0030	Subcontract - Earthworks	64	31-Jul-14	06-Nov-14					
SPS&P0040	Subcontract - Soil Nailing Works	60	31-Jul-14	11-Oct-14					
SPS&P0050	Subcontract - Tunnel Spoil Disposal	60	26-Aug-14	05-Nov-14					
<b>3.2 South Portal Design Submission</b>									
South Portal: Temp. Bridge at LS1		256	17-Feb-14	14-Dec-14					
DDA Submission		28	19-Mar-14	15-Apr-14					
DSN01500	ERIP's Approval	28	19-Mar-14	15-Apr-14					
<b>South Portal: South Portal Site Formation</b>									
DDA Submission		225	17-Feb-14	18-Nov-14					
DSN019800	Preparation for formal submission to ERICEIP	147	17-Feb-14	15-Aug-14					
DSN019850	IP's/EF's Review	28	16-Aug-14	18-Sep-14					
DSN019870	Preparation for resubmission to ERICEIP with ICE Certification	26	19-Sep-14	21-Oct-14					
DSN019870	ERIP's Approval	28	22-Oct-14	18-Nov-14					
<b>South Portal: Temp Support For Retaining Wall</b>									
DDA Submission		244	01-Mar-14	11-Nov-14					
DSN03140	Preparation for formal submission to ERICEIP	244	01-Mar-14	11-Nov-14					
DSN03190	IP's/EF's Review	130	01-Mar-14	08-Aug-14					
DSN03210	Preparation for resubmission to ERICEIP with ICE Certification	26	12-Sep-14	14-Oct-14					
DSN03310	ERIP's Approval	28	15-Oct-14	11-Nov-14					
<b>South Portal: Permanent Retaining Wall</b>									
DDA Submission		125	30-Jun-14	26-Nov-14					
DSN019440	Preparation for formal submission to ERICEIP	125	30-Jun-14	26-Nov-14					
DSN019480	IP's/EF's Review	28	25-Aug-14	26-Sep-14					
DSN019510	Preparation for resubmission to ERICEIP with ICE Certification	26	27-Sep-14	29-Oct-14					
DSN019610	ERIP's Approval	189	10-Apr-14	27-Nov-14					
<b>South Portal: Ventilation Buildings - Foundation Design</b>									
AIP Submission		161	10-Apr-14	25-Oct-14					
DSN07620	Preparation for formal submission to ERICEIP	88	10-Apr-14	29-Jul-14					
DSN07690	IP's/EF's Review	28	30-Jul-14	30-Aug-14					
DSN07710	Preparation for resubmission to ERICEIP with ICE Certification	23	01-Sep-14	27-Sep-14					
DSN07810	ERIP's Approval	28	28-Sep-14	25-Oct-14					
<b>DDA Submission</b>									
DSN07820	Preparation for formal submission to ERICEIP	74	29-Jul-14	27-Nov-14					
DSN07870	IP's/EF's Review	28	27-Oct-14	27-Nov-14					
DSN07870	ERIP's Approval	197	29-Mar-14	26-Nov-14					
<b>South Portal: Temp Works For Mined Tunneling</b>									
DDA Submission		118	29-Mar-14	22-Aug-14					
DSN010510	Preparation for formal submission to ERICEIP	28	23-Aug-14	25-Sep-14					
DSN010560	IP's/EF's Review	27	26-Sep-14	29-Oct-14					
DSN010580	Preparation for resubmission to ERICEIP with ICE Certification	28	30-Oct-14	26-Nov-14					
DSN010680	ERIP's Approval	78	23-Jul-14	22-Nov-14					
<b>South Portal: Temp Works For D&amp;B Tunneling</b>									
DDA Submission		75	23-Jul-14	21-Oct-14					
DSN010150	Preparation for formal submission to ERICEIP								

THE ENGINEER		PROJECT		DOCUMENT NO.	
<b>AECOM</b>		Contract No. CV/2012/08		LTH/DHK/PSR/PW/PLP/00014/A	
CONTRACTOR'S DESIGNER		Liantang/Heung Yuen Wai Boundary Control Point		DOC. STATUS	
<b>ATKINS</b>		Site Formation and Infrastructure Works Contract 2		FOR. INFO.	
		TITLE		PAPER SIZE	
		3-Months Rolling Programme		A3	
CLIENT		MAIN CONTRACTOR		REVISION	
				CREATION DATE	
Civil Engineering and Development Department		A member of the Bouygues Construction group		20/8/2014	
A Monthly Report No.8		DATE		SCALE	
20/8/2014		PREPARED		N/A	
DESCRIPTION		CHECKED		PAGE	
DAL		APPROVED		2 of 9	

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2014	2014	2014	2014	2014
					Aug	Sep	Oct	Nov	
DSNO10200	IP2/ERs Review	28-22-Oct-14	22-Oct-14	22-Nov-14					
<b>South Tunnel Permanent Lining</b>									
<b>AIP Submission</b>									
STPL1023340	Preparation for formal submission to ERICEIP	174-14-Apr-14	13-Nov-14	13-Nov-14					
STPL1023390	IP2/ERs Review	108-14-Apr-14	25-Aug-14	25-Aug-14					
STPL1023410	Preparation for resubmission to ERICEIP with ICE Certification	24-28-Aug-14	23-Sep-14	23-Sep-14					
STPL1023510	ERIP's Approval	18-24-Sep-14	16-Oct-14	16-Oct-14					
STPL1023510	ERIP's Approval	28-17-Oct-14	13-Nov-14	13-Nov-14					
<b>South Tunnel Internal Structures</b>									
<b>AIP Submission</b>									
STSL1L1023340	Preparation for formal submission to ERICEIP	165-16-May-14	13-Nov-14	13-Nov-14					
STSL1L1023390	IP2/ERs Review	77-16-May-14	15-Aug-14	15-Aug-14					
STSL1L1023410	Preparation for resubmission to ERICEIP with ICE Certification	24-16-Aug-14	13-Sep-14	13-Sep-14					
STSL1L1023510	ERIP's Approval	26-15-Sep-14	16-Oct-14	16-Oct-14					
STSL1L1023510	ERIP's Approval	28-17-Oct-14	13-Nov-14	13-Nov-14					
<b>CBAR South Tunnels</b>									
A26040a	Preparation and Submission of CBAR - 1st Submission	112-15-Jul-14	25-Nov-14	25-Nov-14					
A26040b	ERIP's Review	54-15-Jul-14	16-Sep-14	16-Sep-14					
A26040c	Preparation and Submission of CBAR - 2nd Submission	28-17-Sep-14	21-Oct-14	21-Oct-14					
<b>CIA- South Portal &amp; South D&amp;B Tunnels inc Mid Vent Junction &amp; CP</b>									
SC01140	Draft Report	31-14-Nov-14	14-Dec-14	14-Dec-14					
31-14-Nov-14		31-14-Nov-14	14-Dec-14	14-Dec-14					
272-28-Apr-14		25-Mar-15							
28-28-Apr-14		31-May-14							
28-28-Apr-14	Engineer's Approval	31-May-14							
84-16-Aug-14		29-Nov-14							
20-16-Aug-14	Prepare Method Statement	08-Sep-14							
28-10-Sep-14	Engineer's Comment	14-Oct-14							
12-15-Oct-14	Re-submission Method Statement	28-Oct-14							
28-29-Oct-14	Engineer's Approval	29-Nov-14							
84-16-Aug-14		29-Nov-14							
20-16-Aug-14	Prepare Method Statement	08-Sep-14							
28-10-Sep-14	Engineer's Comment	14-Oct-14							
12-15-Oct-14	Re-submission Method Statement	28-Oct-14							
28-29-Oct-14	Engineer's Approval	29-Nov-14							
84-16-Aug-14		29-Nov-14							
20-16-Aug-14	Prepare Method Statement	08-Sep-14							
28-10-Sep-14	Engineer's Comment	14-Oct-14							
12-15-Oct-14	Re-submission Method Statement	28-Oct-14							
28-29-Oct-14	Engineer's Approval	29-Nov-14							
135-13-Oct-14		25-Mar-15							
135-13-Oct-14	Preparation and Submission of Blasting Method Statement	25-Mar-15							
48-27-Oct-14		20-Dec-14							
48-27-Oct-14		20-Dec-14							
84-09-Jul-14		17-Oct-14							
84-09-Jul-14		17-Oct-14							
387-20-Dec-13	Prepare & Submit CLP Sub-station Proposal + CLP sApproval	28-Feb-15							
106-18-Oct-14	Sub-station Construction + CLP Installation	28-Feb-15							
106-18-Oct-14	Sub-station Construction + CLP Installation	28-Feb-15							
96-12-Jun-14	Precautionary Measures	13-Oct-14							
24-12-Jun-14	Precautionary Measures	12-Jul-14							
36-14-Jul-14	Demolish Existing Building (LS2- GLL T14087)	27-Aug-14							

			
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TITLE 3-Months Rolling Programme		DOC. STATUS FOR INFO.	CREATION DATE 20/8/2014
REVISION A		PAPER SIZE A3	SCALE N/A
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<b>CLIENT</b>			

			
<b>MAIN CONTRACTOR</b>			

REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.8	20/8/2014	RAN	RBS/SJO	DAL

Activity ID	Activity Name	Workshop Duration	Project Start	Project Finish	2014	Aug	Sep	Oct	Nov
SVZ870	Demolish Existing Building (LS1 - GLL15728)	36	28-Aug-14	13-Oct-14					
<b>South Portal: Tree Transplant &amp; Felling</b>									
SVZ135	Tree Transplant	330	21-Jan-14	04-Nov-14					
SVZ145	Tree Felling for Bridge	72	21-Jan-14	22-Apr-14					
SVZ155	Tree Felling Remaining	30	21-Jan-14	27-Feb-14					
<b>South Portal: Utilities &amp; Footpath Diversion</b>									
SVZ590	Street Lighting Diversion	42	08-Mar-14	24-May-14					
SVZ595	Footpath Diversion (DSD Service Road)	42	28-Mar-14	24-May-14					
<b>South Portal: 132kV Diversion (South Portal)</b>									
SVZ650	Footpath Diversion (DSD Service Road)	30	28-Mar-14	09-May-14					
SVZ655	CLP 132kV Diversion (by Others) - CLP Pylon at Portal	1	20-Dec-13	20-Dec-13					
SVZ660	CLP 132kV Diversion (by Others) - CLP Pylon at Portal	1	20-Dec-13	20-Dec-13					
<b>South Portal: Temp. Bridge (South Portal)</b>									
SVZ620	Foundation works (East)	155	26-May-14	15-Oct-14					
SVZ625	Pump + Columns (East)	24	03-Jun-14	03-Jul-14					
SVZ630	Foundation works (West)	18	04-Jul-14	26-Jul-14					
SVZ640	Pump + Columns (West)	30	26-May-14	04-Jul-14					
SVZ650	Main Deck Installation	38	05-Jul-14	22-Aug-14					
SVZ660	Slinding works + Finishing works	40	08-Aug-14	26-Sep-14					
SVZ670	KD9 - Stage 1 (Completion of Temp Bridge Construction)	24	15-Sep-14	14-Oct-14					
<b>South Portal: Slopeworks</b>									
SVZ680	Temp. Access Road (~26.0 >= +57.0)	73	15-Oct-14	10-Jan-15					
SVZ690	Permanent Cut Slope (+63.0 to approx. +45.0mPD)	18	15-Oct-14	04-Nov-14					
SVZ695	Permanent Cut Slope (+63.0 to approx. +45.0mPD)	55	05-Nov-14	10-Jan-15					
<b>4 Middle Portal Area</b>									
<b>4.2 Middle Portal Design Submission</b>									
<b>Middle Portal: Site &amp; Portal Formation</b>									
<b>DDA Submission</b>									
DSN29050	Preparation for formal submission to ERICEIP	90	23-Dec-13	14-Apr-14					
DSN29051	IP2/ ERS Review/ Approval	67	23-Dec-13	17-Mar-14					
<b>Mid Vent Building - ELS</b>									
<b>DDA Submission</b>									
DSN29056	Preparation for resubmission to ERICEIP with ICE Certification	27	15-Apr-14	21-May-14					
DSN29057	ERIP's Approval	28	22-May-14	18-Jun-14					
<b>Mid Vent Building - Foundation</b>									
<b>AIP Submission</b>									
DSN29058	Preparation for formal submission to ERICEIP	174	31-Mar-14	18-Aug-14					
DSN29059	IP2/ ERS Review	42	31-Mar-14	24-May-14					
DSN29060	Preparation for resubmission to ERICEIP with ICE Certification	24	26-May-14	23-Jun-14					
DSN29061	ERIP's Approval	23	24-Jun-14	21-Jul-14					
<b>DDA Submission</b>									
DSN29062	Preparation for formal submission to ERICEIP	108	03-Jul-14	11-Dec-14					
DSN29063	IP2/ ERS Review	108	03-Jul-14	08-Nov-14					
<b>Middle Portal: Temp Support for Mined and D&amp;B Tunnelling</b>									
<b>DDA Submission</b>									
DSN29067	IP2/ ERS Review	92	08-Apr-14	31-Jul-14					
DSN29068	Preparation for resubmission to ERICEIP with ICE Certification	28	08-Apr-14	15-May-14					
DSN29069	ERIP's Approval	40	16-May-14	03-Jul-14					
<b>Mid Vent Adit Permanent Lining</b>									
<b>AIP Submission</b>									
DSN29072	Preparation for resubmission to ERICEIP with ICE Certification	47	23-May-14	18-Jul-14					
DSN29073	ERIP's Approval	28	21-Jun-14	18-Jul-14					
<b>DDA Submission</b>									
DSN29074	Preparation for formal submission to ERICEIP	85	22-Aug-14	02-Dec-14					
DSN29074	Preparation for formal submission to ERICEIP	57	22-Aug-14	30-Oct-14					

			
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REVISION A		CREATION DATE 20/8/2014	
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 土木工程拓展署  
 Civil Engineering and  
 Development Department


  
 香港 寶 嘉  
 Dragages  
 Hongkong  
 A member of the Bouygues Construction group

REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.8	20/8/2014	RAN	RBS/SJO	DAL

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2014	Aug	Sep	Oct	Nov
DSN23075	IPs/ERs Review	28/31-Oct-14	02-Dec-14	03-Oct-14					
<b>Mid Vent Adit Internal Structure</b>									
<b>AIP Submission</b>									
DSN23079	IPs/ERs Review	89/05-Jul-14	03-Oct-14	03-Oct-14					
DSN23080	Preparation for resubmission to ERICEIP with ICE Certification	28/05-Jul-14	06-Aug-14	06-Aug-14					
DSN23081	ERIP's Approval	26/07-Aug-14	05-Sep-14	05-Sep-14					
DSN23082	ERIP's Approval	26/06-Sep-14	03-Oct-14	03-Oct-14					
DSN23083	ERIP's Approval	49/25-Sep-14	22-Nov-14	22-Nov-14					
DSN23084	ERIP's Approval	49/25-Sep-14	22-Nov-14	22-Nov-14					
DSN23085	Preparation for formal submission to ERICEIP	49/25-Sep-14	22-Nov-14	22-Nov-14					
DSN23086	Preparation for formal submission to ERICEIP	127/05-Jun-14	04-Nov-14	04-Nov-14					
DSN23087	Preparation for formal submission to ERICEIP	127/05-Jun-14	04-Nov-14	04-Nov-14					
DSN23088	Preparation for formal submission to ERICEIP	49/05-Jun-14	01-Aug-14	01-Aug-14					
DSN23089	Preparation for formal submission to ERICEIP	28/02-Aug-14	03-Sep-14	03-Sep-14					
DSN23090	Preparation for resubmission to ERICEIP with ICE Certification	26/04-Sep-14	07-Oct-14	07-Oct-14					
DSN23091	ERIP's Approval	28/08-Oct-14	04-Nov-14	04-Nov-14					
DSN23092	ERIP's Approval	127/19-Jun-14	18-Nov-14	18-Nov-14					
DSN23093	ERIP's Approval	127/19-Jun-14	18-Nov-14	18-Nov-14					
DSN23094	Preparation for formal submission to ERICEIP	49/19-Jun-14	15-Aug-14	15-Aug-14					
DSN23095	Preparation for formal submission to ERICEIP	49/19-Jun-14	15-Aug-14	15-Aug-14					
DSN23096	Preparation for formal submission to ERICEIP	28/16-Aug-14	18-Sep-14	18-Sep-14					
DSN23097	Preparation for resubmission to ERICEIP with ICE Certification	26/19-Sep-14	21-Oct-14	21-Oct-14					
DSN23098	ERIP's Approval	28/22-Oct-14	18-Nov-14	18-Nov-14					
DSN23099	ERIP's Approval	95/27-May-14	27-Aug-14	27-Aug-14					
DSN23100	Preparation and Submission of CBAR - 2nd Submission	54/27-May-14	30-Jul-14	30-Jul-14					
DSN23101	ERIP's Review/Approval of CBAR	28/31-Jul-14	27-Aug-14	27-Aug-14					
DSN23102	ERIP's Review/Approval of CBAR	141/27-Jun-14	12-Dec-14	12-Dec-14					
DSN23103	Preparation and Submission of CBAR - 1st Submission	50/27-Jun-14	25-Aug-14	25-Aug-14					
DSN23104	ERIP's Review	28/26-Aug-14	27-Sep-14	27-Sep-14					
DSN23105	Preparation and Submission of CBAR - 2nd Submission	39/29-Sep-14	14-Nov-14	14-Nov-14					
DSN23106	ERIP's Review/Approval of CBAR	28/15-Nov-14	12-Dec-14	12-Dec-14					
DSN23107	ERIP's Review/Approval of CBAR	309/17-Feb-14	03-Mar-15	03-Mar-15					
FL202105	Middle Ventilation Adit Blasting Method Statement	104/12-Jun-14	10-Oct-14	10-Oct-14					
FL202106	Preparation and Submission of Blasting Method Statement	75/12-Jun-14	08-Sep-14	08-Sep-14					
FL202107	Engineer's Review & Approval	45/16-Aug-14	10-Oct-14	10-Oct-14					
FL202108	Engineer's Review & Approval	115/14-Oct-14	03-Mar-15	03-Mar-15					
A2300	Prepare Method Statement for Pipe Pile Works	90/14-Oct-14	29-Jan-15	29-Jan-15					
A2301	Engineer's Comment	90/12-Nov-14	03-Mar-15	03-Mar-15					
A2302	Engineer's Approval	218/12-Mar-14	16-Aug-14	16-Aug-14					
A2303	Prepare Method Statement for Pipe Pile Works	48/12-Mar-14	13-May-14	13-May-14					
A2304	Engineer's Comment	28/14-May-14	16-Jun-14	16-Jun-14					
A2305	Engineer's Approval	24/17-Jun-14	15-Jul-14	15-Jul-14					
A2306	Prepare Method Statement for Portal Formation	28/16-Jul-14	16-Aug-14	16-Aug-14					
A2307	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2308	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2309	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2310	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2311	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2312	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2313	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2314	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2315	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2316	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2317	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2318	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2319	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2320	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2321	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2322	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2323	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2324	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2325	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2326	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2327	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2328	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2329	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2330	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2331	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2332	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2333	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2334	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2335	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2336	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2337	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2338	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2339	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2340	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2341	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2342	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2343	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2344	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2345	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2346	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2347	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2348	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2349	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2350	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2351	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2352	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2353	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2354	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2355	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2356	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2357	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2358	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2359	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2360	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2361	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2362	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2363	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2364	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2365	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2366	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2367	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2368	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2369	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2370	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2371	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2372	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2373	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2374	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2375	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2376	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2377	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2378	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2379	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2380	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2381	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2382	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2383	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2384	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2385	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2386	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2387	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2388	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2389	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2390	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2391	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2392	Engineer's Approval	14/28-Feb-14	15-Mar-14	15-Mar-14					
A2393	Prepare Method Statement for Portal Formation	24/17-Mar-14	14-Apr-14	14-Apr-14					
A2394	Engineer's Review & Approval	38/28-Feb-14	14-Apr-14	14-Apr-14					
A2395	Engineer's Approval	14/28-Feb							

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2014	Aug	Sep	Oct	Nov
A25501	Prepare Method Statement	36	17-Feb-14	29-Mar-14					
A25502	Engineer's Comment	24	31-Mar-14	02-May-14					
A25503	Re-submission Method Statement	14	03-May-14	20-May-14					
A25504	Engineer's Approval	24	21-May-14	18-Jun-14					
<b>4.4 Middle Portal General Submission</b>									
<b>Middle Portal: Temp. CLP Substation</b>									
TSS332020	Prepare & Submit CLP Sub-station Proposal - CLP's Approval	84	18-Jun-14	25-Sep-14					
TSS332060	Sub-station Construction + CLP Installation	84	18-Jun-14	25-Sep-14					
<b>4.5 Middle Portal Works</b>									
<b>Middle Portal: CLP Substation</b>									
MV2480	Permanent Slope Stabilization	333	04-Mar-14	06-Feb-15					
MV2481	Excavation up to Portal Formation (+15.5.0mPD)	110	26-Sep-14	06-Feb-15					
MV2482	Excavation for Site Installation and up to Temporary Working Platform for Pipe Pile Works (+25.0mPD)	110	26-Sep-14	06-Feb-15					
MV2806	Pipe Piling Works	60	04-Mar-14	21-May-14					
MV2817	Excavation for Site Installation (Tunneling Works) upto (+22.0mPD)	228	15-Apr-14	14-Nov-14					
<b>Adit Construction - Mid Portal</b>									
MV2490dwg1	Top Heading Canopies & Bench Excavation Ch24-Ch24	54	15-Apr-14	28-Jun-14					
MV2490dwg2a	Top Heading Canopies & Bench Excavation Ch24-Ch70	54	15-Apr-14	28-Jun-14					
NPS2490050	Subcontract - Tunnel Spoil Disposal	2	30-Jun-14	02-Jul-14					
NPS2490060	Subcontract - Ventilation Building Bored Piling Works	60	30-Jun-14	15-Sep-14					
<b>North Portal: TBM Procurement &amp; Delivery</b>									
DSM27980	TBM Procurement, Fabrication & Delivery	960	20-Jan-14	30-Mar-17					
N21400	Precast Segment Mould Fabrication	405	20-Jun-14	28-Feb-15					
N21410a	Precast Segment Fabrication (1.6m Ring) - Temporary Segments	116	02-May-14	29-Sep-14					
N21410b	Precast Segment Fabrication (2.2m Ring)	190	30-Sep-14	23-May-15					
<b>5.2 North Portal Design Submission</b>									
<b>TBM Design</b>									
A24660a	TBM Detailed Design (Group C)	175	21-Jun-14	14-Jul-14					
A24660b	Engineer Review & Comments (Group C)	14	15-Jul-14	28-Jul-14					
A24660c	Re-submission for (Group C)	10	29-Jul-14	07-Aug-14					
A24660d	Engineer Review & Comments for Re-submission (Group C)	10	08-Aug-14	17-Aug-14					
<b>Engineer and Contractor Site Offices</b>									
N21345	Engineer's Approval for Site Office	12	18-Feb-14	03-Mar-14					
<b>North Portal Site Formation</b>									
FL2022115	Preparation for resubmission to ERICEIP with ICE Certification	35	08-May-14	18-Jun-14					
FL2022116	ERIP's Approval	12	08-May-14	21-May-14					
<b>North Portal: Temp Support for Retaining Wall</b>									
DDA Submission	Preparation for resubmission to ERICEIP with ICE Certification	28	22-May-14	18-Jun-14					
FL2022123	Preparation for resubmission to ERICEIP with ICE Certification	83	12-Jun-14	23-Jul-14					
FL2022124	ERIP's Approval	28	26-Jun-14	25-Jul-14					
<b>North Portal: Permanent Retaining Wall</b>									
DDA Submission	Preparation for formal submission to ERICEIP	229	20-Dec-13	06-Aug-14					
FL2022126	IP's/ER's Review	118	20-Dec-13	20-May-14					
FL2022126	IP's/ER's Review	28	21-May-14	23-Jun-14					

			
<b>THE ENGINEER</b>			
<b>PROJECT</b>			
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<b>CLIENT</b>			
			
<b>MAIN CONTRACTOR</b>			
			
<b>DESCRIPTION</b>			
REV	DATE	PREPARED	CHECKED
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			APPROVED

Activity ID	Activity Name	Working Duration	Project Start	Project Finish	2014	Aug	Sep	Oct	Nov
FL2022127	Preparation for resubmission to ERICEIP with ICE Certification	13	24-Jun-14	09-Jul-14					
FL2022128	ERIP's Approval	28	10-Jul-14	06-Aug-14					
<b>North Portal: Ventilation Building - Foundation Design</b>									
<b>AIP Submission</b>									
FL2022132	ERIP's Approval	28	12-Apr-14	09-May-14					
<b>DDA Submission</b>									
FL2022133	Preparation for formal submission to ERICEIP	28	12-Apr-14	09-May-14					
FL2022134	IP's/ER's Review	177	08-Mar-14	23-May-14					
FL2022135	Preparation for resubmission to ERICEIP with ICE Certification	28	24-May-14	26-Jun-14					
FL2022136	ERIP's Approval	20	27-Jun-14	21-Jul-14					
<b>North Tunnel Curved Section - N/B &amp; S/B- Temp Support in Soft Ground</b>									
<b>DDA Submission</b>									
FL2022138	IP's/ER's Review	67	26-Apr-14	17-Jul-14					
FL2022139	Preparation for resubmission to ERICEIP with ICE Certification	28	26-Apr-14	30-May-14					
FL2022140	ERIP's Approval	16	31-May-14	19-Jun-14					
<b>North Tunnel Curved Section - N/B &amp; S/B- Temp Support in Rock</b>									
<b>DDA Submission</b>									
FL2022141	Preparation for formal submission to ERICEIP	144	19-May-14	01-Nov-14					
FL2022142	IP's/ER's Review	75	19-May-14	15-Aug-14					
FL2022143	Preparation for resubmission to ERICEIP with ICE Certification	28	16-Aug-14	18-Sep-14					
FL2022144	ERIP's Approval	12	19-Sep-14	04-Oct-14					
<b>North Tunnel Curved Section Southbound Temp Segmental Lining</b>									
<b>DDA Submission</b>									
FL2022097	Preparation for formal submission to ERICEIP	133	13-Jun-14	26-Sep-14					
FL2022098	IP's/ER's Review	21	13-Jun-14	08-Jul-14					
FL2022099	Preparation for resubmission to ERICEIP with ICE Certification	28	09-Jul-14	09-Aug-14					
FL2022100	ERIP's Approval	12	11-Aug-14	23-Aug-14					
<b>Bored Tunnel Space Proofing &amp; Sight Assessment</b>									
<b>AIP Submission</b>									
FL2022151	Preparation for resubmission to ERICEIP with ICE Certification	36	24-Feb-14	07-Apr-14					
FL2022152	ERIP's Approval	13	24-Feb-14	10-Mar-14					
<b>Bored Tunnel Segmental Lining</b>									
<b>AIP Submission</b>									
FL2022155	Preparation for resubmission to ERICEIP with ICE Certification	45	28-Apr-14	21-Jun-14					
FL2022156	ERIP's Approval	22	28-Apr-14	24-May-14					
<b>DDA Submission</b>									
FL2022157	Preparation for formal submission to ERICEIP	127	23-Jun-14	03-Sep-14					
FL2022158	IP's/ER's Review	62	23-Jun-14	03-Sep-14					
FL2022159	Preparation for resubmission to ERICEIP with ICE Certification	28	04-Sep-14	09-Oct-14					
FL2022160	ERIP's Approval	21	10-Oct-14	03-Nov-14					
<b>Bored Tunnel OHVD Slab</b>									
<b>AIP Submission</b>									
FL2022161	Preparation for formal submission to ERICEIP	213	10-Mar-14	05-Nov-14					
FL2022162	IP's/ER's Review	123	10-Mar-14	09-Aug-14					
FL2022163	Preparation for resubmission to ERICEIP with ICE Certification	28	09-Aug-14	11-Sep-14					
FL2022164	ERIP's Approval	21	12-Sep-14	08-Oct-14					
<b>Bored Tunnel Internal Structure (except OHVD Slab)</b>									
<b>AIP Submission</b>									
FL2022169	Preparation for formal submission to ERICEIP	208	15-Mar-14	01-Nov-14					
FL2022170	IP's/ER's Review	115	15-Mar-14	05-Aug-14					
FL2022171	Preparation for resubmission to ERICEIP with ICE Certification	28	06-Aug-14	06-Sep-14					
FL2022172	ERIP's Approval	21	08-Sep-14	04-Oct-14					

			
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<b>CLIENT</b> 		<b>DOC. STATUS</b> FOR INFO.	
<b>MAIN CONTRACTOR</b> 		<b>CREATION DATE</b> 20/8/2014	
<b>DESCRIPTION</b> 20/8/2014		<b>REVISION</b> A	
<b>DATE</b> PREPARED		<b>SCALE</b> A3	
<b>DATE</b> CHECKED		<b>PAPER SIZE</b> A3	
<b>DATE</b> APPROVED		<b>SCALE</b> N/A	
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Activity ID	Activity Name	Working Duration	Project Start	Project Finish	2014	Aug	Sep	Oct	Nov
<b>Bored Tunnel/ D&amp;B Tunnel Transition - Headwall Structure (N/B &amp; S/B)</b>									
<b>AIP Submission</b>									
FL2022177	Preparation for formal submission to ERICEIP	120	02-Jul-14	21-Nov-14					
FL2022178	IPs/ ERS Review	45	02-Jul-14	22-Aug-14					
FL2022179	Preparation for resubmission to ERICEIP with ICE Certification	28	23-Aug-14	25-Sep-14					
FL2022180	ERIP's Approval	23	26-Sep-14	24-Oct-14					
		28	25-Oct-14	21-Nov-14					
<b>Bored Tunnel Cross Passages Permanent Lining (Soft Ground)</b>									
<b>AIP Submission</b>									
FL2022205	Preparation for formal submission to ERICEIP	70	27-Sep-14	19-Dec-14					
FL2022206	IPs/ ERS Review	42	27-Sep-14	17-Nov-14					
		28	18-Nov-14	19-Dec-14					
<b>Bored Tunnel Cross Passages Permanent Lining (Rock)</b>									
<b>AIP Submission</b>									
FL2022213	Preparation for formal submission to ERICEIP	70	27-Sep-14	19-Dec-14					
FL2022214	IPs/ ERS Review	42	27-Sep-14	17-Nov-14					
		28	18-Nov-14	19-Dec-14					
<b>Confinement Pressure Report</b>									
<b>DDA Submission</b>									
FL2022233	Preparation for formal submission to ERICEIP	42	14-Oct-14	01-Dec-14					
		42	14-Oct-14	01-Dec-14					
<b>CBAR North Tunnel (D&amp;B Section)</b>									
A26030a	Preparation and Submission of CBAR - 1st Submission	123	17-May-14	18-Nov-14					
A26030a2	ERIP's Review	81	17-May-14	21-Aug-14					
A26030a3	Preparation and Submission of CBAR - 2nd Submission	28	22-Aug-14	24-Sep-14					
A26030b	ERIP's Review & Approval of CBAR	21	25-Sep-14	21-Oct-14					
		28	22-Oct-14	18-Nov-14					
<b>Construction Impact Assessment - North Portal &amp; North D&amp;B Tunnels</b>									
SC01115	Final Report	70	07-Jun-14	15-Aug-14					
		70	07-Jun-14	15-Aug-14					
<b>Construction Impact Assessment - Bored Tunnel</b>									
FL21140	Draft Report	31	21-Oct-14	20-Nov-14					
		31	21-Oct-14	20-Nov-14					
<b>5.3 North Portal Method Statement Submission</b>									
<b>North Portal: MS for Portal - Main Cut</b>									
FL2320	Engineer's Review/ Approval	28	22-Mar-14	28-Apr-14					
<b>North Portal: MS for Site Installation for TBM</b>									
N21550	Prepare Method Statement	52	22-Aug-14	24-Oct-14					
N21560	Engineer's Review/ Approval	24	22-Aug-14	19-Sep-14					
<b>North Tunnel (D&amp;B Section) Blasting Method Statement</b>									
FL2022109	Preparation and Submission of Blasting Method Statement	95	03-Oct-14	24-Jan-15					
FL2022110	Engineer's Review & Approval	60	13-Nov-14	23-Jan-15					
<b>North Portal: MS for TBM On-Site Assembly</b>									
FL4875	Prepare & Submit Method Statement	24	27-Oct-14	22-Nov-14					
<b>North Portal: MS for Temp. CLP Substation</b>									
N21020	Prepare & Submit CLP Sub-station Proposal	28	04-Aug-14	06-Oct-14					
N21030	CLP Review & Approval	24	04-Aug-14	30-Aug-14					
<b>5.5 North Portal Works</b>									
N21355	Site Office Procurement & Erection	234	04-May-14	14-Feb-15					
<b>CLP Substation</b>									
N21059	Prepare & Submit CLP Sub-station Proposal + CLP s-Approval	150	04-May-14	30-Sep-14					
N21060	Sub-station Construction	110	07-Oct-14	14-Feb-15					
<b>North Portal: Site Establishment</b>									
N20530	Hoarding Erection & Site Installation	102	04-Feb-14	14-Jun-14					
N20560a1	Heul Road Widening	18	04-Feb-14	24-Feb-14					
		39	24-Apr-14	14-Jun-14					

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<b>CLIENT</b> 		<b>MAIN CONTRACTOR</b> 		<b>REV</b> A Monthly Report No.8 20/8/2014 RAN PREPARED CHECKED APPROVED DAL	

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2014	Aug	Sep	Oct	Nov
<b>North Portal: Site Formation</b>									
N20495	Permanent Slope Formation for TBM Site Installation	401	11-Mar-14	25-Jul-14					
N20505	Permanent Slope Formation (Remaining)	150	29-Apr-14	07-Nov-14					
N20515	SB: Stage 1 Open Cut to +30mPD	200	08-Nov-14	07-Jul-15					
N20525	SB: Stage 2 Cut Slope w/Temp Soil Nails from +30mPD to +20mPD	22	19-Jun-14	17-Jul-14					
N20535	SB: Vent Bldg Bored Piling at +20mPD	46	04-Sep-14	30-Oct-14					
N20545	SB: Stage 3 Cut Slope from +20mPD to +12.50mPD w/3 rows Soil Nail	24	31-Oct-14	27-Nov-14					
N20615	NB: Stage 1 Cut Slope to +38mPD	40	18-Jul-14	06-Sep-14					
N20625	NB: Pre-bored H Piles (Retaining Wall)	36	08-Sep-14	22-Oct-14					
N20635	NB: Stage 2 Excavation from +38mPD to +18mPD w/10 rows Soil Nail	74	23-Oct-14	20-Jan-15					
N20685	Site Clearance for CRCA	72	11-Mar-14	14-Jun-14					
N20695	Site Clearance for CRCA	96	16-Jun-14	16-Oct-14					
<b>North Portal: Site Installation for TBM</b>									
SC01310	Site Installation and Logistics for TBM Works	60	08-Nov-14	20-Jan-15					
DB6370a	<b>Southbound Tunnel (Mined Excavation) inc Enlargement</b>	84	28-Aug-14	05-Dec-14					
DB6370b	Top Heading Excavation (Canopies) (CH6.450-CH6.415) (S5m) (P21.4850 to 48.15)	80	28-Aug-14	28-Nov-14					
DB6370c	Blast door installation + Noise Measurement and 24hr permit approval	30	06-Nov-14	05-Dec-14					
<b>5.6 Administration Building</b>									
<b>5.62 Administration Building: Design Submission</b>									
<b>Admin. Building - Foundation Design</b>									
<b>AIP Submission</b>									
DSN015010	Preparation for formal submission to ERICE/IP	158	07-Apr-14	15-Aug-14					
DSN015060	IP2/ERs Review	35	07-Apr-14	22-May-14					
DSN015090	Preparation for resubmission to ERICE/IP with ICE Certification	24	23-May-14	20-Jun-14					
DSN015180	ERIP's Approval	19	21-Jun-14	14-Jul-14					
DSN015190	ERIP's Approval	28	15-Jul-14	15-Aug-14					
<b>5.65 Administration Building: Works</b>									
<b>Administration Building: Site Formation</b>									
A02010	Tree Protection & Felling	72	10-Apr-14	17-Jul-14					
		72	10-Apr-14	17-Jul-14					

 <b>Dragages Hongkong</b> <small>A member of the Bouygues Construction group</small>		 <b>Civil Engineering and Development Department</b>		 <b>AECOM</b> CONTRACTOR'S DESIGNER		 <b>ATKINS</b>		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2 <b>TITLE</b> 3-Months Rolling Programme		<b>DOCUMENT NO.</b> LTH/DHK/PSR/PW/PLP/00014/A <b>DOC. STATUS</b> FOR INFO. <b>CREATION DATE</b> 20/8/2014 <b>REVISION</b> A <b>PAPER SIZE</b> A3 <b>SCALE</b> N/A <b>PAGE</b> 9 of 9	
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## Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Aug	Sep	Oct	Nov	Dec	
<b>3-Month Rolling Programme 2014-08-21</b>												
<b>Key Dates (Contractual)</b>												
KD-0010	Commencement of Works	0	0	31-Jul-13 A								
KD-1000	KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests	0	0		21-Aug-14*	-6		◆ KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests				
<b>Key Dates (Forecast)</b>												
KD-1005	KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests	0	0		28-Jul-14 A		◆ KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests					
<b>Possession of Site</b>												
PS-P05	Possession of Portion FH5	0	0	15-Aug-14 A			◆ Possession of Portion FH5					
<b>Dependent Milestones from Other Contracts</b>												
MS-0100	Completion of Temporary Vehicular Bridge by C2 Contractor	0	0		23-Sep-14*	0		◆ Completion of Temporary Vehicular Bridge by C2 Contractor				
<b>Major Milestones and Events</b>												
MS-2000A1	T1a: TTA to shift FLHS SB eastward to the widened pavement (shift 1 lanes)	2	2	03-Oct-14	04-Oct-14	4			■ T1a: TTA to shift FLHS SB eastward to the widened pavement (shift 1 lanes)			
<b>Major Procurement &amp; Delivery</b>												
<b>Water Supply Pipeworks</b>												
MM-1050	DN450 DI pipe and pipe fittings	60	30	21-Jun-14 A	25-Sep-14	100			■ DN450 DI pipe and pipe fittings, DN450 DI pipe and pipe fittings			
MM-1060	E&M equipment for the re-provisioned WSD Valve Control House	60	60	21-Aug-14	01-Nov-14	24			■ E&M equipment for the re-provisioned WSD			
<b>Precast Bridge Segment Lifting Frames and Precast Yard</b>												
MM-2000	Design and Submission of lifting frame	160	0	23-Aug-13 A	26-Jul-14 A		■ Design and Submission of lifting frame					
MM-2020	Procurement and fabrication of lifting frame	105	15	05-May-14 A	06-Sep-14	59		■ Procurement and fabrication of lifting frame, Procurement and fabrication of lifting frame				
MM-2040	Deliver to Site and assembly works	24	24	08-Sep-14	08-Oct-14	59		■ Deliver to Site and assembly works				
MM-2050	Certification of lifting frame	14	14	09-Oct-14	24-Oct-14	59		■ Certification of lifting frame				
<b>Design and Submissions</b>												
<b>Statutory Approval</b>												
PRE-1240	Approval of Water Mains Alignment beside Fanling Highway (CH6935-7470) (incl. Twin DN1400, DN1200, DN600, DN2300) - WSD	45	0	19-Mar-14 A	31-Jul-14 A		■ Approval of Water Mains Alignment beside Fanling Highway (CH6935-7470) (incl. Twin DN1400, DN1200, DN600, DN2300) - WSD					
PRE-1400	Consent for Commencement of Works at the Potential Contaminative Land - EPD	60	0	15-Apr-14 A	31-Jul-14 A		■ Consent for Commencement of Works at the Potential Contaminative Land - EPD					
PRE-1500	Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290)	70	14	17-Apr-14 A	05-Sep-14	1461	■ Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290), Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290)					
PRE-1220	Consent for construction of noise barrier (NB1a) within WSD Tau Pass Restricted Zone - WSD	45	28	09-Apr-14 A	23-Sep-14	59	■ Consent for construction of noise barrier (NB1a) within WSD Tau Pass Restricted Zone - WSD					
PRE-1260	Approval of Water Mains Alignment beside Fanling Highway (CH7470-7925) (incl. Twin DN1400, DN1200, DN600, DN2300) - WSD	45	35	19-Mar-14 A	03-Oct-14	210	■ Approval of Water Mains Alignment beside Fanling Highway (CH7470-7925) (incl. Twin DN1400, DN1200, DN600, DN2300) - WSD					
PRE-1040	Submission & approval of temporary works on nullah for construction of pad footing of Bridge E - DSD	40	40	21-Aug-14	09-Oct-14	94	■ Submission & approval of temporary works on nullah for construction of pad footing of Bridge E - DSD					
PRE-1230B	Consent for installation of bored pile within 30m from WSD Tau Pass Restricted Zone - WSD	90	84	15-Jan-14 A	29-Nov-14	6	■ Consent for installation of bored pile within 30m from WSD Tau Pass Restricted Zone - WSD					
<b>Method Statement and Design (Major) Approved by AECOM</b>												
PRE-2020	Submission of noise barrier design for absorptive panels, transparent panels and associated fixing details	60	30	11-Mar-14 A	25-Sep-14	230	■ Submission of noise barrier design for absorptive panels, transparent panels and associated fixing details					
<b>Contractor's Alternative Design (AD) Submission &amp; Approval</b>												
PRE-4220	Pier Design Package B (AB6-AB11)	43	14	28-Nov-13 A	05-Sep-14	14	■ Pier Design Package B (AB6-AB11), Pier Design Package B (AB6-AB11)					
PRE-4230	Pier Design Package C (AD2-AD5)	31	14	28-Nov-13 A	05-Sep-14	70	■ Pier Design Package C (AD2-AD5), Pier Design Package C (AD2-AD5)					



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

- Actual Work
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- ◆ Milestone
- Project Baseline Bar

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

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

**3-Month Rolling Programme**

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3-Month Rolling Programme updated to 2014-08-21			
Date	Revision	Checked	Approved
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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014				
							Aug	Sep	Oct	Nov	Dec
PRE-4250	Pier Design Package E (AC11-AC12)	50	14	28-Nov-13 A	05-Sep-14	89	Pier Design Package E (AC11-AC12), Pier Design Package E (AC11-AC12)				
PRE-4270	Portal Beam Design Package (AB9/AD11, AC11/AD8, AB7/AD9, AB8/AD10, AD3)	54	14	20-Jan-14 A	05-Sep-14	120	Portal Beam Design Package (AB9/AD11, AC11/AD8, AB7/AD9, AB8/AD10, AD3), Portal Beam Design Packag				
PRE-4260	Pier Design Package F (AD8-AD13)	50	14	20-Jan-14 A	05-Sep-14	65	Pier Design Package F (AD8-AD13), Pier Design Package F (AD8-AD13)				
PRE-4330B	Superstructure Design Package 1 for Bridge C2 (AC6-AC11)	134	15	06-Mar-14 A	06-Sep-14	157	Superstructure Design Package 1 for Bridge C2 (AC6-AC11), Superstructure Design Package 1 for Bridge C2				
PRE-4340B	Superstructure Design Package 8 for Bridge D2 (AD6-AD8)	56	37	30-Jul-14 A	06-Oct-14	288	Superstructure Design Package 8 for Bridge D2 (AD6-AD8), Superstructur				
PRE-4340A	Superstructure Design Package 4 for Bridge D1 (AD1-AD5)	110	38	07-May-14 A	07-Oct-14	226	Superstructure Design Package 4 for Bridge D1 (AD1-AD5), Superstructu				
PRE-4310D	Superstructure Design Package 6 for Bridge A4 (AA14-AA18)	108	44	16-May-14 A	14-Oct-14	153	Superstructure Design Package 6 for Bridge A4 (AA14-AA18), Su				
PRE-4310A	Superstructure Design Package 9 for Bridge A1 (AA1-AA5)	118	54	16-May-14 A	25-Oct-14	404	Superstructure Design Package 9 for Bridge A1 (AA'				
PRE-4310C	Superstructure Design Package 3 for Bridge A3 (AA10-AA13)	158	64	04-Apr-14 A	06-Nov-14	143	Superstructure Design Package 3 for E				
PRE-4320A	Superstructure Design Package 11 for Bridge B1 (AB1-AB6)	73	73	21-Aug-14*	17-Nov-14	374	Superstructure Design Pa				
PRE-4310B	Superstructure Design Package 10 for Bridge A2 (AA6-AA9)	154	90	16-May-14 A	06-Dec-14	507	Sup				
PRE-4330A	Superstructure Design Package 2 for Bridge C1 (AC1-AC5)	196	96	28-Mar-14 A	13-Dec-14	147					
PRE-4320B	Superstructure Design Package 7 for Bridge B2 (AB7-AB12)	196	96	21-May-14 A	13-Dec-14	57					
PRE-4340C	Superstructure Design Package 5 for Bridge D3 (AD9-AD14)	196	96	07-May-14 A	13-Dec-14	86					
<b>Temporary Traffic Arrangement (TTA) Submission and Approval</b>											
<b>TTA for Tai Wo Service Road East</b>											
PRE-6220	TTA submission & approval - Scheme ER2 (shifting TWSR East westward towards Fanling Highway for pipe laying works)	30	30	26-Sep-14*	01-Nov-14	90	TTA submission & approval - Scheme ER2 (s				
<b>Section IA &amp; IB - Fanling Highway Widening (KD-1 &amp; KD-2)</b>											
<b>Fanling Highway South Portion between CH6935 and CH7470</b>											
<b>Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZZ)</b>											
<b>At-Grade Roadworks (195m)</b>											
FHW-1100	Site Formation, Preparation Works & Tree Transplant	65	0	12-Aug-13 A	11-Aug-14 A		Site Formation, Preparation Works & Tree Transplant				
FHW-1110	Noise Barrier NB6 and NB7 - Footing adjacent to SB lane (184m)	280	0	29-Mar-14 A	16-Aug-14 A						
FHW-1160	Road Formation, Road Drainage, Kerb and Pavement (Eastern Side)	48	30	31-Jul-14 A	25-Sep-14	447					
FHW-1110*	Pipe Laying - DN1200 Watermains (CHC) across Fanling Highway (total 80m for 2 shafts)	275	234	09-Jun-14 A	10-Jun-15	46					
FHW-1150*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	354	20-Feb-14 A	03-Nov-15	593					
<b>Fanling Highway Zone 2 between CH7130 and CH7290</b>											
<b>At-Grade Roadworks (160m)</b>											
FHW-2110A	Noise Barrier NB71 - Footing adjacent to SB lane (24m)	70	0	17-Apr-14 A	16-Aug-14 A		Noise Barrier NB71 - Footing adjacent to SB lane (24m)				
FHW-2120*	Pipe Laying - Twin DN1400 Watermains (CHE & G) along Fanling Highway (44m long, 6m depth)	85	48	09-Jul-14 A	18-Oct-14	322	Pipe Laying - Twin DN1400 Watermains (CHE & G) along Fa				
FHW-2110B	Noise Barrier NB71 - Footing adjacent to SB lane (96m) (affected due to design change)	100	78	26-Jul-14 A	22-Nov-14	5	Noise Barrier NB71				
FHW-2130*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)	95	191	26-May-14 A	18-Apr-15	593					
<b>Fanling Highway Zone 3 between CH7290 and CH7380</b>											
<b>At-Grade Roadworks (130m)</b>											

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							Aug	Sep	Oct	Nov	Dec
FHW-3120	Noise Barrier NB71 - Mini-Piling adjacent to SB lane (36nos)	40	0	24-May-14 A	02-Aug-14 A		Noise Barrier NB71 - Mini-Piling adjacent to SB lane (36nos)				
FHW-3140*	Pipe Laying - Twin DN1400 Watermains (CHE & F) along Fanling Highway (90m long, 3m depth)	90	60	07-Jun-14 A	01-Nov-14	155	Pipe Laying - Twin DN1400 Watermains (CH				
FHW-3130	Noise Barrier NB71 - Footing adjacent to SB lane (130m) Including pile cap	109	54	23-May-14 A	06-Nov-14	25	Noise Barrier NB71 - Footing adjacent				
FHW-3160	Road Formation, Kerb and Pavement (Eastern Side)	55	55	25-Sep-14	29-Nov-14	25	Road Forma				
FHW-3150*	Pipe Laying - DN600, DN1200 Watermains (CHB & CHC) along Fanling Highway (90m long, 3m depth)	150	409	07-Jun-14 A	09-Jan-16	483					
<b>Fanling Highway Zone 4 between CH7380 and CH7470</b>											
<b>At-Grade Roadworks (90m)</b>											
FHW-4120*	Pipe Laying - Twin DN1400 Watermains (CHE & CHG) along Fanling Highway (90m long, 3m depth)	155	155	03-Nov-14	18-May-15	155	Pipe Laying - Twin DN1400 Watermains (CH				
FHW-4100	Noise Barrier NB71 & NB72 - Footing adjacent to SB lane (90m)	160	160	07-Nov-14	29-May-15	213	Noise Barrier NB71 - Footing adjacent				
<b>Miscellaneous Works for Facilitating Traffic Diversion of Fanling Highway</b>											
FHW-M-1010	Permanent Road Formation with 1 lanes width between CH6935 and CH7380 together with road drain (Eastern Side)	62	34	13-Jul-14 A	30-Sep-14	4	Permanent Road Formation with 1 lanes width between CH6935 and CH7380 tog				
FHW-M-1020	Permanent Road Formation with 2 lanes width between CH6935 and CH7130 (Eastern Side)	45	45	06-Oct-14	26-Nov-14	26	Permanent Roa				
FHW-M-1000	Demolition of Central Barrier & Make Good of Road Pavement for further Traffic Diversion	69	69	06-Oct-14	24-Dec-14	4					
<b>Fanling Highway North Portion between CH7470 and CH7925</b>											
<b>Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)</b>											
<b>Kiu Tau Footbridge Re-provision (East)</b>											
FHW-5070	Pre-drilling works for Socket H-Piles	45	37	05-Aug-14 A	06-Oct-14	108	Pre-drilling works for Socket H-Piles, Pre-drilling works for Socket H-Piles				
FHW-5000B	KT-AB2 - Piling Works (4 nos of Pile)	20	20	07-Oct-14	29-Oct-14	108					
FHW-5000D	KT-P3 - Piling Works (8 nos of Pile)	40	40	30-Oct-14	15-Dec-14	108					
FHW-5000A	KT-AB1 - Piling Works (12 nos of Pile)	60	60	07-Oct-14	15-Dec-14	108					
FHW-5010B	KT-AB2 - Pile Cap & Abutment	105	105	30-Oct-14	11-Mar-15	303					
<b>Fanling Highway Zone 7 between CH7660 and CH7925</b>											
<b>At-Grade Roadworks (265m)</b>											
FHW-7100	Site Formation, Preparation Works & Tree Transplant	127	75	30-Aug-13 A	19-Nov-14	40	Site Formation, Prepara				
<b>Section II - Remainder of the Works (KD-3)</b>											
<b>WSD Works</b>											
<b>DN450 Fire Mains (CHA)</b>											
WA-1050	Pipe Laying - CHA 420 - 520 (DN450) near Re-aligned TWSR West (Re-TWSRW: CH530 - 640), 100m long & 2m depth	70	70	21-Oct-14	13-Jan-15	81	Pipe Laying - CHA 420 - 520 (DN450) near Re-aligned TWSR West (Re-TWSRW: CH530 - 640), 100m long & 2m depth				
<b>DN600 Water Mains (CHB)</b>											
WB-1000	Pipe Laying - CHB 0 - 153 (DN600) near Fanling Highway S/B (FHW: CH7130-7290), 153m long (common trench with NB)	95	35	26-May-14 A	03-Oct-14	749	Pipe Laying - CHB 0 - 153 (DN600) near Fanling Highway S/B (FHW: CH7130-7290), 153m long (common trench with NB)				
WB-1080	Pipe Laying - CHB 700 - 756 (DN600) near Re-aligned TWSR East (along Roundabout), 56m long & GL	35	35	29-Sep-14	10-Nov-14	10	Pipe Laying - CHB 700 - 756 (DN6				
WB-0100	Temporary Local Diversion for DN600 near Abutment AD1	80	80	10-Sep-14*	13-Dec-14	593					
<b>DN1200 Water Mains (CHC)</b>											
WC-1020	Jacking Pit for Twins DN1200 (CHC) at existing TWSRW	60	0	30-Jun-14 A	19-Aug-14 A		Jacking Pit for Twins DN1200 (CHC) at existing TWSRW				
WC-1040	Receiving Pit for Twins DN1200 (CHC)	50	15	09-Jun-14 A	06-Sep-14	50	Receiving Pit for Twins DN1200 (CHC), Receiving Pit for Twins DN1200 (CHC)				

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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014				
							Aug	Sep	Oct	Nov	Dec
TWSRW-2100	Mass Concrete Wall (FL/RW3) (Pending Engineer's instruction to delete the Works)	45	45	21-Aug-14	15-Oct-14	84	Mass Concrete Wall (FL/RW3) (Pending Engineer's instruction to delete the Works)				
<b>TWSRW Zone 3 between CH280 and CH315</b>											
<b>At-Grade Roadworks</b>											
TWSRW-3100	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (31m)	80	80	24-Sep-14	30-Dec-14	59	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (31m)				
<b>TWSRW Zone 4 between CH315 and CH376</b>											
<b>Construction of Bridge E</b>											
TWSRW-4020A	Plant Mobilization for piling works at AE2	2	0	19-Jul-14 A	24-Jul-14 A		Plant Mobilization for piling works at AE2				
TWSRW-4030B	Bored Pile Works for AE2	60	37	25-Jul-14 A	06-Oct-14	130	Bored Pile Works for AE2, Bored Pile Works for AE2				
TWSRW-4040B	Pile Test for AE2	7	7	23-Oct-14	30-Oct-14	130	Pile Test for AE2				
TWSRW-4000B	CLP Overhead 11KV Cable Diversion at Area B (Phase 2)	140	72	04-Nov-13 A	15-Nov-14	18	CLP Overhead 11KV Cable				
TWSRW-4050B	Pile Cap for AE2	45	45	31-Oct-14	22-Dec-14	130	Pile Cap for AE2				
TWSRW-4060	Construction of Temporary Support at DSD nulah (Work in dry season)	45	45	01-Nov-14	23-Dec-14	75	Construction of Temporary Support at DSD nulah (Work in dry season)				
<b>TWSRW Zone 5 between CH376 and CH520</b>											
<b>Construction of Retaining Structures</b>											
TWSRW-5050C	Construction of Bored Pile Wall (8 no. Piles) (conflict with overhead cable)	94	0	22-May-14 A	13-Aug-14 A		Construction of Bored Pile Wall (8 no. Piles) (conflict with overhead cable)				
TWSRW-5050D	Construction of Remaining Portion of Bored Pile Wall at formation level	85	85	29-Aug-14	09-Dec-14	13	Construction of Remaining Portion of Bored Pile Wall at formation level				
<b>TWSRW Zone 6 between CH520 and CH530</b>											
<b>At-Grade Roadworks</b>											
TWSRW-6100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the edge of extended box culvert)	14	14	27-Sep-14	15-Oct-14	21	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the edge of extended box culvert)				
<b>TWSRW Zone 7 between CH530 and CH640</b>											
<b>Construction of Retaining Structures</b>											
TWSRW-7020	Installation of Soil Nail (129 nos)	40	15	10-Jun-14 A	06-Sep-14	33	Installation of Soil Nail (129 nos), Installation of Soil Nail (129 nos)				
TWSRW-7010	Slope Cutting and Drainage Channel	235	31	06-Dec-13 A	26-Sep-14	17	Slope Cutting and Drainage Channel, Slope Cutting and Drainage Channel				
<b>At-Grade Roadworks</b>											
TWSRW-7100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the cut-slope)	18	18	27-Sep-14	20-Oct-14	17	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the cut-slope)				
TWSRW-7110	Implementation of TTA - Scheme W3	0	0	21-Oct-14		17	Implementation of TTA - Scheme W3				
TWSRW-7120*	Pipe Laying - DN450 Watermains (CHA)	70	70	21-Oct-14	13-Jan-15	81	Pipe Laying - DN450 Watermains (CHA)				
TWSRW-7140	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)	251	251	21-Oct-14	28-Jun-15	38	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)				
<b>TWSRW Zone 8 between CH640 and CH695</b>											
<b>Kiu Tau Footbridge Reprvision (West)</b>											
TWSRW-8000	Pre-Drilling Works for Socket H-Pile	7	7	29-Oct-14	05-Nov-14	17	Pre-Drilling Works for Socket H-Pile				
TWSRW-8010	Installation of Socket H-Pile for Proposed Kiu Tau Footbridge (14 nos of Pile)	70	70	06-Nov-14	29-Jan-15	17	Installation of Socket H-Pile for Proposed Kiu Tau Footbridge (14 nos of Pile)				
<b>Remainder of the Works</b>											
TWSRW-9010*	Utilities Diversion in Area 1 (along Re-aligned TWSRW CH100 - CH280)	167	167	22-Oct-14	06-Apr-15	96	Utilities Diversion in Area 1 (along Re-aligned TWSRW CH100 - CH280)				
TWSRW-9040*	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)	251	251	21-Oct-14	28-Jun-15	38	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)				
<b>Stage N4A &amp; N4B - Realignment of Tai Wo Service Road East (KD-13 &amp; KD-14)</b>											
<b>TWSRE Zone 1 between CH100 and CH270</b>											

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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Aug	Sep	Oct	Nov	Dec	
<b>At-Grade Roadworks</b>												
TWSRE-1100	Installation of Mini-Pile for PC01 & PC02 (22nos)	66	0	16-May-14 A	07-Aug-14 A		Installation of Mini-Pile for PC01 & PC02 (22nos)					
TWSRE-1130	Retaining Wall Construction for FL/RW5	45	18	10-Jul-14 A	11-Sep-14	-58	Retaining Wall Construction for FL/RW5, Retaining Wall Construction for FL/RW5					
<b>TWSRE Zone 2 between CH270 and CH380</b>												
<b>At-Grade Roadworks</b>												
TWSRE-2020	Retaining Wall Construction for FL/RW6	45	45	12-Sep-14	05-Nov-14	-58	Retaining Wall Construction for FL/RW6					
<b>TWSRE Zone 3 between CH380 and CH456</b>												
<b>At-Grade Roadworks</b>												
TWSRE-3020B*	Pipe laying - DN2300 Watermains (CHJ) along Realigned TWSR East	75	75	29-Sep-14	29-Dec-14	43						
<b>Roundabout A, Slip Road and Access Road</b>												
TWSRE-4000	Site Formation, Preparation Works & Tree Transplant	65	20	15-Apr-14 A	13-Sep-14	55	Site Formation, Preparation Works & Tree Transplant, Site Formation, Preparation Works & Tree Tran					
TWSRE-4030	Noise Barrier NB74 - Footing adjacent to Realigned TWSR East (72m) (to be deleted by the Engineer)	0	0	16-Sep-14	16-Sep-14	120						
TWSRE-4050B*	Pipe laying - DN2300 Watermains (CHJ) along Access Road A & Roundabout	91	99	20-Jun-14 A	17-Dec-14	-57						
TWSRE-4060	Access Road A - Road Formation, Road Drainage, Kerb, Planter and Pavement	134	105	18-Jul-14 A	24-Dec-14	-64						
TWSRE-4070A	Roundabout A (Lower-Half) - Road Formation, Road Drainage, Kerb, Planter and Pavement	64	64	11-Nov-14	27-Jan-15	10						
TWSRE-4050A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Access Road A & Roundabout	139	139	29-Sep-14	21-Mar-15	102						
<b>Stage 1C - Viaduct Structure &amp; TCSS Civil Provisions (KD-9)</b>												
<b>Preliminaries</b>												
B-1000A	ADMS Installation inside MTRCL Railway (for pier AD11, AD12, AB10)	14	14	21-Aug-14*	05-Sep-14	29	ADMS Installation inside MTRCL Railway (for pier AD11, AD12, AB10)					
B-1010A	Demonstration to MTRCL (for pier AD11, AD12, AB10)	1	1	06-Sep-14	06-Sep-14	29	Demonstration to MTRCL (for pier AD11, AD12, AB10)					
B-1020A	Base-line Monitoring (for pier AD11, AD12, AB10)	10	10	08-Sep-14	19-Sep-14	29	Base-line Monitoring (for pier AD11, AD12, AB10)					
B-5000	Provide a Temporary Cycle Track (Scheme 1)	27	26	22-May-14 A	20-Sep-14	-28	Provide a Temporary Cycle Track (Scheme 1), Provide a Temporary Cycle Track (Scheme 1)					
B-2030	Completion of CLP Overhead 11KV Cable Diversion at Area B (Phase 2)	0	0		15-Nov-14	47	◆ Completion of CLP Overhead					
<b>Foundation &amp; Pier Construction</b>												
<b>Bridge A</b>												
BA-17-1020	Pier AA17 - Pile Cap	30	0	10-May-14 A	24-Jul-14 A		Pier AA17 - Pile Cap					
BA-13-1010	Pier AA13 - Pile Test	7	0	31-Jul-14 A	04-Aug-14 A		Pier AA13 - Pile Test					
BA-04-1000	Pier AA4 - Piling Works	12	0	15-Jul-14 A	11-Aug-14 A		Pier AA4 - Piling Works					
BA-18-1000	Pier AA18 - Piling Works	12	0	07-Jul-14 A	19-Aug-14 A		Pier AA18 - Piling Works					
BA-14-1000	Pier AA14 - Piling Works	12	2	07-Aug-14 A	22-Aug-14	38	Pier AA14 - Piling Works, Pier AA14 - Piling Works					
BA-04-1010	Pier AA4 - Pile Test	7	7	27-Aug-14	03-Sep-14	245	Pier AA4 - Pile Test					
BA-16-1000	Pier AA16 - Piling Works	12	12	23-Aug-14	05-Sep-14	51	Pier AA16 - Piling Works					
BA-15-1020	Pier AA15 - Pile Cap	30	15	17-Jul-14 A	06-Sep-14	16	Pier AA15 - Pile Cap, Pier AA15 - Pile Cap					
BA-18-1010	Pier AA18 - Pile Test	7	7	04-Sep-14	12-Sep-14	202	Pier AA18 - Pile Test					

- Actual Work
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							Aug	Sep	Oct	Nov	Dec				
BC-06-1010	Pier AC6 - Pile Test	7	7	21-Aug-14	28-Aug-14	24									
BC-11-1010	Pier AC11 - Pile Test	7	7	21-Aug-14	28-Aug-14	130									
BC-10-1000	Pier AC10 - Piling Works	12	8	11-Aug-14 A	29-Aug-14	138									
BC-07-1010	Pier AC7 - Pile Test	7	7	26-Aug-14	02-Sep-14	53									
BC-10-1010	Pier AC10 - Pile Test	7	7	17-Sep-14	24-Sep-14	138									
BC-09-1000	Pier AC9 - Piling Works	24	24	06-Sep-14	07-Oct-14	51									
BC-07-1020	Pier AC7 - Pile Cap	30	30	03-Sep-14	10-Oct-14	53									
BC-08-1030	Pier AC8 - Pier Construction	24	24	11-Sep-14*	10-Oct-14	12									
BC-06-1020	Pier AC6 - Pile Cap	30	30	08-Sep-14	15-Oct-14	16									
BC-05-1020	Pier AC5 - Pile Cap	30	30	18-Sep-14	24-Oct-14	54									
BC-09-1010	Pier AC9 - Pile Test	7	7	24-Oct-14	31-Oct-14	75									
BC-12-1000	Pier AC12 - Piling Works	12	12	22-Oct-14	04-Nov-14	-10									
BC-07-1030	Pier AC7 - Pier Construction	24	24	07-Nov-14	04-Dec-14	30									
BC-02-1000	Pier AC2 - Piling Works	24	24	17-Nov-14	13-Dec-14	47									
<b>Bridge D</b>															
BD-07-1020	Pier AD7 - Pile Cap	30	0	26-May-14 A	30-Jul-14 A										
BD-04-1010	Pier AD4 - Pile Test	7	0	04-Jul-14 A	04-Aug-14 A										
BD-06-1000	Pier AD6 - Piling Works	24	0	29-May-14 A	13-Aug-14 A										
BD-08-1010	Pier AD8 - Pile Test	7	7	23-Aug-14 A	28-Aug-14	-32									
BD-09-1010	Pier AD9 - Pile Test	7	7	21-Aug-14 A	28-Aug-14	36									
BD-05-1020	Pier AD5 - Pile Cap	30	9	14-Jul-14 A	30-Aug-14	55									
BD-06-1010	Pier AD6 - Pile Test	7	7	29-Aug-14	05-Sep-14	90									
BD-03-2000	Pier AD3E- Piling Works	12	12	30-Aug-14	13-Sep-14	10									
BD-08-1020	Pier AD8 - Pile Cap	30	30	29-Aug-14	06-Oct-14	-32									
BD-03-1020B	Pier AD3W - Pile Cap	30	30	30-Aug-14*	07-Oct-14	-40									
BD-03-2010	Pier AD3E - Pile Test	7	7	03-Oct-14	10-Oct-14	66									
BD-01-1000	Abutment AD1 - Piling Works	24	24	15-Sep-14	14-Oct-14	10									
BD-10-1000	Pier AD10 - Piling Works	24	24	22-Sep-14	21-Oct-14	-28									
BD-03-1030	Pier AD3W - Pier Construction	10	10	27-Oct-14*	06-Nov-14	30									
BD-01-1010	Abutment AD1 - Pile Test	7	7	31-Oct-14	07-Nov-14	540									



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

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

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

**3-Month Rolling Programme**

3-Month Rolling Programme updated to 2014-08-21

Date	Revision	Checked	Approved
27-Aug-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2014					
							Aug	Sep	Oct	Nov	Dec	
BD-04-1020	Pier AD4 - Pile Cap	30	30	11-Oct-14	14-Nov-14	85						
BD-10-1010	Pier AD10 - Pile Test	7	7	07-Nov-14	14-Nov-14	-28						
BD-03-1020A	Pier AD3E - Pile Cap	30	30	25-Oct-14	28-Nov-14	54						
BD-11-1000	Pier AD11 - Piling Works	24	24	12-Nov-14	09-Dec-14	10						
BD-09-1020	Pier AD9 - Pile Cap	30	30	11-Nov-14	15-Dec-14	-24						
BD-10-1020	Pier AD10 - Pile Cap	30	30	15-Nov-14	19-Dec-14	-28						
BD-06-1020	Pier AD6 - Pile Cap	30	30	20-Nov-14	24-Dec-14	29						
<b>Pier Head Construction</b>												
<b>Bridge C</b>												
PC-1080	Pier Head Construction at Pier AC8	35	35	28-Oct-14	06-Dec-14	22						
<b>Section VI - Works in Portion FH9 (KD-6A)</b>												
<b>Preliminary Preparation Works</b>												
S6-1000	Completion of Temporary Vehicular Bridge by C2 Contractor	0	0		23-Sep-14	3						
S6-1010	Tree Felling and Tree Transplant	50	50	24-Sep-14	22-Nov-14	3						
<b>Section VII - All Geotechnical Fieldworks &amp; All Associated Laboratory Tests (KD-6B)</b>												
<b>Submission of Laboratory Tests</b>												
S7-5000	Testing & Submission of Laboratory Test Report (Drillhole No. BDH1)	35	0	28-Dec-13 A	28-Jul-14 A							
S7-5010	Testing & Submission of Laboratory Test Report (Drillhole No. BDH2)	35	0	25-Feb-14 A	28-Jul-14 A							
S7-5020	Testing & Submission of Laboratory Test Report (Drillhole No. BDH3)	35	0	28-Feb-14 A	28-Jul-14 A							
S7-5030	Testing & Submission of Laboratory Test Report (Drillhole No. VDH1)	35	0	31-May-14 A	28-Jul-14 A							
S7-5040	Testing & Submission of Laboratory Test Report (Drillhole No. VDH2)	35	0	11-Mar-14 A	28-Jul-14 A							
S7-5050	Testing & Submission of Laboratory Test Report (Drillhole No. VDH3)	35	0	04-Jun-14 A	28-Jul-14 A							
S7-5060	Testing & Submission of Laboratory Test Report (Drillhole No. VDH4)	35	0	06-Jun-14 A	28-Jul-14 A							
S7-5070	Testing & Submission of Laboratory Test Report (Drillhole No. VDH5)	35	0	08-May-14 A	28-Jul-14 A							
S7-5080	Testing & Submission of Laboratory Test Report (Drillhole No. VDH6)	35	0	11-Jan-14 A	28-Jul-14 A							
S7-5090	Testing & Submission of Laboratory Test Report (Drillhole No. VDH7)	35	0	06-Dec-13 A	28-Jul-14 A							
S7-5100	Testing & Submission of Laboratory Test Report (Drillhole No. VDH8)	35	0	14-Mar-14 A	28-Jul-14 A							
S7-5110	Testing & Submission of Laboratory Test Report (Drillhole No. VDH9)	35	0	07-Mar-14 A	28-Jul-14 A							
S7-5120	Testing & Submission of Laboratory Test Report (Drillhole No. VDH10)	35	0	21-Feb-14 A	28-Jul-14 A							

 <b>俊和建築工程有限公司</b> CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.	 Actual Work  Remaining Work  Summary Bar  Critical Remaining Work  Milestone  Project Baseline Bar	<b>CEDD Contract No. CV/2012/09</b>  <b>Liantang / Heung Yuen Wai BCP - Site Formation &amp; Infrastructure Works, Contract 3</b>  <b>3-Month Rolling Programme</b>	3-Month Rolling Programme updated to 2014-08-21 <table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td>27-Aug-14</td> <td>Rev.1</td> <td>SL</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Revision	Checked	Approved	27-Aug-14	Rev.1	SL													
	Date	Revision	Checked	Approved																			
	27-Aug-14	Rev.1	SL																				

## Contract 5

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	2nd Half		Oct	Nov
<b>1</b>	<b>1</b>	<b>Key Dates</b>	<b>1110 days</b>	<b>28/3/2013</b>	<b>10/4/2016</b>	<b>0%</b>						
<b>2</b>	<b>1.1</b>	<b>Contract Award &amp; Commencement</b>	<b>15 days</b>	<b>28/3/2013</b>	<b>11/4/2013</b>	<b>100%</b>						
<b>3</b>	1.1.1	Letter of Acceptance	0 days	28/3/2013	28/3/2013	100%						
<b>4</b>	1.1.2	Commencement of Works	0 days	11/4/2013	11/4/2013	100%						
<b>5</b>	<b>1.2</b>	<b>Site Possession Date</b>	<b>330 days</b>	<b>11/4/2013</b>	<b>7/3/2014</b>	<b>100%</b>						
<b>6</b>	1.2.1	Portion BCP 1	0 days	11/5/2013	11/5/2013	100%						
<b>7</b>	1.2.2	Portion BCP 2	0 days	10/6/2013	10/6/2013	100%						
<b>8</b>	1.2.3	Portion BCP 3 (villagers illegal occupation)	0 days	8/9/2013	8/9/2013	100%						
<b>9</b>	1.2.4	Portion BCP 4 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%						
<b>10</b>	1.2.5	Portion BCP 5	0 days	8/9/2013	8/9/2013	100%						
<b>11</b>	1.2.6	Portion BCP 6	0 days	8/9/2013	8/9/2013	100%						
<b>12</b>	1.2.7	Portion BCP 7	0 days	8/9/2013	8/9/2013	100%						
<b>13</b>	1.2.8	Portion CR 2	0 days	7/12/2013	7/12/2013	100%						
<b>14</b>	1.2.9	Portion CR 40 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%						
<b>15</b>	1.2.10	Portion CR 41 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%						
<b>16</b>	1.2.11	Portion CR 42 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%						
<b>17</b>	1.2.12	Portion CR 44 (delaying site possession)	0 days	5/2/2014	5/2/2014	100%						
<b>18</b>	1.2.13	Area LMH 0	0 days	11/4/2013	11/4/2013	100%						
<b>19</b>	1.2.14	Area LMH 1	0 days	8/9/2013	8/9/2013	100%						
<b>20</b>	1.2.15	Area LMH 2	0 days	11/5/2013	11/5/2013	100%						
<b>21</b>	1.2.16	Area LMH 3	0 days	7/3/2014	7/3/2014	100%						
<b>22</b>	1.2.17	Area LMH 4	0 days	8/9/2013	8/9/2013	100%						
<b>23</b>	1.2.18	Area LMH 5	0 days	8/10/2013	8/10/2013	100%						
<b>24</b>	1.2.19	Area RS 1	0 days	11/5/2013	11/5/2013	100%						
<b>25</b>	1.2.20	Area RS 2 (Omitted)	0 days	11/5/2013	11/5/2013	100%						
<b>26</b>	1.2.21	Area RS 3	0 days	11/5/2013	11/5/2013	100%						
<b>27</b>	1.2.22	Area RS 4	0 days	11/5/2013	11/5/2013	100%						
<b>28</b>	<b>1.3</b>	<b>Section Completion Date</b>	<b>976 days</b>	<b>8/8/2013</b>	<b>10/4/2016</b>	<b>0%</b>						
<b>29</b>	1.3.1	KD-1 Section I of the Works - G.I. field works	0 days	4/2/2014	4/2/2014	100%						
<b>30</b>	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%						
<b>31</b>	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%						
<b>32</b>	1.3.4	KD-4 Section IV of the Works - Village house within portion RS4	0 days	5/1/2014	5/1/2014	100%						
<b>33</b>	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%						
<b>34</b>	1.3.6	KD-7 Section VII of the Works - All works within Area CRD	0 days	15/5/2014	15/5/2014	100%						
<b>35</b>	1.3.7	KD-8 Section VIII of the Works - All works within Area BCPA	0 days	12/10/2014	12/10/2014	0%						◆◆ 12/10
<b>36</b>	1.3.8	KD-8 Section IX of the Works - All works within Area BCPB	0 days	11/4/2015	11/4/2015	0%						
<b>37</b>	1.3.9	KD-10 Section X of the Works - All works within Area BCPC	0 days	4/6/2014	4/6/2014	100%						
<b>38</b>	1.3.10	KD-11 Section XI of the Works - All works within Area BCPD	0 days	11/4/2015	11/4/2015	0%						
<b>39</b>	1.3.11	KD-12 Section XII of the Works - All works within Area LMH	0 days	1/12/2014	1/12/2014	0%						◆◆ 1/12
<b>40</b>	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%						
<b>41</b>	1.3.13	KD-14 Section XIV of the Works - Trees preservation and protection	0 days	11/4/2015	11/4/2015	0%						
<b>42</b>	1.3.14	KD-15 Section XV of the Works - Landscape soft works	0 days	11/4/2015	11/4/2015	0%						
<b>43</b>	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%						
<b>44</b>	<b>1.4</b>	<b>Stage Completion Date</b>	<b>60 days</b>	<b>8/8/2013</b>	<b>7/10/2013</b>	<b>100%</b>						
<b>47</b>	<b>2</b>	<b>Preliminaries and Statuary / Contractual Submissions</b>	<b>424 days</b>	<b>11/4/2013</b>	<b>9/6/2014</b>	<b>100%</b>						
<b>78</b>	<b>3</b>	<b>Stage of the Works</b>	<b>180 days</b>	<b>11/4/2013</b>	<b>7/10/2013</b>	<b>100%</b>						
<b>79</b>	<b>3.1</b>	<b>Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road</b>	<b>179 days</b>	<b>12/4/2013</b>	<b>7/10/2013</b>	<b>100%</b>						
<b>90</b>	<b>3.2</b>	<b>Stage II of the Works - Temporary ArchSD Depot (LMH2)</b>	<b>78 days</b>	<b>11/4/2013</b>	<b>27/6/2013</b>	<b>100%</b>						
<b>94</b>	<b>4</b>	<b>Section of the Works</b>	<b>1095 days</b>	<b>12/4/2013</b>	<b>10/4/2016</b>	<b>45%</b>						
<b>95</b>	<b>4.1</b>	<b>Section I of the Works - Ground Investigation field works (Drg. 7101A-7111A)</b>	<b>251 days</b>	<b>30/5/2013</b>	<b>4/2/2014</b>	<b>100%</b>						
<b>100</b>	<b>4.2</b>	<b>Section II of the Works - All laboratory tests for Section I</b>	<b>188 days</b>	<b>31/8/2013</b>	<b>6/3/2014</b>	<b>100%</b>						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	2nd Half		Oct	Nov
105	4.3	Section III of the Works - Site formation works for Portions RS1, RS2 & RS3 (seek for certificate of completion in letter ref. SRJV/W47/SO/J5/1308/00416 dated 23/8/2013)	89 days	12/5/2013	8/8/2013	100%						
111	4.4	Section IV of the Works - Village house within portion RS4	399 days	12/4/2013	15/5/2014	100%						
123	4.5	Section V of the Works-All works within portion RS4 exclude Section IV	509 days	12/4/2013	2/9/2014	40%						
124	4.5.1	ISSUED EOT2	241 days	5/1/2014	2/9/2014	95%						
125	4.5.2	Submissions and method statement	37 days	12/4/2013	18/5/2013	100%						
126	4.5.3	Approvals from ER	30 days	26/4/2013	25/5/2013	100%						
127	4.5.4	Construction of footbridge and staircase with mini-piles 8 nos. x Ø 273 and staircase (Drg. 2201A to 2207B, 6001B)	235 days	11/1/2014	2/9/2014	0%						
128	4.5.4.1	Mini-piles	61 days	11/1/2014	12/3/2014	0%						
129	4.5.4.2	Pile Caps	52 days	14/2/2014	6/4/2014	0%						
130	4.5.4.3	Abutments	45 days	10/3/2014	23/4/2014	0%						
131	4.5.4.4	Wing walls	45 days	27/3/2014	10/5/2014	0%						
132	4.5.4.5	Mass concrete	41 days	13/4/2014	23/5/2014	0%						
133	4.5.4.6	Remove sheetpiles from abutments	11 days	24/5/2014	3/6/2014	0%						
134	4.5.4.7	Beams	45 days	4/6/2014	18/7/2014	0%						
135	4.5.4.8	Deck	34 days	19/7/2014	21/8/2014	0%						
136	4.5.4.9	Compact fill behind abutments	14 days	4/6/2014	17/6/2014	0%						
137	4.5.4.10	New footpath	21 days	18/6/2014	8/7/2014	0%						
138	4.5.4.11	New staircase	36 days	9/7/2014	13/8/2014	0%						
139	4.5.4.12	Miscellaneous (pedestrian parapet, granite tile etc.)	20 days	14/8/2014	2/9/2014	0%						
140	4.6	Section VII of the Works - All works within Area CRD	249 days	9/9/2013	15/5/2014	100%						
177	4.7	Section VIII of the Works - All works within Area BCPA	489 days	11/6/2013	12/10/2014	50%						
178	4.7.1	Submission for Site Formation Works & import fill	72 days	11/6/2013	21/8/2013	100%						
179	4.7.2	Approval of submission for Site Formation Works	50 days	22/8/2013	10/10/2013	100%						
180	4.7.3	Approval for sources of import fill	69 days	28/9/2013	5/12/2013	100%						
181	4.7.4	Site formation of land (import fill 121433m3)	263 days	11/10/2013	30/6/2014	61%						
182	4.7.4.1	site formation (A1-A9)	82 days	11/10/2013	31/12/2013	98%						
183	4.7.4.2	site formation (A10-13, A15-20, A23, A24-A25)	90 days	1/1/2014	31/3/2014	89%						
184	4.7.4.3	site formation (A14, A22, A26)	91 days	1/4/2014	30/6/2014	0%						
185	4.7.5	Slope drainage works (Drg. 7156B-7159B)	284 days	2/1/2014	12/10/2014	40%						
186	4.7.5.1	submission of design of sedimentation tank/pond	38 days	2/1/2014	8/2/2014	100%						
187	4.7.5.2	approval of design of sedimentation tank/pond	36 days	9/2/2014	16/3/2014	50%						
188	4.7.5.3	discharge to existing Box Culvert No. 4 & sedimentation tank	16 days	17/3/2014	1/4/2014	0%						
189	4.7.5.4	DN1050 from CP to sedimentation tank	73 days	2/4/2014	13/6/2014	85%						
190	4.7.5.5	shortcreted TC (from A3,A2,A1,A5)	31 days	31/5/2014	30/6/2014	0%						
191	4.7.5.6	shortcreted TC (from A10-13)	30 days	1/7/2014	30/7/2014	0%						
192	4.7.5.7	shortcreted TC (from A10,A15,A19)	25 days	31/7/2014	24/8/2014	0%						
193	4.7.5.8	shortcreted TC (from A20-24A26,A14)	49 days	25/8/2014	12/10/2014	0%						
194	4.7.6	Chain link fence (1120m)	195 days	1/4/2014	12/10/2014	0%						
195	4.7.6.1	chain link fence (A1-5,A10,A15,A19)	102 days	1/4/2014	11/7/2014	0%						
196	4.7.6.2	chain link fence (A4,A9,A14,A26,A24)	58 days	12/7/2014	7/9/2014	0%						
197	4.7.6.3	chain link fence (A21-24)	35 days	8/9/2014	12/10/2014	0%						
198	4.8	Section IX of the Works - All works within Area BCPB	492 days	6/12/2013	11/4/2015	11%						
199	4.8.1	Submission for demolition of existing building structures	37 days	20/12/2013	25/1/2014	100%						
200	4.8.2	Approval of submission for demolish existing building structures	41 days	26/1/2014	7/3/2014	100%						
201	4.8.3	Demolition of existing building structures UPON instruction (Drg. 6152A, 6153A)	118 days	8/3/2014	3/7/2014	0%						
202	4.8.4	Site formation works (import fill 370523m3)	492 days	6/12/2013	11/4/2015	3%						
203	4.8.4.1	site formation works (B20)	28 days	6/12/2013	2/1/2014	0%						
204	4.8.4.2	site formation works (B1,3,6,9,21,22)	89 days	3/1/2014	1/4/2014	14%						
205	4.8.4.3	site formation works (B2,5)	92 days	2/4/2014	2/7/2014	0%						
206	4.8.4.4	site formation works (B7,11,12)	93 days	3/7/2014	3/10/2014	0%						
207	4.8.4.5	site formation works (4,8,10,13,14,16,17)	91 days	4/10/2014	2/1/2015	0%						
208	4.8.4.6	site formation works (B15,18,19)	99 days	3/1/2015	11/4/2015	0%						
209	4.8.5	Temp. boundary fence, chain link fence (Drg.1002C, 1032B, 1033B)	320 days	27/5/2014	11/4/2015	0%						
210	4.8.5.1	chain link fence (780m)	99 days	3/1/2015	11/4/2015	0%						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	Sep	Oct	Nov	Dec
211	4.8.5.2	fabricate temporary boundary fence & post	37 days	27/5/2014	2/7/2014	0%						
212	4.8.5.3	fix temporary boundary fence (105m)	35 days	3/7/2014	6/8/2014	0%						
213	4.9	<b>Section X of the Works - All works within Area BCPC</b>	<b>269 days</b>	<b>9/9/2013</b>	<b>4/6/2014</b>	<b>100%</b>						
229	4.10	<b>Section XI of the Works - All works within Area BCPD</b>	<b>598 days</b>	<b>22/8/2013</b>	<b>11/4/2015</b>	<b>13%</b>						
230	4.10.1	Submissions	23 days	22/8/2013	13/9/2013	100%						
231	4.10.2	Approval of Submissions	37 days	14/9/2013	20/10/2013	100%						
232	4.10.3	<b>Construction of retaining wall RW2 - CH0 to 840 (length 840m)</b>	<b>281 days</b>	<b>21/10/2013</b>	<b>28/7/2014</b>	<b>30%</b>						
248	4.10.4	Boundary fence (Drg.1002C, 1003A)	267 days	12/4/2014	3/1/2015	0%						
253	4.10.5	Modified CEDD hoarding Type III (Drg. 1032B)	176 days	18/10/2014	11/4/2015	0%						
257	4.10.6	Site Formation works (import fill 104958m3) including slope drainage works (Drg. 7155B-7159B)	423 days	7/1/2014	5/3/2015	18%						
258	4.10.6.1	D1-D2	84 days	7/1/2014	31/3/2014	60%						
259	4.10.6.2	D3, D10,D11, D17, D12- D14	95 days	27/5/2014	29/8/2014	15%						
260	4.10.6.3	D4, D15, D16	94 days	30/8/2014	1/12/2014	0%						
261	4.10.6.4	D5-D9	94 days	2/12/2014	5/3/2015	0%						
262	4.10.7	Sewerage, Drainage & Water Works (Drg. 1323B,1305C,1309A)	368 days	21/10/2013	23/10/2014	0%						
277	4.10.8	Irrigation system (sequence 3)(see Appendix C) adjacent to underpass & depressed road	44 days	29/8/2014	11/10/2014	0%						
278	4.10.9	Irrigation system (sequence 4) (see Appendix C) next to BCPC	44 days	29/8/2014	11/10/2014	0%						
279	4.10.10	Utilities works (Drg. 1405A) (see Appendix A)	369 days	18/12/2013	21/12/2014	0%						
280	4.10.10.1	Sequence 1 - allow ducts for 11kV & LV across the underpass	13 days	18/12/2013	30/12/2013	0%						
281	4.10.10.2	Sequence 5a - 132kV	12 days	12/10/2014	23/10/2014	0%						
282	4.10.10.3	Sequence 5b - 11kV	24 days	24/10/2014	16/11/2014	0%						
283	4.10.10.4	Sequence 5c - LV	23 days	17/11/2014	9/12/2014	0%						
284	4.10.10.5	Sequence 5d - PCCW	12 days	10/12/2014	21/12/2014	0%						
285	4.10.11	Road works and Road lighting works (Drg.1205A,1505C,1605B)	111 days	22/12/2014	11/4/2015	0%						
286	4.10.12	<b>Construction of depressed road &amp; underpass-9.3m wide x168m long</b>	<b>241 days</b>	<b>31/12/2013</b>	<b>28/8/2014</b>	<b>0%</b>						
292	4.11	<b>Section XII of the Works - All works within Area LMH</b>	<b>467 days</b>	<b>22/8/2013</b>	<b>1/12/2014</b>	<b>56%</b>						
293	4.11.1	Submissions for method statement of subway & staircase	70 days	22/8/2013	30/10/2013	100%						
294	4.11.2	Approval of Submissions for method statement of subway & staircase	68 days	30/8/2013	5/11/2013	100%						
295	4.11.3	<b>Construction of retaining wall RW1 - CH0 to 561.053m</b>	<b>213 days</b>	<b>26/9/2013</b>	<b>26/4/2014</b>	<b>93%</b>						
296	4.11.3.1	Bay 1075 to Bay 1068 (8 bays) -H1	77 days	26/9/2013	11/12/2013	100%						
297	4.11.3.2	Bay 1067 to Bay 1060 (8 bays) -H2	77 days	8/10/2013	23/12/2013	100%						
298	4.11.3.3	Bay 1059 to Bay 1052 (8 bays) -H3	93 days	15/11/2013	15/2/2014	100%						
299	4.11.3.4	Bay 1051 to Bay 1044 (8 bays) -H4	80 days	29/11/2013	16/2/2014	100%						
300	4.11.3.5	Bay 1043 to Bay 1036 (8 bays) -H5	79 days	13/12/2013	1/3/2014	100%						
301	4.11.3.6	Bay 1035 to Bay 1028 (8 bays) -H5,H6	83 days	17/1/2014	9/4/2014	100%						
302	4.11.3.7	Bay 1027 to Bay 1020 (8 bays) -H6	79 days	16/12/2013	4/3/2014	100%						
303	4.11.3.8	Bay 1019 to Bay 1012 (8 bays) -H7	105 days	28/12/2013	11/4/2014	100%						
304	4.11.3.9	Bay 1011 to Bay 1004 (8 bays) H7,H8	87 days	30/12/2013	26/3/2014	75%						
305	4.11.3.10	Bay 1003 to Bay 1001 (3 bays) -H8	31 days	27/3/2014	26/4/2014	0%						
306	4.11.4	<b>Construction of retaining wall RW1A-CH561.053 to 612.457m (length approx.. 51.4m)</b>	<b>368 days</b>	<b>11/9/2013</b>	<b>13/9/2014</b>	<b>100%</b>						
307	4.11.4.1	Bay 1076 to Bay 1078 (base & wall)	49 days	11/9/2013	29/10/2013	100%						
308	4.11.4.2	Bay 1079 to Bay 1082 (after divert existing Rd i.e. after Staircase & Lift Shaft)	60 days	16/7/2014	13/9/2014	100%						
309	4.11.5	Filling & Slope drainage behind RW1A (involve TTA)	79 days	14/9/2014	1/12/2014	0%						
310	4.11.6	<b>Site formation works (import fill 15300m3) including slope drainage works (Drg. 7154B, 7159B) (see Appendix B)</b>	<b>294 days</b>	<b>24/12/2013</b>	<b>13/10/2014</b>	<b>44%</b>						
311	4.11.6.1	<b>site formation (H1-H8) &amp; slope drainage works</b>	<b>157 days</b>	<b>24/12/2013</b>	<b>29/5/2014</b>	<b>53%</b>						
312	4.11.6.1.1	fill H1	36 days	24/4/2014	29/5/2014	0%						
313	4.11.6.1.2	fill H2	20 days	24/12/2013	12/1/2014	100%						
314	4.11.6.1.3	fill H3	17 days	17/2/2014	5/3/2014	100%						
315	4.11.6.1.4	fill H4	17 days	17/2/2014	5/3/2014	100%						
316	4.11.6.1.5	fill H5	18 days	10/4/2014	27/4/2014	85%						
317	4.11.6.1.6	fill H6	19 days	16/4/2014	4/5/2014	85%						
318	4.11.6.1.7	fill H7	18 days	12/4/2014	29/4/2014	10%						
319	4.11.6.1.8	fill H8	19 days	27/3/2014	14/4/2014	0%						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	Sep	Oct	Nov	Dec
320	4.11.6.2	Remove existing Lin Ma Hang Road	13 days	1/10/2014	13/10/2014	0%						
321	4.11.6.3	Fill H9 & B15 for slope	21 days	23/9/2014	13/10/2014	0%						
322	4.11.7	Boundary fence & chain link fence on top of slope	49 days	14/10/2014	1/12/2014	0%						
323	4.11.8	<b>Drainage works at Lin Ma Hang Road (Drg. 1304B, 1306A, 1307A, 1309A) (see Appendix B)</b>	<b>244 days</b>	<b>6/11/2013</b>	<b>7/7/2014</b>	<b>32%</b>						
324	4.11.8.1	H1-SM16-9062, 9201 & 9105A-9062, 9054-9062, 9101-9105	244 days	6/11/2013	7/7/2014	1%						
330	4.11.8.2	SMH6895-6808, 6804-6808	49 days	10/5/2014	27/6/2014	0%						
331	4.11.8.3	H2 - SMH9054-45,44, 9043	52 days	13/1/2014	5/3/2014	100%						
332	4.11.8.4	H3 - SMH9043-37, 9036 (DN900)	41 days	6/3/2014	15/4/2014	100%						
333	4.11.8.5	H4 - SMH9036-30,9029 (DN900)	32 days	15/3/2014	15/4/2014	100%						
334	4.11.8.6	H5 - SMH9029-22,9021 (DN750,900)	43 days	28/4/2014	9/6/2014	100%						
335	4.11.8.7	H6 - SMH9021-14,9013 (DN750)	36 days	5/5/2014	9/6/2014	0%						
336	4.11.8.8	H7 - SMH9013-06,9005 (DN600,750)	35 days	30/4/2014	3/6/2014	0%						
337	4.11.8.9	H8 - SMH9005-03,9002 (DN450)	23 days	8/5/2014	30/5/2014	0%						
338	4.11.8.10	H8 - SMH9002-9001 (DN300)	9 days	31/5/2014	8/6/2014	100%						
339	4.11.9	Water works at Lin Ma Hang Road (Drg.1914B-1917B)	128 days	11/3/2014	16/7/2014	65%						
340	4.11.10	Irrigation System at Lin Ma Hang Road (Drg.1974B, 1976A, 1977A)	42 days	4/6/2014	15/7/2014	0%						
341	4.11.10.1	from Phase H2-H8	37 days	4/6/2014	10/7/2014	0%						
342	4.11.10.2	for Phase H1	8 days	8/7/2014	15/7/2014	0%						
343	4.11.10.3	after Phase H8	13 days	28/6/2014	10/7/2014	0%						
344	4.11.11	<b>Utility Works</b>	<b>168 days</b>	<b>16/4/2014</b>	<b>30/9/2014</b>	<b>19%</b>						
345	4.11.11.1	<b>CLP - LV (west side of new Lin Ma Hang Road)</b>	<b>103 days</b>	<b>16/4/2014</b>	<b>27/7/2014</b>	<b>13%</b>						
346	4.11.11.1.1	from chainage 840 to chainage 1125	15 days	16/4/2014	30/4/2014	50%						
347	4.11.11.1.2	from chainage 630 to chainage 840	22 days	10/6/2014	1/7/2014	0%						
348	4.11.11.1.3	from chainage 475 to chainage 630	11 days	17/7/2014	27/7/2014	0%						
349	4.11.11.1.4	from chainage 1125 to chainage 1270	10 days	8/7/2014	17/7/2014	0%						
350	4.11.11.2	<b>CLP - LV (east side of new Lin Ma Hang Road)</b>	<b>36 days</b>	<b>6/7/2014</b>	<b>10/8/2014</b>	<b>13%</b>						
351	4.11.11.2.1	from chainage 840 to chainage 1125	15 days	6/7/2014	20/7/2014	50%						
352	4.11.11.2.2	from chainage 630 to chainage 840	21 days	21/7/2014	10/8/2014	0%						
353	4.11.11.2.3	from chainage 475 to chainage 630	10 days	8/7/2014	17/7/2014	0%						
354	4.11.11.2.4	from chainage 1125 to chainage 1270	10 days	17/7/2014	26/7/2014	0%						
355	4.11.11.3	<b>CLP - 11kV (west side of new Lin Ma Hang Road)</b>	<b>97 days</b>	<b>2/5/2014</b>	<b>6/8/2014</b>	<b>13%</b>						
356	4.11.11.3.1	from chainage 840 to chainage 1125	15 days	2/5/2014	16/5/2014	50%						
357	4.11.11.3.2	from chainage 630 to chainage 840	21 days	2/7/2014	22/7/2014	0%						
358	4.11.11.3.3	from chainage 475 to chainage 630	10 days	28/7/2014	6/8/2014	0%						
359	4.11.11.3.4	from chainage 1125 to chainage 1270	11 days	18/7/2014	28/7/2014	0%						
360	4.11.11.4	<b>CLP - 11kV (east side of new Lin Ma Hang Road)</b>	<b>46 days</b>	<b>18/7/2014</b>	<b>1/9/2014</b>	<b>13%</b>						
361	4.11.11.4.1	from chainage 840 to chainage 1125	15 days	22/7/2014	5/8/2014	50%						
362	4.11.11.4.2	from chainage 630 to chainage 840	21 days	12/8/2014	1/9/2014	0%						
363	4.11.11.4.3	from chainage 475 to chainage 630	11 days	18/7/2014	28/7/2014	0%						
364	4.11.11.4.4	from chainage 1125 to chainage 1270	11 days	27/7/2014	6/8/2014	0%						
365	4.11.11.5	<b>PCCW (west side of new Lin Ma Hang Road)</b>	<b>114 days</b>	<b>2/5/2014</b>	<b>23/8/2014</b>	<b>0%</b>						
366	4.11.11.5.1	from chainage 840 to chainage 1125	25 days	5/6/2014	29/6/2014	0%						
367	4.11.11.5.2	from chainage 630 to chainage 840	34 days	2/5/2014	4/6/2014	0%						
368	4.11.11.5.3	from chainage 475 to chainage 630	17 days	7/8/2014	23/8/2014	0%						
369	4.11.11.5.4	from chainage 1125 to chainage 1270	16 days	29/7/2014	13/8/2014	0%						
370	4.11.11.6	<b>HGC (west side of new Lin Ma Hang Road)</b>	<b>91 days</b>	<b>5/6/2014</b>	<b>3/9/2014</b>	<b>0%</b>						
371	4.11.11.6.1	from chainage 840 to chainage 1125	16 days	30/6/2014	15/7/2014	0%						
372	4.11.11.6.2	from chainage 630 to chainage 840	21 days	5/6/2014	25/6/2014	0%						
373	4.11.11.6.3	from chainage 475 to chainage 630	11 days	24/8/2014	3/9/2014	0%						
374	4.11.11.6.4	from chainage 1125 to chainage 1270	10 days	20/8/2014	29/8/2014	0%						
375	4.11.11.7	<b>NWT (west side of new Lin Ma Hang Road)</b>	<b>84 days</b>	<b>26/6/2014</b>	<b>17/9/2014</b>	<b>100%</b>						
380	4.11.11.8	Street lighting work	29 days	2/9/2014	30/9/2014	0%						
381	4.11.11.8.1	west side of new Lin Ma Hang Road	15 days	16/9/2014	30/9/2014	0%						
382	4.11.11.8.2	east side of new Lin Ma Hang Road	29 days	2/9/2014	30/9/2014	0%						
383	4.11.12	Roadwork of carriageway (new Lin Ma Hang Road for BCPA)	72 days	21/7/2014	30/9/2014	0%						
384	4.11.13	Construction of footpath (for BCPA)	72 days	21/7/2014	30/9/2014	0%						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	Sep	Oct	Nov	Dec
<b>385</b>	<b>4.11.14</b>	<b>Construction of pedestrian subway &amp; pump room</b>	<b>202 days</b>	<b>6/11/2013</b>	<b>26/5/2014</b>	<b>88%</b>						
386	4.11.14.1	prepare formation of sheetpiling/excavation	9 days	6/11/2013	14/11/2013	100%						
387	4.11.14.2	excavation &/or sheetpiling	33 days	15/11/2013	17/12/2013	100%						
388	4.11.14.3	rubble mound	16 days	2/12/2013	17/12/2013	100%						
389	4.11.14.4	cast blinding layer	17 days	11/12/2013	27/12/2013	100%						
390	4.11.14.5	pump house	30 days	16/12/2013	14/1/2014	100%						
391	4.11.14.6	subway 8th bay	27 days	15/1/2014	10/2/2014	100%						
392	4.11.14.7	subway 7th bay	23 days	11/2/2014	5/3/2014	98%						
393	4.11.14.8	subway 6th bay	17 days	25/2/2014	13/3/2014	100%						
394	4.11.14.9	miscellaneous works	74 days	14/3/2014	26/5/2014	60%						
<b>395</b>	<b>4.11.15</b>	<b>Construction of staircase with lift shaft with 6 nos. of mini pile</b>	<b>225 days</b>	<b>14/10/2013</b>	<b>26/5/2014</b>	<b>99%</b>						
396	4.11.15.1	mini-piles	54 days	14/10/2013	6/12/2013	100%						
397	4.11.15.2	lift shaft	41 days	7/12/2013	16/1/2014	100%						
398	4.11.15.3	Bay 9	33 days	17/1/2014	18/2/2014	100%						
399	4.11.15.4	Staircase	64 days	19/2/2014	23/4/2014	100%						
400	4.11.15.5	miscellaneous works	73 days	15/3/2014	26/5/2014	95%						
<b>401</b>	<b>4.11.16</b>	<b>1 no. DN1650 pipe jacking LV009 including jacking &amp; receiving pits</b>	<b>147 days</b>	<b>6/11/2013</b>	<b>1/4/2014</b>	<b>85%</b>						
<b>402</b>	<b>4.11.16.1</b>	<b>Pits construction</b>	<b>36 days</b>	<b>6/11/2013</b>	<b>11/12/2013</b>	<b>100%</b>						
403	4.11.16.1.1	utility detection of the area	3 days	6/11/2013	8/11/2013	100%						
404	4.11.16.1.2	inspection pits for jacking pit and receiving pit	5 days	9/11/2013	13/11/2013	100%						
405	4.11.16.1.3	temporary work & excavation for receiving pit	14 days	28/11/2013	11/12/2013	100%						
406	4.11.16.1.4	temporary work & excavation for jacking pit	14 days	14/11/2013	27/11/2013	100%						
<b>407</b>	<b>4.11.16.2</b>	<b>Jack sleeve Pipes</b>	<b>89 days</b>	<b>12/12/2013</b>	<b>10/3/2014</b>	<b>100%</b>						
408	4.11.16.2.1	establishment of jacking equipment	15 days	12/12/2013	26/12/2013	100%						
409	4.11.16.2.2	jack pipe and excavate	74 days	27/12/2013	10/3/2014	100%						
410	4.11.16.3	HDPE pipes	22 days	11/3/2014	1/4/2014	0%						
411	4.11.16.3.1	Lay HDPE pipes	7 days	11/3/2014	17/3/2014	0%						
412	4.11.16.3.2	Grout HDPE pipes	7 days	18/3/2014	24/3/2014	0%						
413	4.11.16.3.3	Remove temporary works and backfilling	8 days	25/3/2014	1/4/2014	0%						
<b>414</b>	<b>4.11.17</b>	<b>Construction of retaining wall RW9 - CH0 to 75m (length 75m)</b>	<b>110 days</b>	<b>2/4/2014</b>	<b>20/7/2014</b>	<b>0%</b>						
415	4.11.17.1	drive sheetpile & excavation	14 days	2/4/2014	15/4/2014	0%						
416	4.11.17.2	grade 200 rock fill	14 days	6/4/2014	19/4/2014	0%						
417	4.11.17.3	cast blinding layer	14 days	14/4/2014	27/4/2014	0%						
418	4.11.17.4	Bay 9001-9010	94 days	18/4/2014	20/7/2014	0%						
<b>419</b>	<b>4.11.18</b>	<b>Construction of Bridge J with 6 x Ø 1500 bored piles</b>	<b>217 days</b>	<b>7/12/2013</b>	<b>11/7/2014</b>	<b>45%</b>						
420	4.11.18.1	bored piles	73 days	7/12/2013	17/2/2014	100%						
421	4.11.18.2	pile caps	15 days	18/2/2014	4/3/2014	100%						
422	4.11.18.3	abutment walls	24 days	3/3/2014	26/3/2014	45%						
423	4.11.18.4	falsework for deck	15 days	25/3/2014	8/4/2014	0%						
424	4.11.18.5	deck	55 days	9/4/2014	2/6/2014	0%						
425	4.11.18.6	parapet	39 days	3/6/2014	11/7/2014	0%						
<b>426</b>	<b>4.11.19</b>	<b>Construction of retaining wall RW5 - CH0 to 60m (length 60m)</b>	<b>44 days</b>	<b>27/3/2014</b>	<b>9/5/2014</b>	<b>0%</b>						
427	4.11.19.1	drive sheetpile & excavation	11 days	27/3/2014	6/4/2014	0%						
428	4.11.19.2	grade 200 rock fill	4 days	7/4/2014	10/4/2014	0%						
429	4.11.19.3	cast blinding layer	5 days	11/4/2014	15/4/2014	0%						
430	4.11.19.4	Bay 5001-5008	24 days	16/4/2014	9/5/2014	0%						
<b>431</b>	<b>4.12</b>	<b>Section XIII of the Works - Works not covered in any other Sections</b>	<b>598 days</b>	<b>22/8/2013</b>	<b>11/4/2015</b>	<b>28%</b>						
432	4.12.1	Submissions	70 days	22/8/2013	30/10/2013	100%						
433	4.12.2	Approval of Submissions	68 days	16/9/2013	22/11/2013	100%						
<b>434</b>	<b>4.12.3</b>	<b>Temporary Traffic Arrangement (TTA) Scheme for Works at existing LMH Rd</b>	<b>92 days</b>	<b>23/8/2013</b>	<b>22/11/2013</b>	<b>100%</b>						
435	4.12.3.1	Preparation of TTA scheme	21 days	23/8/2013	12/9/2013	100%						
436	4.12.3.2	Comment & approval of TTA scheme by TD & RMO	55 days	13/9/2013	6/11/2013	100%						
437	4.12.3.3	Obtain roadwork advice from RMO	16 days	7/11/2013	22/11/2013	100%						
<b>438</b>	<b>4.12.4</b>	<b>Northbound of Re-aligned Lin Ma Hang Road (west side)</b>	<b>382 days</b>	<b>23/11/2013</b>	<b>9/12/2014</b>	<b>26%</b>						
<b>439</b>	<b>4.12.4.1</b>	<b>Works from chainage 190 to chainage 310</b>	<b>229 days</b>	<b>23/11/2013</b>	<b>9/7/2014</b>	<b>53%</b>						
440	4.12.4.1.1	Drainage & slope drain	76 days	23/11/2013	6/2/2014	100%						
441	4.12.4.1.2	Waterwork	38 days	7/2/2014	16/3/2014	95%						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	Sep	Oct	Nov	Dec
442	4.12.4.1.3	Irrigation System	18 days	17/3/2014	3/4/2014	0%						
443	4.12.4.1.4	Roadwork	40 days	4/4/2014	13/5/2014	0%						
444	4.12.4.1.5	Utilities works	38 days	14/5/2014	20/6/2014	26%						
445	4.12.4.1.5.1	11kV	9 days	14/5/2014	22/5/2014	0%						
446	4.12.4.1.5.2	LV	9 days	23/5/2014	31/5/2014	0%						
447	4.12.4.1.5.3	NWT	10 days	1/6/2014	10/6/2014	100%						
448	4.12.4.1.5.4	Highway lighting	10 days	11/6/2014	20/6/2014	0%						
449	4.12.4.1.6	Footpath	19 days	21/6/2014	9/7/2014	0%						
450	<b>4.12.4.2</b>	<b>Works from chainage 380 to chainage 580</b>	<b>263 days</b>	<b>23/11/2013</b>	<b>12/8/2014</b>	<b>46%</b>						
451	4.12.4.2.1	Drainage	76 days	23/11/2013	6/2/2014	95%						
452	4.12.4.2.2	Waterwork	35 days	7/2/2014	13/3/2014	95%						
453	4.12.4.2.3	Irrigation System	18 days	14/3/2014	31/3/2014	0%						
454	4.12.4.2.4	Roadwork	43 days	1/4/2014	13/5/2014	0%						
455	<b>4.12.4.2.5</b>	<b>Utilities works</b>	<b>57 days</b>	<b>14/5/2014</b>	<b>9/7/2014</b>	<b>29%</b>						
456	4.12.4.2.5.1	11kV	15 days	14/5/2014	28/5/2014	5%						
457	4.12.4.2.5.2	LV	16 days	29/5/2014	13/6/2014	5%						
458	4.12.4.2.5.3	NWT	15 days	14/6/2014	28/6/2014	100%						
459	4.12.4.2.5.4	Highway lighting	11 days	29/6/2014	9/7/2014	0%						
460	4.12.4.2.6	Footpath	34 days	10/7/2014	12/8/2014	0%						
461	<b>4.12.4.3</b>	<b>Works from chainage 310 to chainage 380</b>	<b>99 days</b>	<b>14/5/2014</b>	<b>20/8/2014</b>	<b>6%</b>						
462	4.12.4.3.1	Drainage	30 days	14/5/2014	12/6/2014	0%						
463	4.12.4.3.2	Waterwork	12 days	13/6/2014	24/6/2014	0%						
464	4.12.4.3.3	Irrigation System	9 days	25/6/2014	3/7/2014	0%						
465	4.12.4.3.4	Roadwork	18 days	4/7/2014	21/7/2014	0%						
466	4.12.4.3.5	Utilities works	22 days	22/7/2014	12/8/2014	27%						
467	4.12.4.3.5.1	11kV	5 days	22/7/2014	26/7/2014	0%						
468	4.12.4.3.5.2	LV	6 days	27/7/2014	1/8/2014	0%						
469	4.12.4.3.5.3	NWT	6 days	2/8/2014	7/8/2014	100%						
470	4.12.4.3.5.4	Highway lighting	5 days	8/8/2014	12/8/2014	0%						
471	4.12.4.3.6	Footpath	8 days	13/8/2014	20/8/2014	0%						
472	<b>4.12.4.4</b>	<b>Works from chainage 580 to chainage 780</b>	<b>210 days</b>	<b>14/5/2014</b>	<b>9/12/2014</b>	<b>6%</b>						
473	4.12.4.4.1	Drainage	72 days	14/5/2014	24/7/2014	0%						
474	4.12.4.4.2	Waterwork	35 days	25/7/2014	28/8/2014	0%						
475	4.12.4.4.3	Irrigation System	19 days	29/8/2014	16/9/2014	0%						
476	4.12.4.4.4	Sewerage	13 days	17/9/2014	29/9/2014	0%						
477	4.12.4.4.5	Roadwork	44 days	30/9/2014	12/11/2014	0%						
478	4.12.4.4.6	Utilities works	56 days	30/9/2014	24/11/2014	27%						
479	4.12.4.4.6.1	11kV	17 days	30/9/2014	16/10/2014	0%						
480	4.12.4.4.6.2	LV	15 days	17/10/2014	31/10/2014	0%						
481	4.12.4.4.6.3	NWT	15 days	1/11/2014	15/11/2014	100%						
482	4.12.4.4.6.4	Highway lighting	9 days	16/11/2014	24/11/2014	0%						
483	4.12.4.4.7	Footpath	15 days	25/11/2014	9/12/2014	0%						
484	<b>4.12.4.5</b>	<b>Works from chainage 80 to chainage 190</b>	<b>170 days</b>	<b>14/5/2014</b>	<b>30/10/2014</b>	<b>5%</b>						
485	4.12.4.5.1	Drainage	58 days	14/5/2014	10/7/2014	0%						
486	4.12.4.5.2	Waterwork	35 days	11/7/2014	14/8/2014	0%						
487	4.12.4.5.3	Irrigation System	16 days	15/8/2014	30/8/2014	0%						
488	4.12.4.5.4	Roadwork	37 days	31/8/2014	6/10/2014	0%						
489	4.12.4.5.5	Utilities works	37 days	31/8/2014	6/10/2014	27%						
490	4.12.4.5.5.1	11kV	10 days	31/8/2014	9/9/2014	0%						
491	4.12.4.5.5.2	LV	10 days	10/9/2014	19/9/2014	0%						
492	4.12.4.5.5.3	NWT	10 days	20/9/2014	29/9/2014	100%						
493	4.12.4.5.5.4	Highway lighting	7 days	30/9/2014	6/10/2014	0%						
494	4.12.4.5.6	Footpath	24 days	7/10/2014	30/10/2014	0%						
495	<b>4.12.5</b>	<b>Southbound of Re-aligned Lin Ma Hang Road (east side)</b>	<b>163 days</b>	<b>31/10/2014</b>	<b>11/4/2015</b>	<b>0%</b>						
496	<b>4.12.5.1</b>	<b>Works from chainage 60 to chainage 200</b>	<b>111 days</b>	<b>31/10/2014</b>	<b>18/2/2015</b>	<b>0%</b>						
506	<b>4.12.5.2</b>	<b>Works from chainage 400 to chainage 600</b>	<b>133 days</b>	<b>13/11/2014</b>	<b>25/3/2015</b>	<b>0%</b>						
516	<b>4.12.5.3</b>	<b>Works from chainage 200 to chainage 400</b>	<b>115 days</b>	<b>18/12/2014</b>	<b>11/4/2015</b>	<b>0%</b>						
527	<b>4.12.5.4</b>	<b>Works from chainage 600 to chainage 780</b>	<b>115 days</b>	<b>18/12/2014</b>	<b>11/4/2015</b>	<b>0%</b>						

ID	WBS	Task Name	Duration	Start	Finish	% Complete	2014					
							Jul	Aug	Sep	Oct	Nov	Dec
537	4.12.6	Archaeological survey (Sections T1 to T3)(Drg. 6403A)	167 days	24/10/2013	8/4/2014	100%						
543	4.12.7	Construction of retaining wall RW8 - CH0 to 22 (3 bays)	70 days	13/8/2014	21/10/2014	0%						
545	4.12.8	Site Formation works for ArchSD Depot (Drg. 1001B)	35 days	22/10/2014	25/11/2014	0%						
546	4.12.9	Existing road to be improved & run-in to the site to be constructed at RS1 (Drg.1203A, 1001B)	108 days	4/8/2014	19/11/2014	16%						
547	4.12.10	Access road to be re-constructed / upgraded at RS3 (Drg/1203)	111 days	20/11/2014	10/3/2015	0%						
548	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>73%</b>						
549	4.13.1	Submissions	69 days	12/4/2013	19/6/2013	100%						
550	4.13.2	Approval of Submissions	70 days	20/6/2013	28/8/2013	100%						
551	4.13.3	Tree felling/removal works and tree transplanting works	499 days	6/9/2013	17/1/2015	75%						
552	4.13.4	Preservation and Protection of Existing Trees in all Portion of the Site	591 days	29/8/2013	11/4/2015	65%						
553	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>						
554	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%						
555	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%						
556	4.14.3	shrub planting at BCPC for Section X of the Works	21 days	15/5/2014	4/6/2014	0%						
557	4.14.4	tree & shrub planting at BCPD Section XI of the Works	55 days	16/2/2015	11/4/2015	0%						
558	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 HKSAR
- - - WORKS AREA (ABOVE GROUND)
- - - WORKS AREA (TUNNEL)
- X AIR MONITORING STATIONS

PA	REV TO	REV	FIRST ISSUE	DC	WT

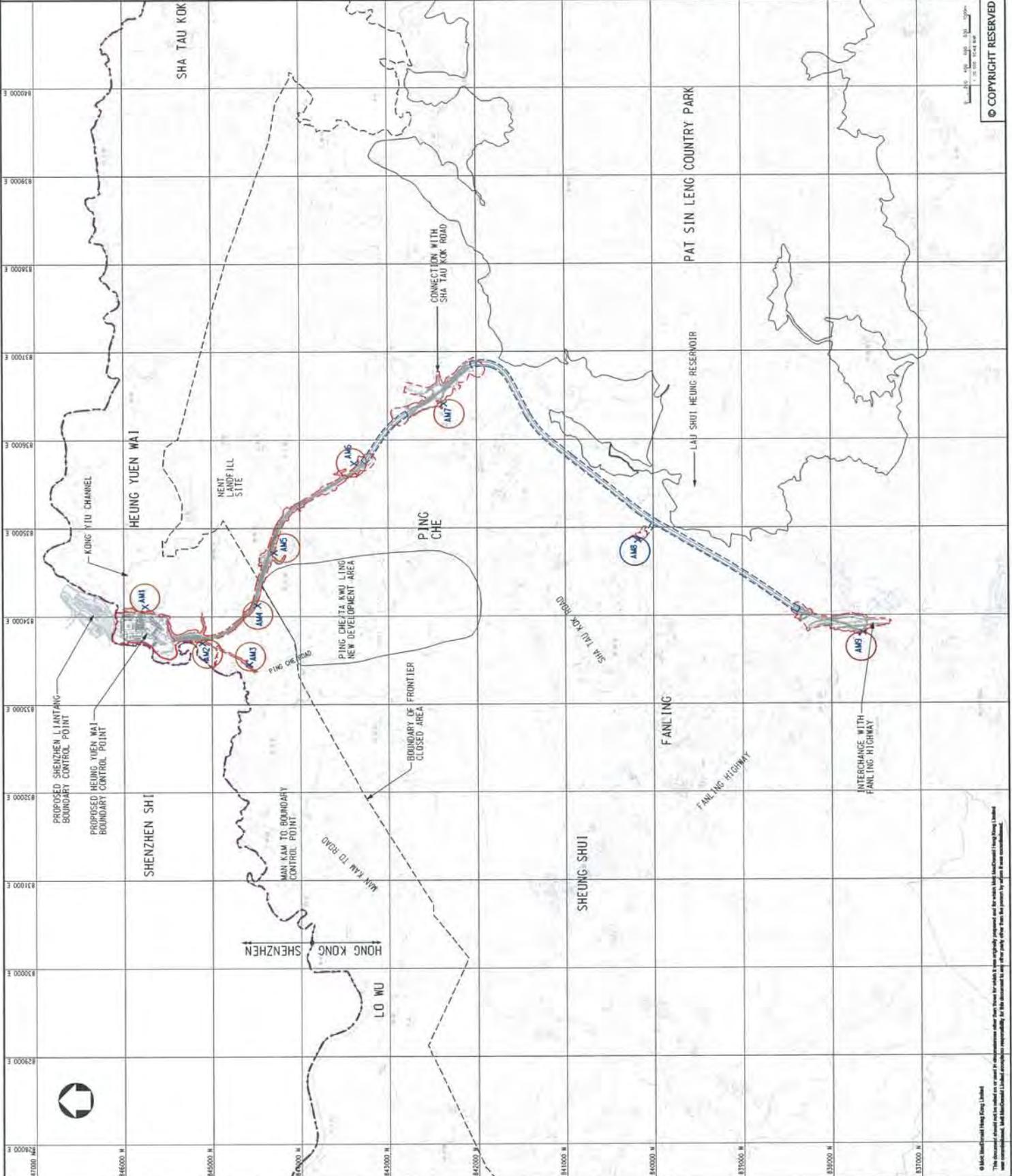


CIVIL ENGINEERING  
AND DEVELOPMENT  
DEPARTMENT

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

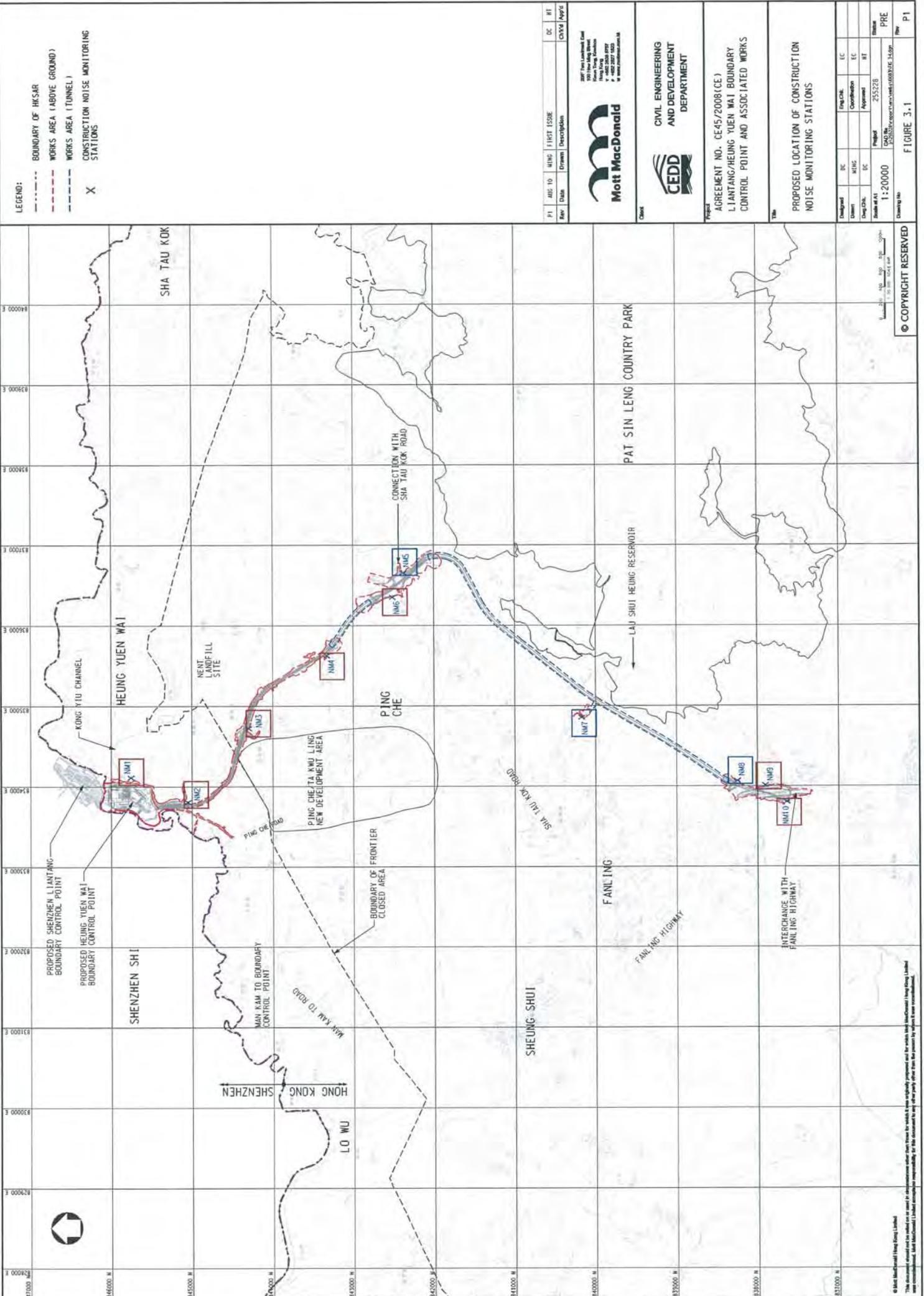
PROPOSED LOCATION OF CONSTRUCTION  
AIR QUALITY MONITORING STATIONS

Drawn	DC	Eng. CHK.	EC
Checked	HT/EC	Coordination	EC
Scale at A1	1:20000 <th>Project</th> <td>253228 </td>	Project	253228
Scale at A2		Contract No.	CE-45/2008(CE)
Drawing No.	FIGURE 2-1 <th>Status</th> <td>PRE </td>	Status	PRE
		Date	P1



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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

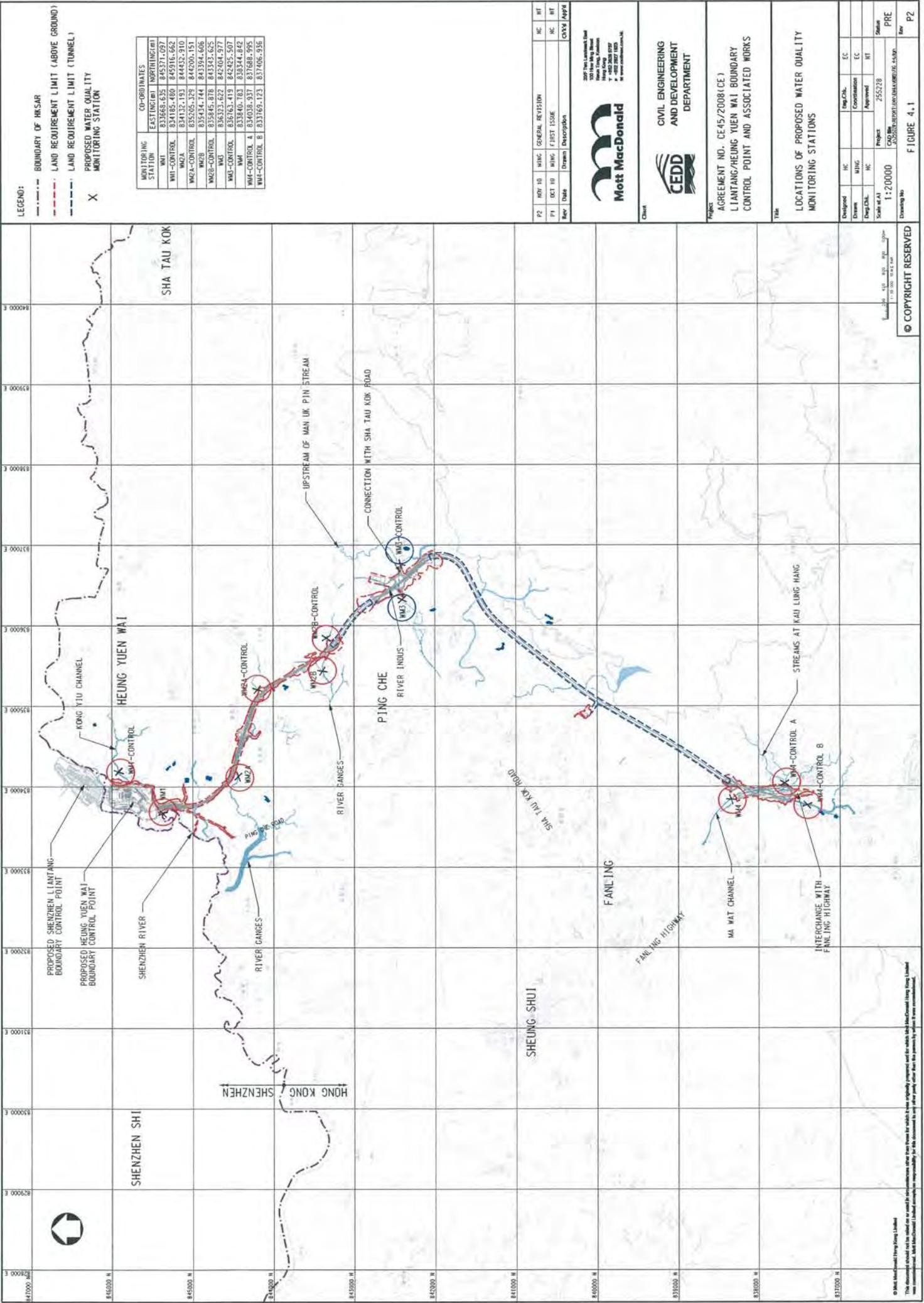
AGREEMENT NO. CE-45/2008(CE)  
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designated	DC	ME/C	DC								

FIGURE 3-1

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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	CO-ORDINATES	
	EASTING (M)	NORTHING (M)
WMA	837683.635	845371.097
WMA-CONTROL 1	834185.460	845916.662
WMA-CONTROL 2	834132.193	844432.910
WMA-CONTROL 3	835205.329	844200.151
WMA-CONTROL 4	835334.744	843394.606
WMA-CONTROL 5	835945.878	843343.625
WMA-CONTROL 6	836323.622	842404.977
WMA-CONTROL 7	836763.419	842425.507
WMA-CONTROL 8	834038.937	837688.995

REV	DATE	BY	CHKD	DESCRIPTION
P2	NOV 10	MHC	GENERAL REVISION	
P1	OCT 10	MHC	FIRST ISSUE	



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

TITLE LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

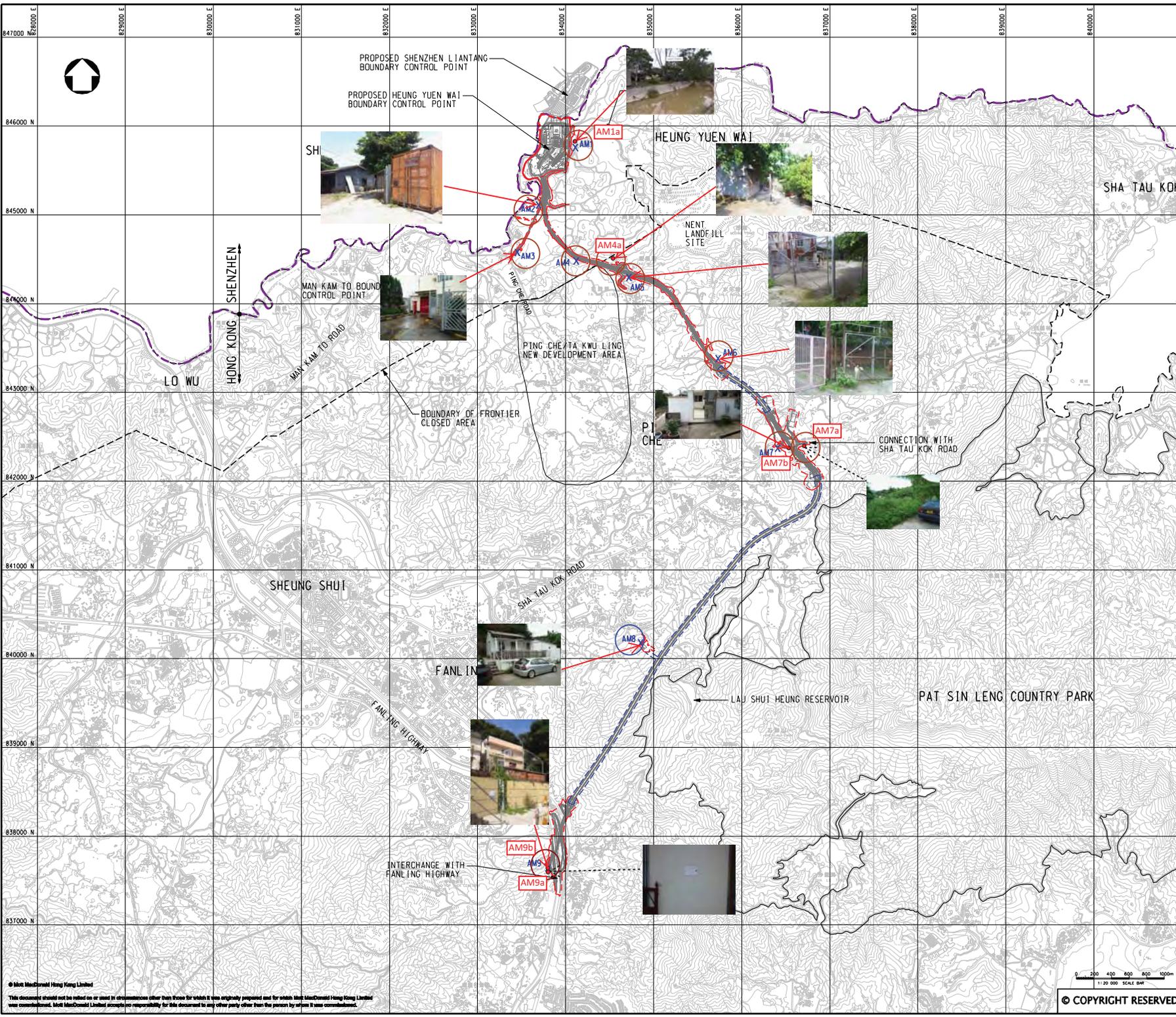
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Drawn	MHC	Coordination	EC
Design Chk.	HC	Approved	HT
Scale at A1	1:20000	Project	255228
Scale at A3		CAU No.	
Drawing No.		ASST. CHIEF ENGINEER (E&D)	PRE
			Rev
			P2

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## **Appendix E**

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



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

P1	AUG 10	MING	FIRST ISSUE	DC	HT
Rev	Date	Drawn	Description	Chk'd	App'd



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

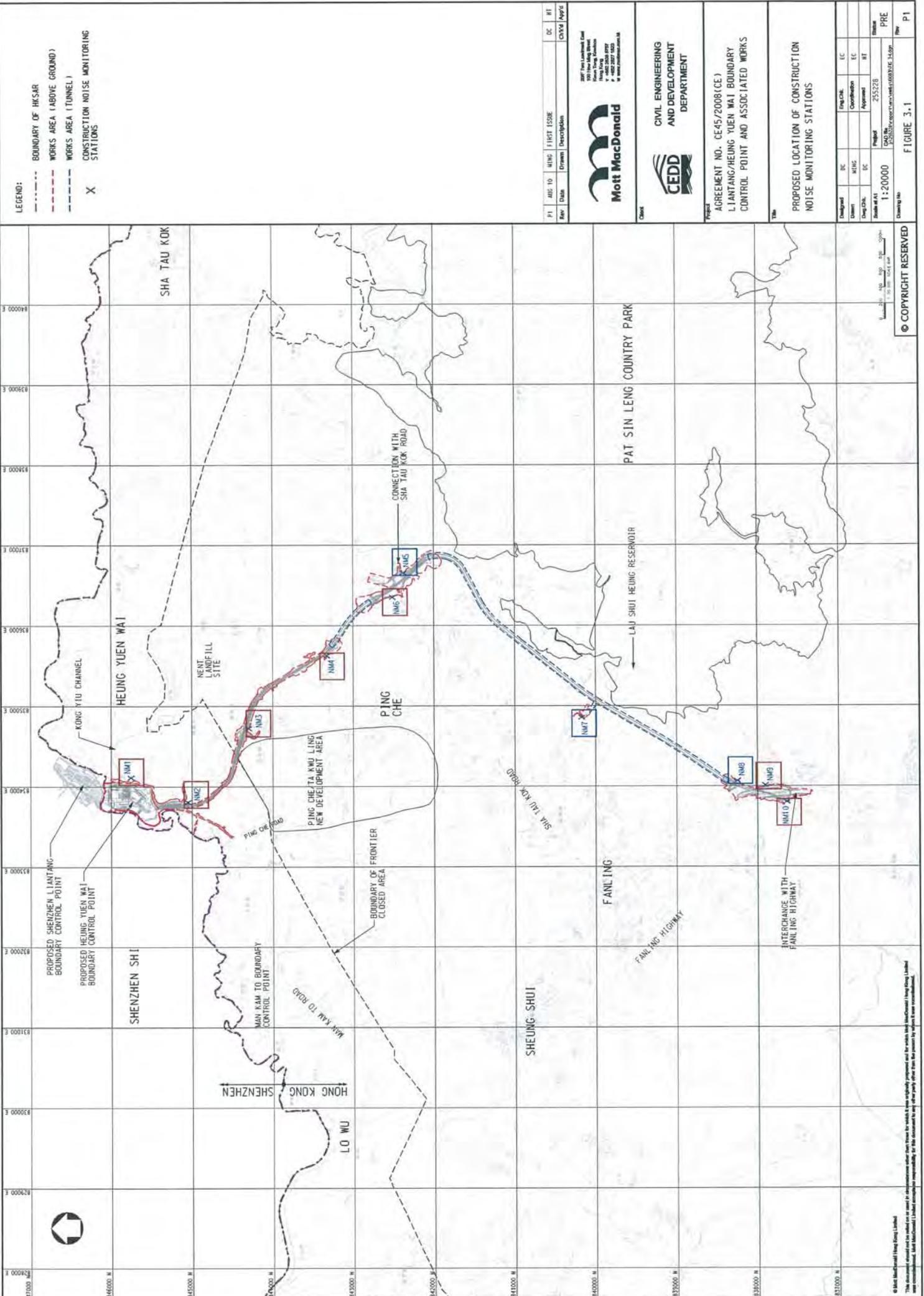
Title  
 PROPOSED LOCATION OF CONSTRUCTION  
 AIR QUALITY MONITORING STATIONS

Designed	DC	Eng.Chk.	EC	
Drawn	MING	Coordination	EC	
Disp.Chk.	DC	Approved	HT	
Scale at A1	1:20000	Project	255228	Status
		CAD file	255228\report\env\lanta\00831\FE_21.dgn	PRE
Drawing No				Rev
				P1

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0 200 400 600 800 1000m  
 1:20 000 SCALE BM  
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FIGURE 2.1



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

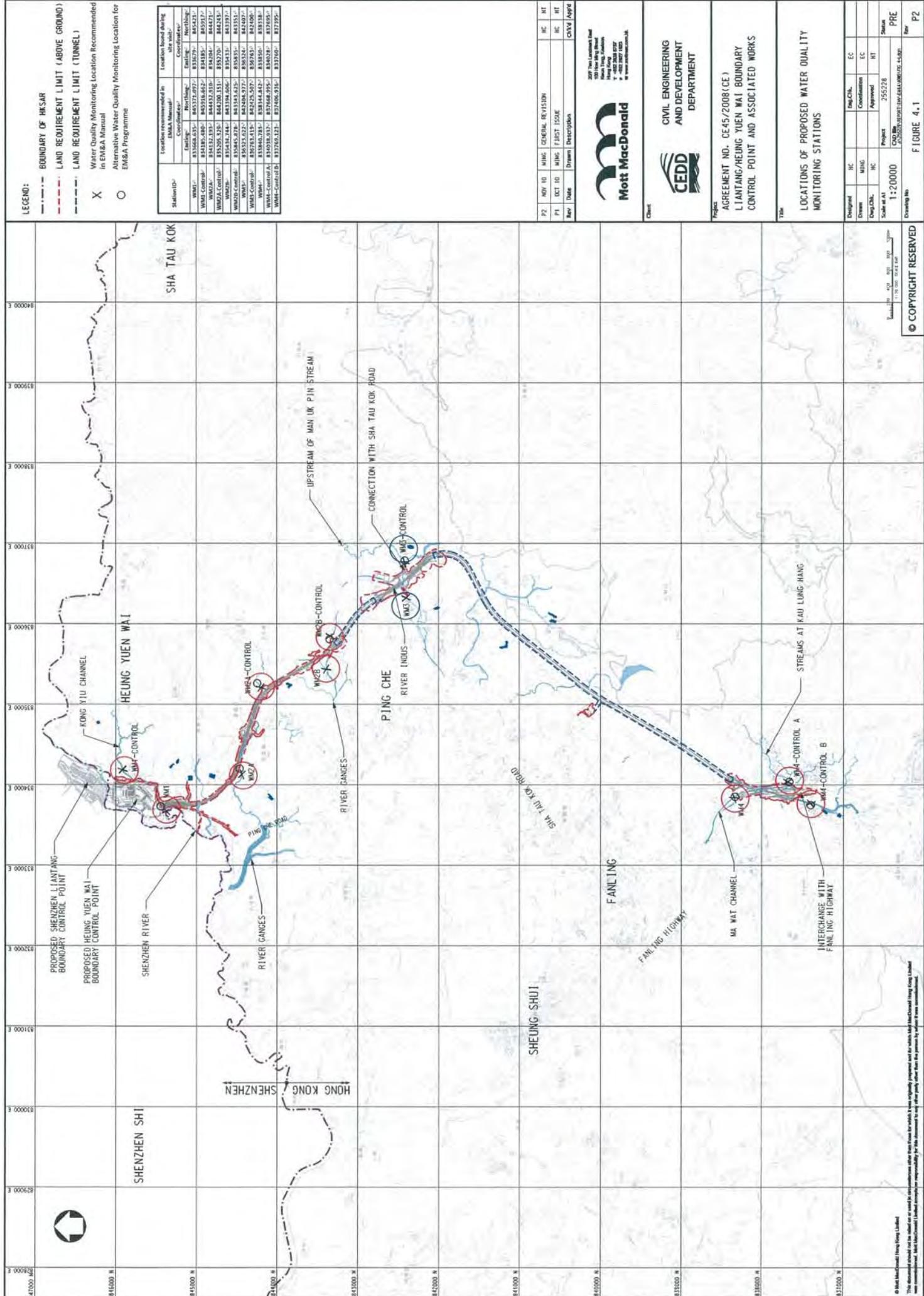
PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designated	DC	ME/C	DC						

Scale at A1: 1:20000  
Scale at A2: 1:20000  
Scale at A3: 1:20000  
Scale at A4: 1:20000  
Scale at A5: 1:20000  
Scale at A6: 1:20000  
Scale at A7: 1:20000  
Scale at A8: 1:20000  
Scale at A9: 1:20000  
Scale at A10: 1:20000

FIGURE 3-1

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**LEGEND:**

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

Station ID	Location recommended in EM&A Manual		Location based on existing site visit	
	Easting	Northing	Easting	Northing
WM1	83366.433	845372.097	83367	845373
WM2	84412.183	844452.816	84413	844453
WM3	85205.326	844200.331	85207	844201
WM4	83743.744	843338.606	83745	843339
WM5	83585.878	843348.625	83587	843349
WM6	83765.415	842528.507	83767	842529
WM7	83846.283	838144.842	83848	838145
WM8	83403.837	837668.295	83405	837669
WM9	83765.427	837606.916	83767	837607

P2	REV 10	HWG	GENERAL REVISION	HC	HT
P1	REV 10	HWG	FIRST ISSUE	HC	HT
Rev	Date	Drawn	Description	CHKD	APPR



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**Civil Engineering and Development Department**

Project Agreement No. CE45/2008(CE)  
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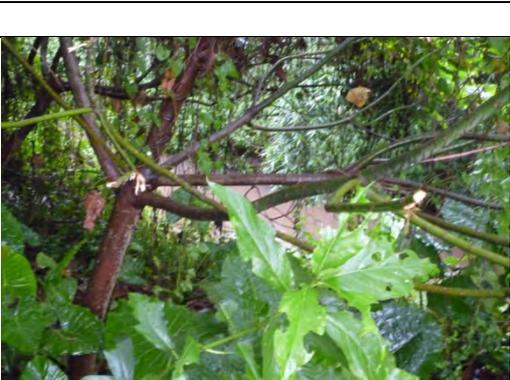
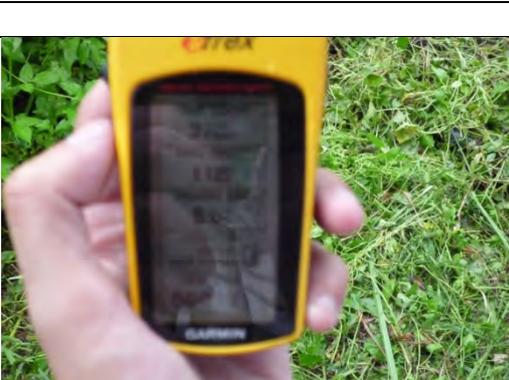
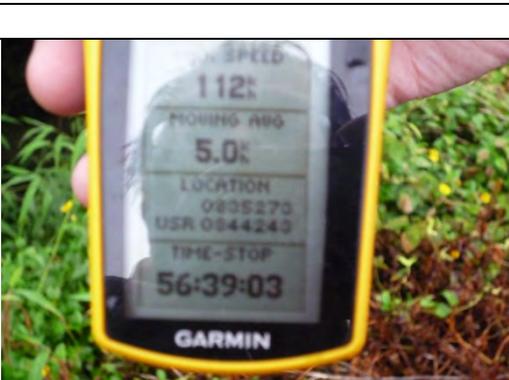
Locations of Proposed Water Quality Monitoring Stations

Designed	HC	HWG	EC	EC
Drawn	MHC	HC	Approved	HT
Scale at A1	1:20000			
Project	CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS			
Drawing No.	FIGURE 4_1			
Rev	P2			

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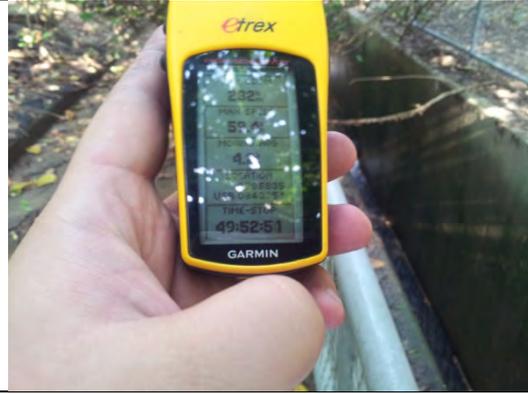
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**Photographic Records for Water Quality Monitoring Location**

	
<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**

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

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Garden Farm, Tsung Yuen Ha Village  
 Location ID : AM1a

Date of Calibration: 23/6/2014  
 Next Calibration Date: 23/8/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa) 1004.1  
 Temperature (°C) 27.8

Corrected Pressure (mm Hg) 753.075  
 Temperature (K) 301

### CALIBRATION ORIFICE

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

Qstd Slope -> 2.00757  
 Qstd Intercept -> -0.01628

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	5	5	10.0	1.569	48	47.56	Slope =	33.2665	
13	4.1	4.1	8.2	1.421	42	41.61	Intercept =	-5.2086	
10	3.1	3.1	6.2	1.237	36	35.67	Corr. coeff. =	0.9992	
7	2	2	4.0	0.995	28	27.74			
5	1.2	1.2	2.4	0.773	21	20.81			

**Calculations :**

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

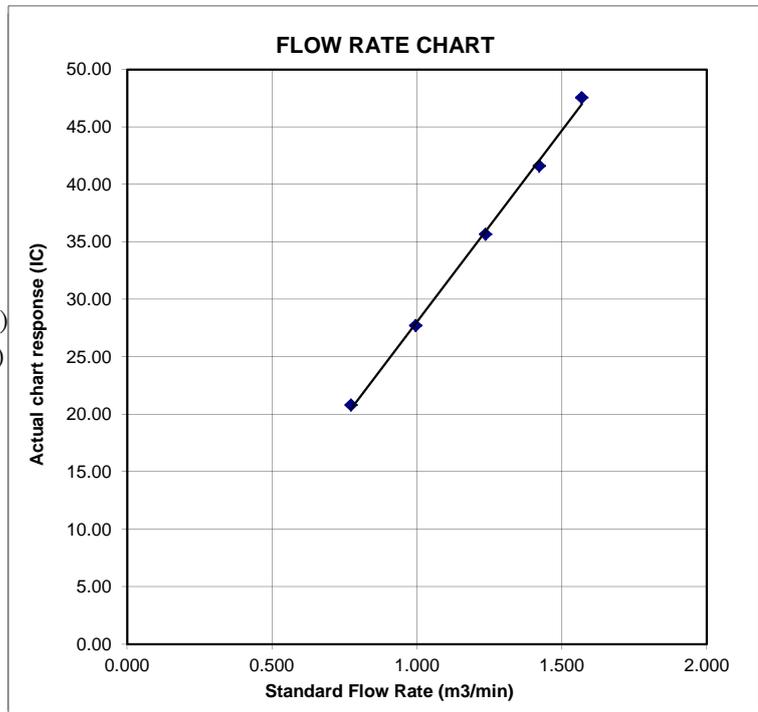
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K )  
 Pstd = actual pressure during calibration ( mm Hg )

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House near Lin Ma Hang Road	Date of Calibration:	20/6/2014
Location ID : AM2	Next Calibration Date:	20/8/2014
	Technician:	Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1002.7	Corrected Pressure (mm Hg)	752.025
Temperature (°C)	29.2	Temperature (K)	302

### CALIBRATION ORIFICE

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

### CALIBRATION

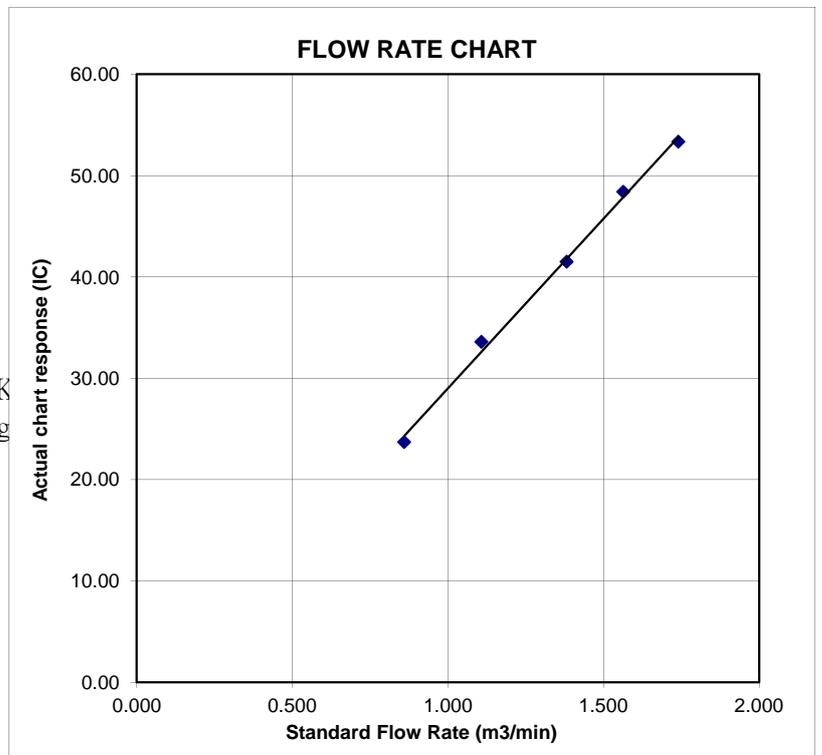
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.741	54	53.34	Slope = 33.4669 Intercept = -4.4451 Corr. coeff. = 0.9983
13	5	5	10.0	1.564	49	48.40	
10	3.9	3.9	7.8	1.382	42	41.49	
7	2.5	2.5	5.0	1.108	34	33.59	
5	1.5	1.5	3.0	0.860	24	23.71	

**Calculations :**

$Q_{std} = 1/m[\text{Sqrt}(H2O(Pa/P_{std})(T_{std}/T_a))-b]$   
 $IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$   
  
 Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

$1/m(( I )[\text{Sqrt}(298/T_{av})(P_{av}/760)]-b)$   
  
 m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 20/6/2014  
 Next Calibration Date: 20/8/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1002.7	Corrected Pressure (mm Hg)	752.025
Temperature (°C)	29.2	Temperature (K)	302

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.684	54	53.34	Slope = 32.3526 Intercept = -0.7315 Corr. coeff. = 0.9987
13	4.6	4.6	9.2	1.501	49	48.40	
10	3.7	3.7	7.4	1.347	43	42.48	
7	2.2	2.2	4.4	1.040	34	33.59	
5	1.4	1.4	2.8	0.831	26	25.68	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

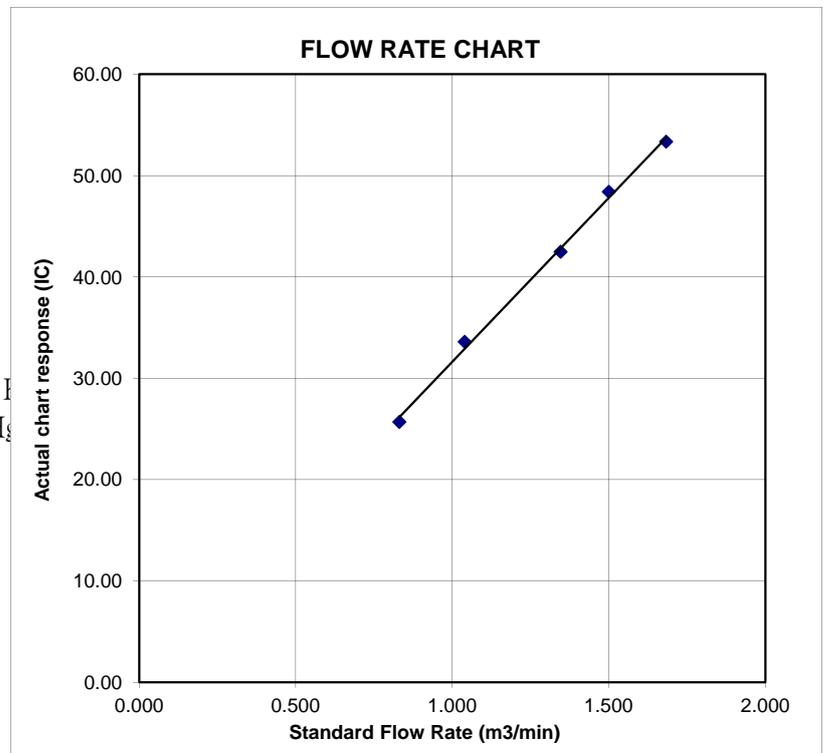
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House of Loi Tung Village

Date of Calibration: 23/7/2014

Location ID : AM7b

Next Calibration Date: 23/9/2014

Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa) 999.7  
 Temperature (°C) 30.6

Corrected Pressure (mm Hg) 749.775  
 Temperature (K) 304

### CALIBRATION ORIFICE

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

Qstd Slope -> 2.00757  
 Qstd Intercept -> -0.01628

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.720	54	53.14	Slope = 33.3908 Intercept = -4.0664 Corr. coeff. = 0.9974
13	4.9	4.9	9.8	1.543	48	47.23	
10	3.8	3.8	7.6	1.359	42	41.33	
7	2.4	2.4	4.8	1.082	34	33.46	
5	1.4	1.4	2.8	0.828	23	22.63	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

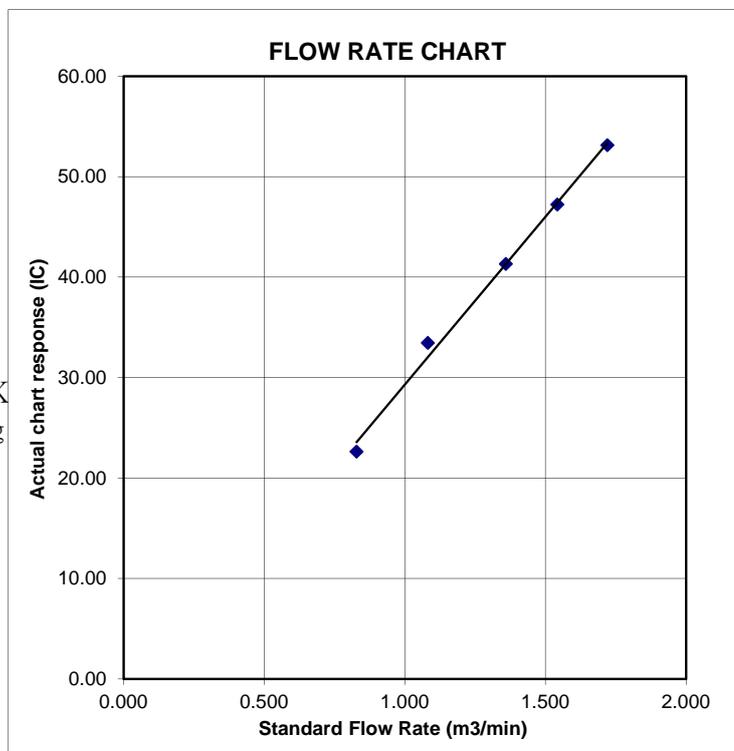
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Po Kat Tsai Village No. 4  
 Location ID : AM8

Date of Calibration: 23/7/2014  
 Next Calibration Date: 23/9/2014  
 Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa)	999.7	Corrected Pressure (mm Hg)	749.775
Temperature (°C)	30.6	Temperature (K)	304

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.706	62	61.01	Slope = 32.3537 Intercept = 5.0594 Corr. coeff. = 0.9981
13	4.7	4.7	9.4	1.511	54	53.14	
10	3.8	3.8	7.6	1.359	50	49.20	
7	2.4	2.4	4.8	1.082	40	39.36	
5	1.3	1.3	2.6	0.798	32	31.49	

**Calculations :**

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

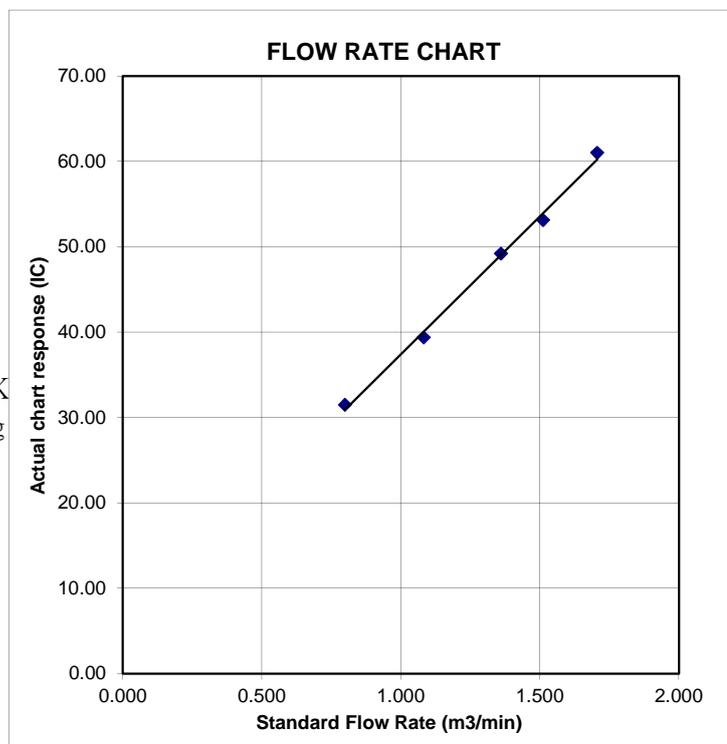
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 23/6/2014  
 Next Calibration Date: 23/8/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1004.1	Corrected Pressure (mm Hg)	753.075
Temperature (°C)	27.8	Temperature (K)	301

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.7	4.7	9.4	1.521	50	49.54	Slope = 30.6859 Intercept = 1.5416 Corr. coeff. = 0.9941
13	3.9	3.9	7.8	1.386	44	43.59	
10	3.5	3.5	7.0	1.314	41	40.62	
7	2.1	2.1	4.2	1.020	33	32.70	
5	1.3	1.3	2.6	0.804	27	26.75	

**Calculations :**

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

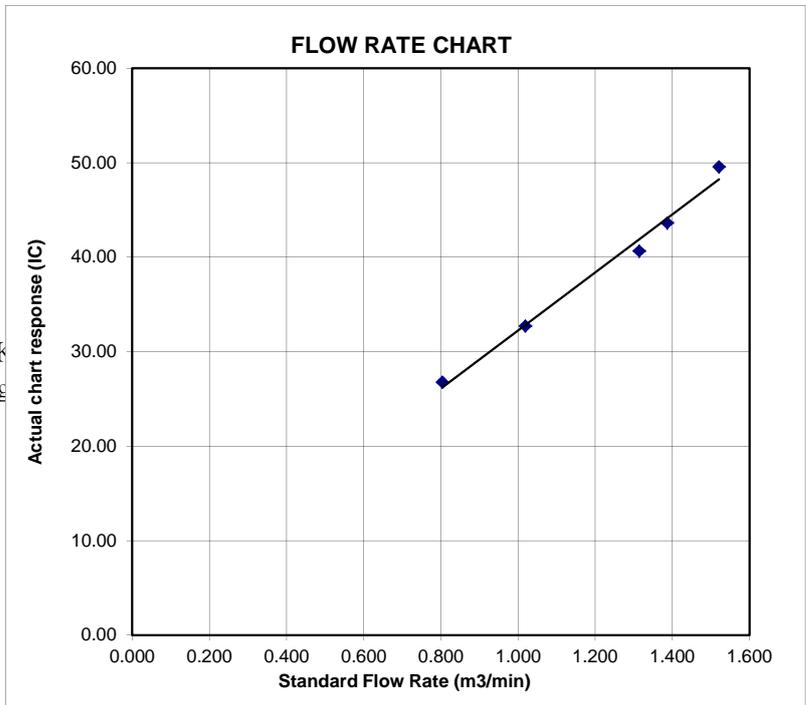
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Garden Farm, Tsung Yuen Ha Village  
 Location ID : AM1a

Date of Calibration: 21/8/2014  
 Next Calibration Date: 21/10/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa) 1010.7  
 Temperature (°C) 26.9

Corrected Pressure (mm Hg) 758.025  
 Temperature (K) 300

### CALIBRATION ORIFICE

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

Qstd Slope -> 2.00757  
 Qstd Intercept -> -0.01628

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	5.3	5.3	10.6	1.623	47	46.79	Slope =	33.6876	
13	4.3	4.3	8.6	1.462	42	41.81	Intercept =	-7.4866	
10	3.3	3.3	6.6	1.282	36	35.84	Corr. coeff. =	0.9978	
7	2.2	2.2	4.4	1.048	29	28.87			
5	1.4	1.4	2.8	0.838	20	19.91			

**Calculations :**

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

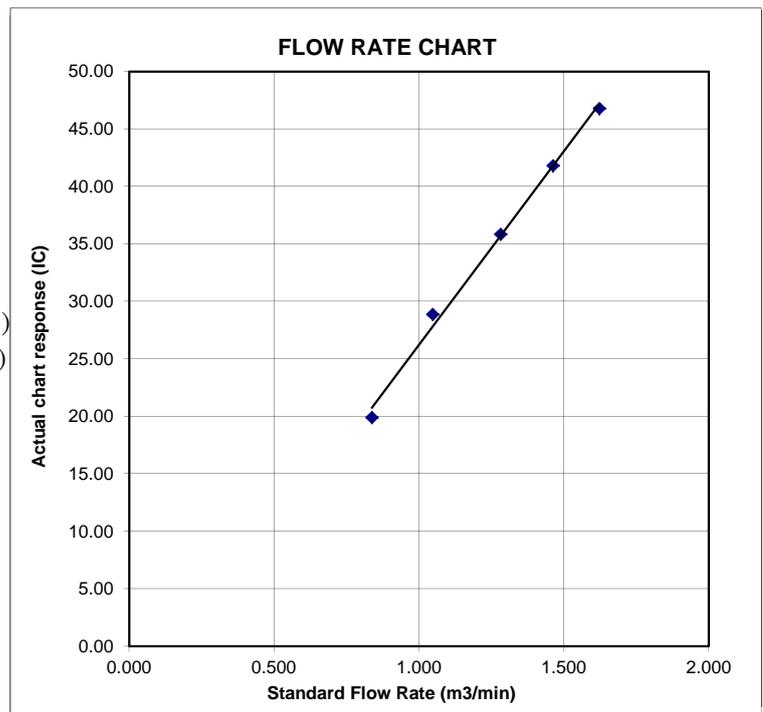
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K )  
 Pstd = actual pressure during calibration ( mm Hg )

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/8/2014  
 Next Calibration Date: 21/10/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1010.7	Corrected Pressure (mm Hg)	758.025
Temperature (°C)	26.9	Temperature (K)	300

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.754	56	55.75	Slope = 25.9448 Intercept = 10.7235 Corr. coeff. = 0.9981
13	4.8	4.8	9.6	1.545	51	50.77	
10	3.5	3.5	7.0	1.320	46	45.79	
7	2.3	2.3	4.6	1.072	39	38.83	
5	1.4	1.4	2.8	0.838	32	31.86	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

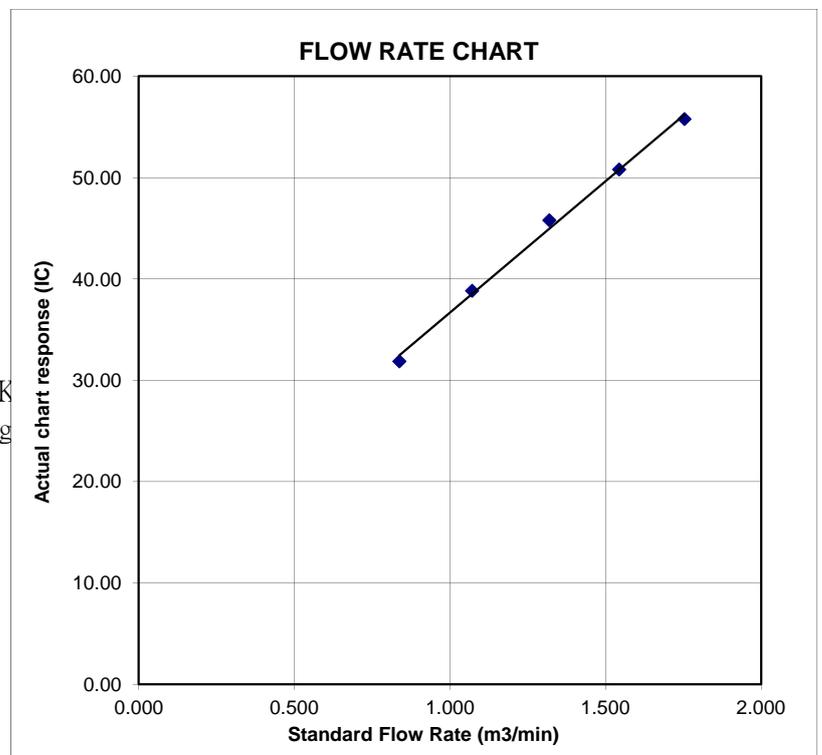
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/8/2014  
 Next Calibration Date: 21/10/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1010.7	Corrected Pressure (mm Hg)	758.025
Temperature (°C)	26.9	Temperature (K)	300

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.712	55	54.75	Slope = 31.6885 Intercept = 1.4008 Corr. coeff. = 0.9942
13	4.8	4.8	9.6	1.545	51	50.77	
10	3.3	3.3	6.6	1.282	44	43.80	
7	2.4	2.4	4.8	1.095	35	34.84	
5	1.4	1.4	2.8	0.838	28	27.87	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

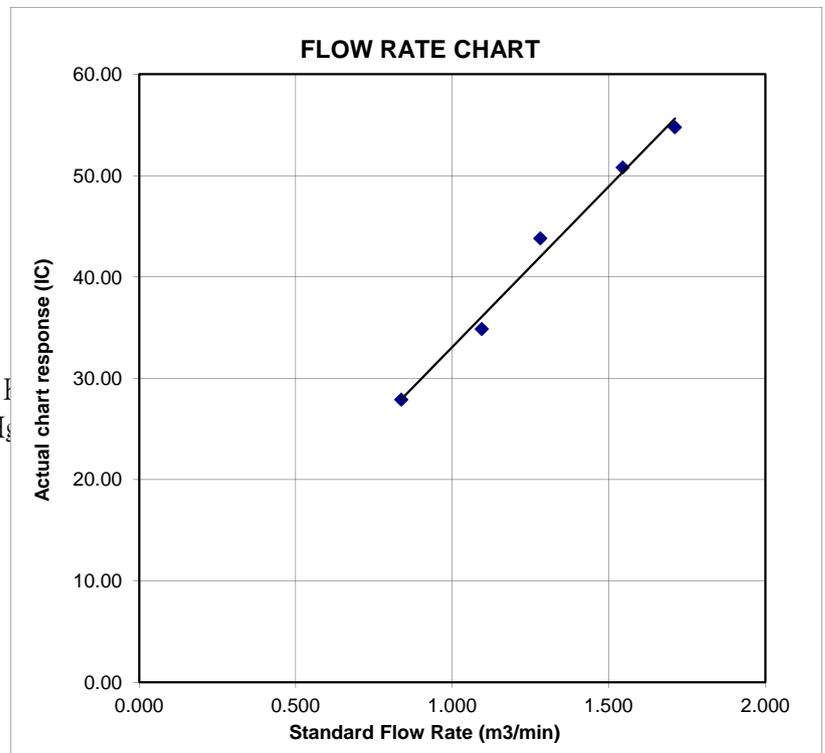
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House of Loi Tung Village

Date of Calibration: 23/8/2014

Location ID : AM7b

Next Calibration Date: 23/10/2014

Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa) 1009.8  
 Temperature (°C) 29.1

Corrected Pressure (mm Hg) 757.35  
 Temperature (K) 302

### CALIBRATION ORIFICE

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

Qstd Slope -> 2.00757  
 Qstd Intercept -> -0.01628

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION Slope = 34.7864 Intercept = 2.7832 Corr. coeff. = 0.9998
18	6.2	6.1	12.3	1.740	64	63.45	
13	4.9	4.9	9.8	1.554	57	56.51	
10	3.8	3.8	7.6	1.370	51	50.56	
7	2.5	2.5	5.0	1.112	42	41.64	
5	1.5	1.5	3.0	0.863	33	32.72	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

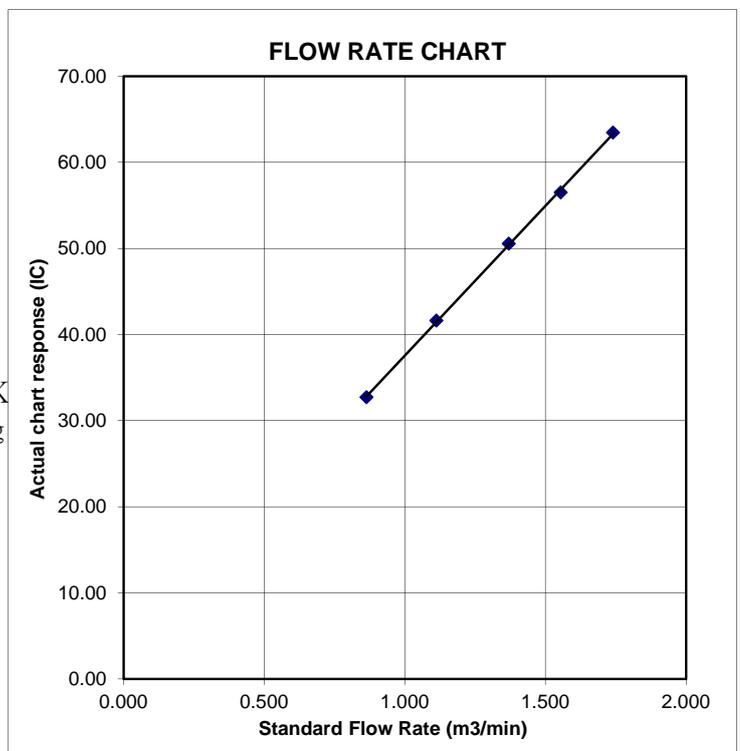
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Po Kat Tsai Village No. 4  
 Location ID : AM8

Date of Calibration: 23/8/2014  
 Next Calibration Date: 23/10/2014  
 Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa)	1009.8	Corrected Pressure (mm Hg)	757.35
Temperature (°C)	29.1	Temperature (K)	302

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	5.7	5.7	11.4	1.676	58	57.50	Slope = 30.8717 Intercept = 5.9092 Corr. coeff. = 0.9999		
13	4.4	4.4	8.8	1.473	52	51.56			
10	3.5	3.5	7.0	1.315	47	46.60			
7	2.3	2.3	4.6	1.067	39	38.67			
5	1.4	1.4	2.8	0.834	32	31.73			

**Calculations :**

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

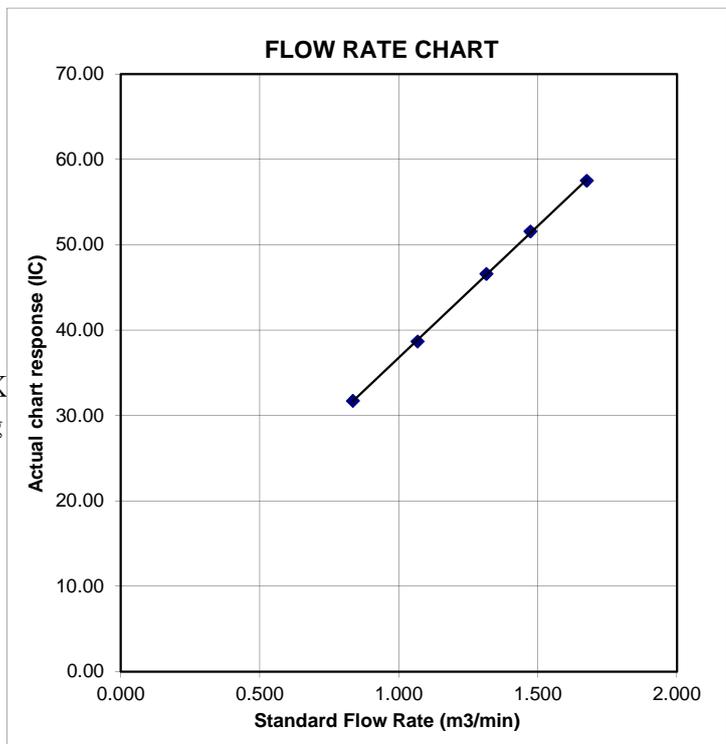
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/8/2014  
 Next Calibration Date: 21/10/2014  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1010.7	Corrected Pressure (mm Hg)	758.025
Temperature (°C)	26.9	Temperature (K)	300

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.1	5.1	10.2	1.592	50	49.78	Slope = 37.3205 Intercept = -9.3966 Corr. coeff. = 0.9966
13	4	4	8.0	1.411	43	42.81	
10	3.1	3.1	6.2	1.243	38	37.83	
7	2	2	4.0	1.000	29	28.87	
5	1.6	1.6	3.2	0.895	23	22.90	

**Calculations :**

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

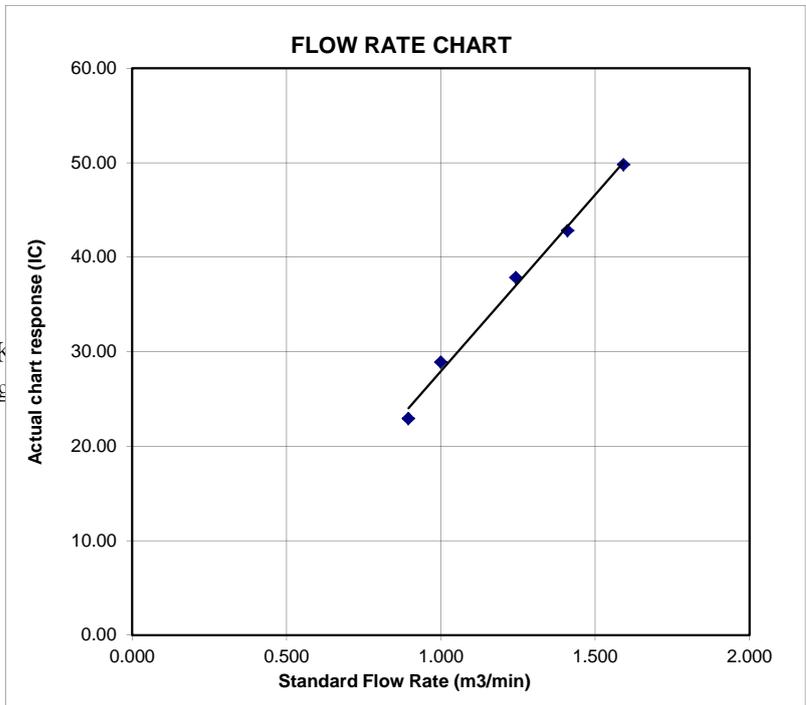
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure





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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 07, 2014 Rootmeter S/N 0438320 Ta (K) - 294  
 Operator Tisch Orifice I.D. - 1612 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3940	3.2	2.00
2	NA	NA	1.00	0.9790	6.4	4.00
3	NA	NA	1.00	0.8800	7.8	5.00
4	NA	NA	1.00	0.8350	8.8	5.50
5	NA	NA	1.00	0.6910	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866	0.7077	1.4077	0.9957	0.7142	0.8896
0.9823	1.0034	1.9908	0.9914	1.0127	1.2581
0.9804	1.1140	2.2258	0.9894	1.1243	1.4066
0.9791	1.1726	2.3345	0.9881	1.1834	1.4753
0.9739	1.4094	2.8155	0.9829	1.4224	1.7793
Qstd slope (m) = 2.00757			Qa slope (m) = 1.25710		
intercept (b) = -0.01628			intercept (b) = -0.01029		
coefficient (r) = 0.99989			coefficient (r) = 0.99989		
y axis = $\text{SQRT}[\text{H2O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H2O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

## CALIBRATION CERTIFICATE

Date: February 26, 2014

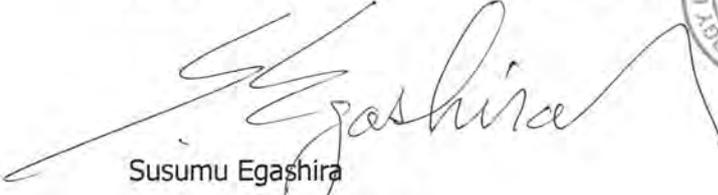
Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6502
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	563 CPM
Scale Setting	:	February 25, 2014

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

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**



  
Susumu Egashira  
Overseas Sales Division

SIBATA SCIENTIFIC TECHNOLOGY LTD.

1-1-62, Nakane, Soka, Saitama, 340-0005 Japan

TEL : 048-933-1582 FAX : 048-933-1591

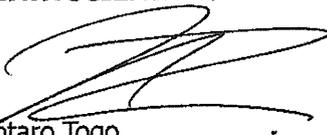
**CALIBRATION CERTIFICATE**

Date: December 18, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6505
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	591 CPM
Calibration Date	:	November 12, 2013

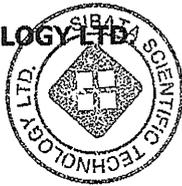
We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**  
Kentaro Togo

Section Manager

Overseas Sales Division





## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### SUB-CONTRACTING REPORT

CONTACT	: MR T W TAM	WORK ORDER	: HK1415131
CLIENT	: ACTION UNITED ENVIRO SERVICES	SUB-BATCH	: 1
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	DATE RECEIVED	: 16-JAN-2014
PROJECT	: ----	DATE OF ISSUE	: 16-MAY-2014
		NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

### General Comments

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>
Richard Fung	General Manager

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

WORK ORDER : HK1415131  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRO SERVICES  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1415131-001	S/N: 2X6145	AIR	16-JAN-2014	S/N: 2X6145

# Equipment Calibration Record

## Equipment Calibrated:

Type: Laser Dust monitor  
 Manufacturer: Sibata LD-3B  
 Serial No. 2X6145  
 Equipment Ref: EQ105  
 Job Order \_\_\_\_\_

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 6 January 2014

## Equipment Calibration Results:

Calibration Date: 16 & 17 January 2014

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
4hr23min	10:20 ~ 14:43	19.5	1024.3	0.031	3528	13.4
2hr55min	14:55 ~ 17:50	19.5	1024.3	0.052	3722	21.2
5hr19min	12:45 ~ 18:04	20.1	1023.3	0.102	14812	46.4

Sensitivity Adjustment Scale Setting (Before Calibration) 590 (CPM)

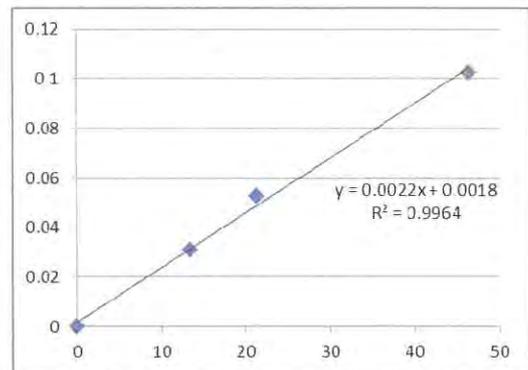
Sensitivity Adjustment Scale Setting (After Calibration) 597 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9964

Validity of Calibration Record 22 Jan 2014



Operator: Tung Chi Sun Signature:  Date: 22 January 2014

QC Reviewer: Ben Tam Signature:  Date: 22 January 2014

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 6-Jan-14
Location ID :	Calibration Room	Next Calibration Date: 6-Apr-14

### CONDITIONS

Sea Level Pressure (hPa)	1018	Corrected Pressure (mm Hg)	763.5
Temperature (°C)	18.5	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Calibration Date->	9-Apr-13	Expiry Date->	9-Apr-14

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751 Intercept = 17.5690 Corr. coeff. = 0.9966
13	4.6	4.6	9.2	1.460	50	50.67	
10	2.8	2.8	5.6	1.141	44	44.59	
8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

**Calculations :**

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

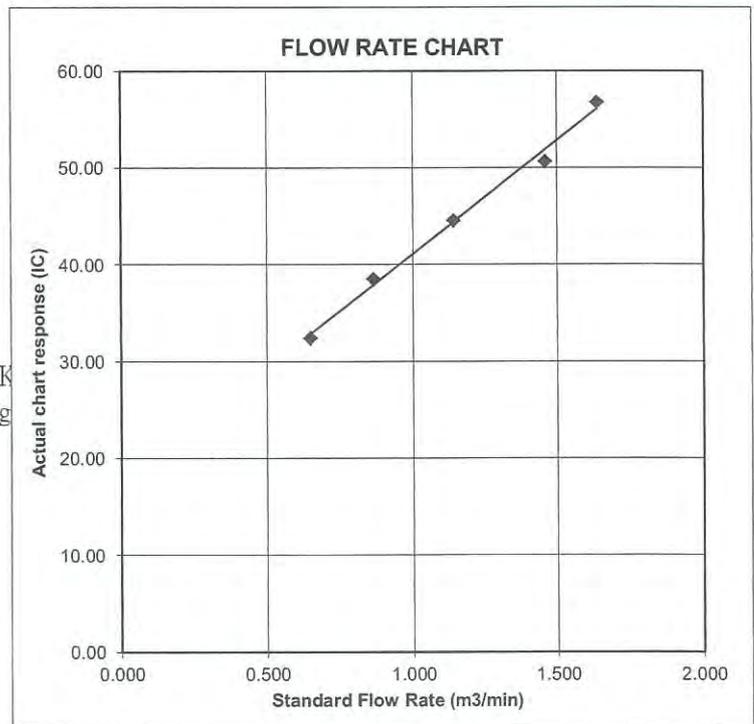
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 I = actual chart response  
 m = calibrator Qstd slope  
 b = calibrator Qstd intercept  
 Ta = actual temperature during calibration ( deg K)  
 Pstd = actual pressure during calibration ( mm Hg)

**For subsequent calculation of sampler flow:**

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

m = sampler slope  
 b = sampler intercept  
 I = chart response  
 Tav = daily average temperature  
 Pav = daily average pressure





## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### SUB-CONTRACTING REPORT

CONTACT	: MR T W TAM	WORK ORDER	: HK1415129
CLIENT	: ACTION UNITED ENVIRO SERVICES	SUB-BATCH	: 1
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	DATE RECEIVED	: 16-JAN-2014
PROJECT	: ----	DATE OF ISSUE	: 16-MAY-2014
		NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

#### General Comments

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

#### Signatories

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

<i>Signatories</i>	<i>Position</i>
Richard Fung	General Manager

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

WORK ORDER : HK1415129  
SUB-BATCH : 1  
CLIENT : ACTION UNITED ENVIRO SERVICES  
PROJECT : ----



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1415129-001	S/N: 2X6146	AIR	16-JAN-2014	S/N: 2X6146

# Equipment Calibration Record

## Equipment Calibrated:

Type: Laser Dust monitor  
 Manufacturer: Sibata LD-3B  
 Serial No. 2X6146  
 Equipment Ref: EQ106  
 Job Order \_\_\_\_\_

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 6 January 2014

## Equipment Calibration Results:

Calibration Date: 16 & 17 January 2014

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
4hr23min	10:20 ~ 14:43	19.5	1024.3	0.031	3410	12.9
2hr55min	14:55 ~ 17:50	19.5	1024.3	0.052	3701	21.1
5hr19min	12:45 ~ 18:04	20.1	1023.3	0.102	14533	45.5

Sensitivity Adjustment Scale Setting (Before Calibration) 589 (CPM)

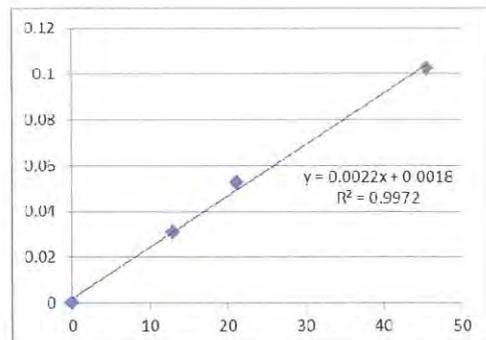
Sensitivity Adjustment Scale Setting (After Calibration) 593 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9972

Validity of Calibration Record 22 Jan 2014



Operator : Tung Chi Sun Signature :  Date : 22 January 2014

QC Reviewer : Ben Tam Signature :  Date : 22 January 2014

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 6-Jan-14
Location ID :	Calibration Room	Next Calibration Date: 6-Apr-14

### CONDITIONS

Sea Level Pressure (hPa)	1018	Corrected Pressure (mm Hg)	763.5
Temperature (°C)	18.5	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11662
Model->	5025A	Qstd Intercept ->	-0.01714
Calibration Date->	9-Apr-13	Expiry Date->	9-Apr-14

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751 Intercept = 17.5690 Corr. coeff. = 0.9966
13	4.6	4.6	9.2	1.460	50	50.67	
10	2.8	2.8	5.6	1.141	44	44.59	
8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

#### Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K)

Pstd = actual pressure during calibration ( mm Hg)

#### For subsequent calculation of sampler flow:

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

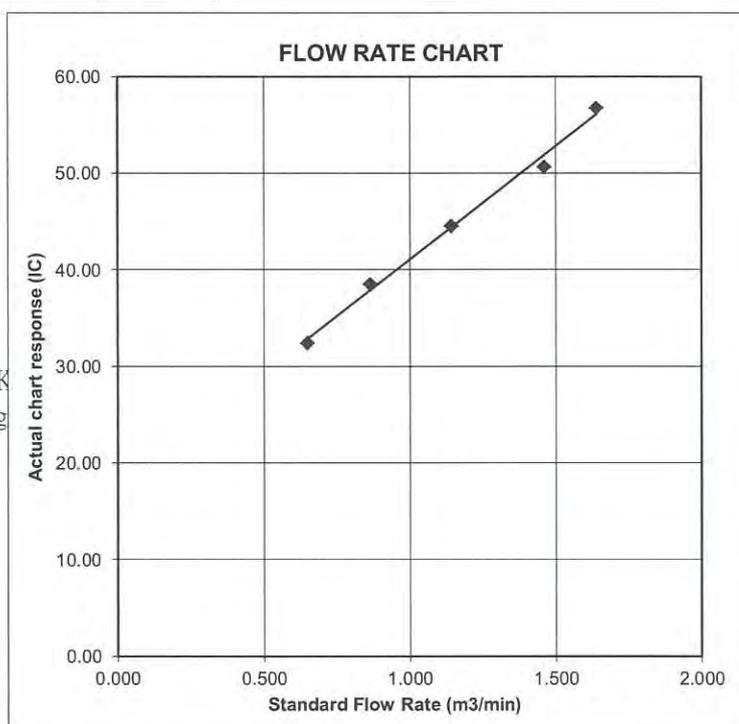
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C142545

證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC14-0853 )

Date of Receipt / 收件日期 : 14 April 2014

Description / 儀器名稱 : Acoustical Calibrator (EQ081)

Manufacturer / 製造商 : Brüel & Kjær

Model No. / 型號 : 4231

Serial No. / 編號 : 2326408

Supplied By / 委託者 : Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building,

35-41 Tai Lin Pai Road, Kwai Chung, N.T.

### TEST CONDITIONS / 測試條件

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

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

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 26 April 2014

### TEST RESULTS / 測試結果

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

All results are within manufacturer's specification.

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

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

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

Tested By :

測試

  
K C Lee  
Project Engineer

Certified By :

核證

  
K M Wu  
Engineer

Date of Issue :

簽發日期

29 April 2014

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

e/n 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C142545  
證書編號

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

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

- Test procedure : MA100N.

- Results :

### 5.1 Sound Level Accuracy

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

### 5.2 Frequency Accuracy

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

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

### Note :

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



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

## Certificate of Calibration 校正證書

Certificate No. : C142221

證書編號

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

Note :

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

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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



# Certificate of Calibration 校正證書

Certificate No. : C142223  
證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC14-0853 )      Date of Receipt / 收件日期 : 28 March 2014  
Description / 儀器名稱 : Sound Level Meter (EQ011)  
Manufacturer / 製造商 : Rion  
Model No. / 型號 : NL-52  
Serial No. / 編號 : 01121362  
Supplied By / 委託者 : Action-United Environmental Services and Consulting  
Unit A, 20/F., Gold King Industrial Building,  
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

## TEST CONDITIONS / 測試條件

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

## TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 8 April 2014

## TEST RESULTS / 測試結果

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

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

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

Tested By :   
測試 : K C Lee  
Project Engineer

Certified By :   
核證 : K M Wu  
Engineer

Date of Issue : 10 April 2014  
簽發日期

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

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

# Certificate of Calibration

## 校正證書

Certificate No. : C142223  
證書編號

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

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.9	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.9 (Ref.)
				104.00		103.9
				114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.9	Ref.
			Slow			93.9	± 0.3

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

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

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E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C142223

證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.2	-8.6 ± 1.4
					500 Hz	90.6	-3.2 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	95.1	+1.2 ± 1.6
					4 kHz	94.9	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.4	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	C	Fast	94.00	63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.7	-0.2 ± 1.5
					250 Hz	93.9	0.0 ± 1.4
					500 Hz	93.9	0.0 ± 1.4
					1 kHz	93.9	Ref.
					2 kHz	93.7	-0.2 ± 1.6
					4 kHz	93.1	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.5	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04596

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

#### Note :

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

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

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



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C142224

證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC14-0853 )

Date of Receipt / 收件日期 : 28 March 2014

Description / 儀器名稱 : Sound Level Meter (EQ013)

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-52

Serial No. / 編號 : 00921191

Supplied By / 委託者 : Action-United Environmental Services and Consulting  
Unit A, 20/F., Gold King Industrial Building,  
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

### TEST CONDITIONS / 測試條件

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

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

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 8 April 2014

### TEST RESULTS / 測試結果

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

All results are within manufacturer's specification.

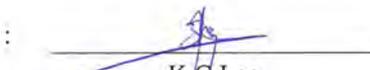
The results are detailed in the subsequent page(s).

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

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

Tested By

測試

  
K C Lee  
Project Engineer

Certified By

核證

  
K M Wu  
Engineer

Date of Issue

簽發日期

10 April 2014

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

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

# Certificate of Calibration

## 校正證書

Certificate No. : C142224

證書編號

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

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.7	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.7	Ref.
			Slow			93.7	± 0.3

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

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# Certificate of Calibration

## 校正證書

Certificate No. : C142224

證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	A	Fast	94.00	63 Hz	67.4	-26.2 ± 1.5
					125 Hz	77.5	-16.1 ± 1.5
					250 Hz	85.0	-8.6 ± 1.4
					500 Hz	90.4	-3.2 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	94.9	+1.2 ± 1.6
					4 kHz	94.7	+1.0 ± 1.6
					8 kHz	92.6	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.3	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L <sub>A</sub>	C	Fast	94.00	63 Hz	92.8	-0.8 ± 1.5
					125 Hz	93.5	-0.2 ± 1.5
					250 Hz	93.7	0.0 ± 1.4
					500 Hz	93.7	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	93.5	-0.2 ± 1.6
					4 kHz	92.9	-0.8 ± 1.6
					8 kHz	90.7	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.3	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04223

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

#### Note :

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

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TEST REPORT  
for  
PRECISION  
SOUND LEVEL METER  
(NX-42EX installed)

Model : N L - 5 2

Serial No. : 00142580

Microphone No. : 06011

Preamplifier No. : 32608

Condition : Temperature 25 °C

Humidity 30 %RH

Date : March, 12, 2014

Signature : *Y. Narayana*

Pass

1. Frequency weightings (Fig. 1)

Frequency weighting A

Frequency weighting C

Frequency weighting Z

2. Level linearity error (dB)

Reference signal level (Ref.) : 94.0 dB (at 1 kHz, 8 kHz), 74.0 dB (at 31.5 Hz)

Frequency weighting : A

Frequency	Indicated value	Difference with Reference signal level (dB)					
		25.0	74.0	94.0	98.0	114.0	136.0
31.5 Hz	-0.2	Ref.	—	-0.1	—	—	—
1 kHz	0.0	—	Ref.	—	0.0	—	0.0
8 kHz	0.0	—	Ref.	—	—	0.0	—
Tolerance limit	±0.3	—	—	±0.3	±0.2	±0.3	±0.3

3. Toneburst response (Time weighted sound level)

Input signal level : 127 dB

Toneburst : Frequency : 4 kHz, duration : 0.25 ms

Frequency weighting : A, Time-weighting : F

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
100.0	99.7	-0.3	±1.0

4. Time weighting I (impulse)

Input signal level : 120 dB

Toneburst : Frequency : 4 kHz, duration : 5 ms, period : 500 ms

Frequency weighting : A

(dB)			
Design goal	Indicated value	Difference	Tolerance limit
111.2	110.3	-0.9	±2.0

\*When the optional Extended Function Program NX-42EX is installed, time weighting I(impulse) can be selected in only sub-channel.

5. Peak sound level (dB)

Frequency weighting : C

Frequency (Hz)	Number of cycles in test signal	(dB)				
		Input signal level	Design goal	Indicated value	Difference	Tolerance limit
			$L_c$	$L_{cpeak}$		
31.5	1 cycle	137.0	136.5	137.3	0.8	±2.0
500	Positive half cycle	137.0	139.4	139.2	-0.2	±1.0
	Negative half cycle	137.0	139.4	139.2	-0.2	±1.0

6. Response to repeated to toneburst

Input signal level : 130.0 dB + 8 dB

Frequency weighting : A, Time-weighting : S

Toneburst : Frequency : 2 kHz, duration : 5 ms, period : 25 ms

(dB)				
Peak-to-rms ratio	Design goal	Indicated value	Difference	Tolerance limit
3.16	131.0	131.0	0.0	±0.5

7. Inherent noise level (dB)

(dB)		
Frequency weighting	Indicated value	Tolerance limit
A	10.5	17 or less
C	15.0	25 or less
Z	20.6	30 or less

8. Instrumental error

84.0 dB ± 0.7 dB

0.0 dB

Applicable standards

JIS C 1509-1 : 2005 Class 1

IEC 61672-1 : 2002 Class 1

ANSI S1.4-1983 Type 1

ANSI S1.43-1997 Type 1

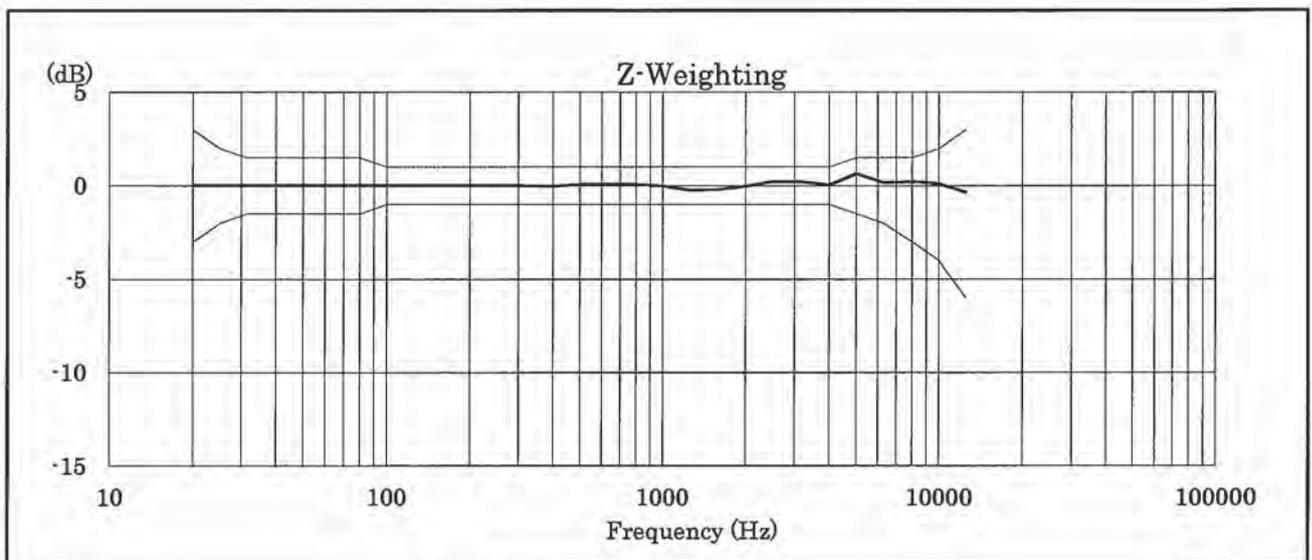
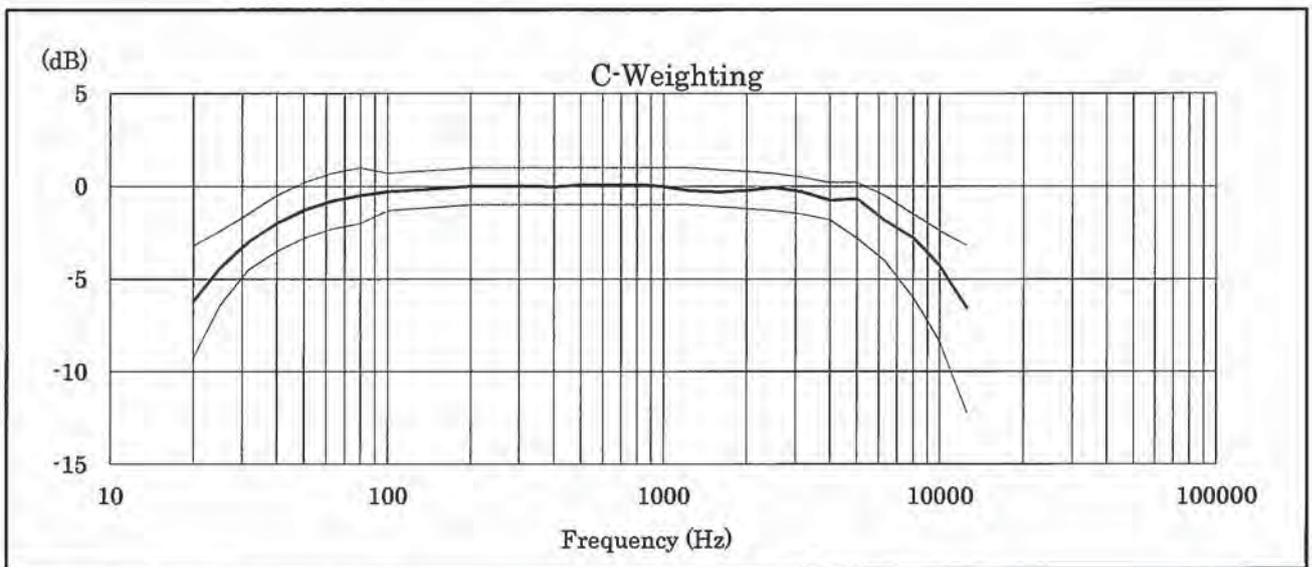
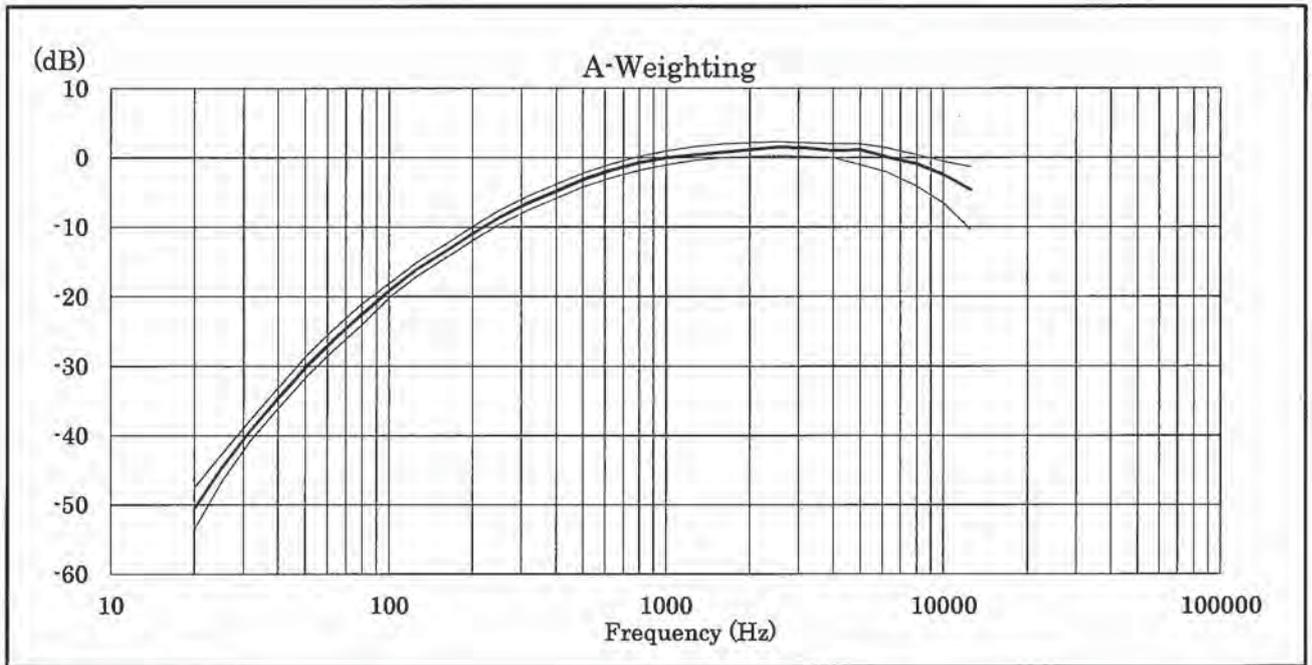
CE marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC)

WEEE Directive (2002/96/EC)

Chinese RoHS



Relative free field frequency response





輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C142547

證書編號

ITEM TESTED / 送檢項目 ( Job No. / 序引編號 : IC14-0853 )

Date of Receipt / 收件日期 : 14 April 2014

Description / 儀器名稱 : Sound Level Meter (EQ067)

Manufacturer / 製造商 : Rion

Model No. / 型號 : NL-31

Serial No. / 編號 : 00410221

Supplied By / 委託者 : Action-United Environmental Services and Consulting  
Unit A, 20/F., Gold King Industrial Building,  
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

### TEST CONDITIONS / 測試條件

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

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

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 26 April 2014

### TEST RESULTS / 測試結果

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

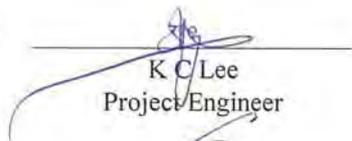
All results are within manufacturer's specification.

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

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

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

Tested By :  
測試

  
K C Lee  
Project Engineer

Certified By :  
核證

  
K M Wu  
Engineer

Date of Issue : 29 April 2014  
簽發日期

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

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Sun Creation Engineering Limited - Calibration & Testing Laboratory

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

輝創工程有限公司 - 校正及檢測實驗室

地址 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C142547

證書編號

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

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L <sub>A</sub>	A	Fast	94.00	1	93.8	± 1.1

#### 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L <sub>A</sub>	A	Fast	94.00	1	93.8 (Ref.)
				104.00		103.8
				114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

### 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L <sub>A</sub>	A	Fast	94.00	1	93.8	Ref.
			Slow			93.8	± 0.3

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

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# Certificate of Calibration

## 校正證書

Certificate No. : C142547

證書編號

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class I Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L <sub>A</sub>	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.6	-16.1 ± 1.5
					250 Hz	85.1	-8.6 ± 1.4
					500 Hz	90.5	-3.2 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	95.1	+1.2 ± 1.6
					4 kHz	94.9	+1.0 ± 1.6
					8 kHz	92.8	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class I Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L <sub>C</sub>	C	Fast	94.00	63 Hz	92.9	-0.8 ± 1.5
					125 Hz	93.6	-0.2 ± 1.5
					250 Hz	93.8	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.8	Ref.
					2 kHz	93.7	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	90.9	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

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輝創工程有限公司 – 校正及檢測實驗室

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C142547

證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 319734

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

### Note :

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

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

# Certificate of Calibration

## 校正證書

Certificate No. : C142873  
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853)

Date of Receipt / 收件日期 : 8 May 2014

Description / 儀器名稱 : Integrating Sound Level Meter (EQ065)  
Manufacturer / 製造商 : Brüel & Kjær  
Model No. / 型號 : 2238  
Serial No. / 編號 : 2337676  
Supplied By / 委託者 : Action-United Environmental Services and Consulting  
Unit A, 20/F., Gold King Industrial Building,  
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

### TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C  
Line Voltage / 電壓 : ---

Relative Humidity / 相對濕度 : (55 ± 20)%

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 13 May 2014

### TEST RESULTS / 測試結果

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

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

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

Tested By  
測試

  
K C Lee  
Project Engineer

Certified By  
核證

  
K M Wu  
Engineer

Date of Issue  
簽發日期

15 May 2014

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# Certificate of Calibration

## 校正證書

Certificate No. : C142873

證書編號

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

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L <sub>AFF</sub>	A	F	94.00	1	94.2

##### 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L <sub>AFF</sub>	A	F	94.00	1	94.0	± 0.7

##### 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L <sub>AFF</sub>	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

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# Certificate of Calibration

## 校正證書

Certificate No. : C142873

證書編號

### 6.2 Time Weighting

#### 6.2.1 Continuous Signal

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

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

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

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L <sub>AFP</sub>	A	F	94.00	31.5 Hz	54.8	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)					

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

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# Certificate of Calibration

## 校正證書

Certificate No. : C142873  
證書編號

### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L <sub>CFP</sub>	C	F	94.00	31.5 Hz	91.1	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

### 6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L <sub>Aeq</sub>	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
								90	89.7	± 0.5
								80	79.7	± 1.0
								70	69.7	± 1.0
			60 sec.			1/10 <sup>2</sup>				
			5 min.			1/10 <sup>3</sup>				
						1/10 <sup>4</sup>				

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812708

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

- Uncertainties of Applied Value :

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

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

#### Note :

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

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

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

Sun Creation Engineering Limited - Calibration & Testing Laboratory

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

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

**WORK ORDER:** HK1421663  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 08/07/2014  
**DATE OF ISSUE:** 16/07/2014

### COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.  
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Dissolved Oxygen and Temperature  
Description: Dissolved Oxygen Meter  
Brand Name: YSI  
Model No.: Pro 20  
Serial No.: 12C100570  
Equipment No.: --  
Date of Calibration: 08 July, 2014

### NOTES

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

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

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**Work Order:** HK1421663  
**Date of Issue:** 16/07/2014  
**Client:** ACTION UNITED ENVIRO SERVICES



**Description:** Dissolved Oxygen Meter  
**Brand Name:** YSI  
**Model No.:** Pro 20  
**Serial No.:** 12C100570  
**Equipment No.:** --  
**Date of Calibration:** 08 July, 2014

**Date of next Calibration:** 08 October, 2014

**Parameters:**

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.77	3.81	+0.04
5.16	5.16	0.00
7.98	7.88	-0.10
	Tolerance Limit (mg/L)	±0.20

**Temperature**

Method Ref: Section 6 of International Accreditation New Zealand Technical

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

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
15.5	15.2	-0.3
28.5	28.8	+0.3
36.5	36.2	-0.3
	Tolerance Limit (°C)	±2.0

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

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



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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR BEN TAM  
**CLIENT:** ACTION UNITED ENVIRO SERVICES  
**ADDRESS:** RM A 20/F., GOLDEN KING IND BLDG,  
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KWAI CHUNG,  
N.T., HONG KONG

**WORK ORDER:** HK1421664  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 08/07/2014  
**DATE OF ISSUE:** 16/07/2014

**PROJECT:** --

### COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.  
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Turbidity  
Equipment Type: Turbidimeter  
Brand Name: HACH  
Model No.: 2100Q  
Serial No.: 12060C018266  
Equipment No.: --  
Date of Calibration: 08 July, 2014

### NOTES

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

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

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



**Work Order:** HK1421664  
**Date of Issue:** 16/07/2014  
**Client:** ACTION UNITED ENVIRO SERVICES

**Equipment Type:** Turbidimeter  
**Brand Name:** HACH  
**Model No.:** 2100Q  
**Serial No.:** 12060C018266  
**Equipment No.:** --

**Date of Calibration:** 08 July, 2014      **Date of next Calibration:** 08 October, 2014

## Parameters:

### Turbidity

**Method Ref: APHA 21st Ed. 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.08	--
4	4.30	+7.5
40	37.6	-6.0
80	78.4	-2.0
400	402	+0.5
800	848	+6.0
	Tolerance Limit (±%)	10.0

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

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

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



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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR BEN TAM  
**CLIENT:** ACTION UNITED ENVIRO SERVICES  
**ADDRESS:** RM A 20/F., GOLDEN KING IND BLDG,  
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KWAI CHUNG,  
**PROJECT:** N.T., HONG KONG

**WORK ORDER:** HK1421347  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 07/07/2014  
**DATE OF ISSUE:** 21/07/2014

### COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.  
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: pH  
Description: pH meter  
Brand Name: --  
Model No.: 8685  
Serial No.: 1067687  
Equipment No.: --  
Date of Calibration: 08 July, 2014

### NOTES

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

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

# REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Work Order: HK1421347  
Date of Issue: 21/07/2014  
Client: ACTION UNITED ENVIRO SERVICES



Description: pH meter  
Brand Name: --  
Model No.: 8685  
Serial No.: 1067687  
Equipment No.: --

Date of Calibration: 08 July, 2014

Date of next Calibration:

08 October, 2014

## Parameters:

### pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	3.8	-0.20
7.0	7.1	+0.10
10.0	9.9	-0.10
	Tolerance Limit (pH Unit)	±0.20

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

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



Hong Kong Accreditation Service  
香港認可處

**Certificate of Accreditation**  
認可證書

*This is to certify that*  
特此證明

**ALS TECHNICHEM (HK) PTY LIMITED**

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

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

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

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

**Environmental Testing**  
環境測試

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

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

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

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

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

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



## **Appendix G**

### **Event and Action Plan**

Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
<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	ACTION CONTRACTOR			
	ET	IEC	ER	
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 H**

### **Impact Monitoring Schedule**

**Impact Monitoring Schedule for the Reporting Period – August 2014**

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

# 24-hour TSP monitoring for AM1a was rescheduled from 8 Aug to 12 Aug due to power failure of HVS.

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

<b>Contract 2 (C2)</b>	Air Quality	AM7b & AM8
	Construction Noise	NM5, NM6, NM7, NM8
<b>Contract 5 (C5)</b>	Air Quality	AM1a, AM2 & AM3
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control
<b>Contract 3 (C3)</b>	Air Quality	AM9b
	Construction Noise	NM8, NM9 & NM10
	Water Quality	WM4, WM4-Control A & WM4-Control B

**Impact Monitoring Schedule for next Reporting Period – September 2014**

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

<b>Contract 2 (C2)</b>	Air Quality	AM7b & AM8
	Construction Noise	NM5, NM6, NM7, NM8

<b>Contract 5 (C5)</b>	Air Quality	AM1a, AM2 & AM3
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control

<b>Contract 3 (C3)</b>	Air Quality	AM9b
	Construction Noise	NM8, NM9 & NM10
	Water Quality	WM4, WM4-Control A & WM4-Control B

## **Appendix I**

### **Database of Monitoring Result**

**24-hour TSP Monitoring Data**

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-HR TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
<b>AM1a - Garden Farm, Tsung Yuen Ha Village</b>															
2-Aug-14	207675	8788.55	8812.55	1440.00	42	43	42.5	28.8	1004.8	1.42	2046	2.7101	2.8099	0.0998	49
12-Aug-14 #	27052	8812.55	8836.57	1441.20	36	39	37.5	28.5	1005.1	1.27	1834	2.7597	2.8240	0.0643	35
14-Aug-14	207698	8836.57	8860.57	1440.00	40	44	42.0	28.4	1005.4	1.41	2026	2.7340	2.8135	0.0795	39
20-Aug-14	27053	8860.57	8884.46	1433.40	42	44	43.0	24.7	1010.4	1.45	2075	2.8462	2.8925	0.0463	22
26-Aug-14	27074	8884.46	8908.46	1440.00	42	44	43.0	30.1	1010.6	1.49	2140	2.8003	2.8370	0.0367	17
<b>AM2 - Village House near Lin Ma Hang Road</b>															
2-Aug-14	207676	4252.59	4276.11	1411.20	30	33	31.5	28.8	1004.8	1.06	1502	2.7153	2.8098	0.0945	63
8-Aug-14	27053	4276.11	4299.76	1419.00	33	34	33.5	28.8	1004.4	1.12	1594	2.7552	2.8437	0.0885	56
14-Aug-14	27087	4299.76	4323.40	1418.40	30	32	31.0	28.4	1005.4	1.05	1490	2.7008	2.7784	0.0776	52
20-Aug-14	27054	4323.40	4347.55	1449.00	37	40	38.5	24.7	1010.4	1.28	1858	2.8252	2.8519	0.0267	14
26-Aug-14	27075	4347.55	4371.41	1431.60	39	40	39.5	30.1	1010.6	1.09	1567	2.8288	3.0061	0.1773	113
<b>AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village</b>															
2-Aug-14	207677	5257.86	5281.87	1440.60	39	40	39.5	28.8	1004.8	1.23	1773	2.7052	2.8492	0.1440	81
8-Aug-14	207693	5281.87	5305.87	1440.00	38	40	39.0	28.8	1004.4	1.22	1750	2.7173	2.8209	0.1036	59
14-Aug-14	27088	5305.87	5329.87	1440.00	38	38	38.0	28.4	1005.4	1.19	1708	2.7197	2.8180	0.0983	58
20-Aug-14	27055	5329.87	5353.88	1440.60	52	53	52.5	24.7	1010.4	1.64	2368	2.8188	2.8787	0.0599	25
26-Aug-14	27076	5353.88	5377.88	1440.00	38	40	39.0	30.1	1010.6	1.17	1691	2.8442	2.9294	0.0852	50
<b>AM7b - Loi Tung Village House</b>															
2-Aug-14	207678	12828.35	12852.35	1440.00	38	39	38.5	28.8	1004.8	1.26	1818	2.6958	2.8657	0.1699	93
8-Aug-14	207681	12852.35	12876.35	1440.00	39	40	39.5	28.8	1004.4	1.29	1861	2.7228	2.7951	0.0723	39
14-Aug-14	27089	12876.35	12900.36	1440.60	30	37	33.5	28.4	1005.4	1.12	1607	2.7002	2.7528	0.0526	33
20-Aug-14	27056	12900.36	12924.45	1445.40	32	40	36.0	28.6	1005.1	1.19	1719	2.8214	2.8557	0.0343	20
26-Aug-14	27077	12924.45	12948.45	1440.00	30	34	32.0	30.1	1010.6	0.83	1196	2.8149	2.8536	0.0387	32
<b>AM8 - Po Kat Tsai Village No. 4</b>															
2-Aug-14	207679	6698.96	6722.97	1440.60	38	39	38.5	28.8	1004.8	1.02	1471	2.7214	2.7944	0.0730	50
8-Aug-14	207694	6722.97	6746.97	1440.00	38	38	38.0	28.8	1004.4	1.01	1448	2.7158	2.7670	0.0512	35
14-Aug-14	27092	6746.97	6770.97	1440.00	36	38	37.0	28.4	1005.4	0.98	1406	2.6808	2.7207	0.0399	28
20-Aug-14	27057	6770.97	6794.98	1440.60	38	39	38.5	24.7	1010.4	1.03	1487	2.8082	2.8459	0.0377	25
26-Aug-14	27078	6794.98	6818.98	1440.00	28	30	29.0	30.1	1010.6	0.74	1064	2.8013	2.8245	0.0232	22
<b>AM9b - Nam Wa Po Village House No. 80</b>															
2-Aug-14	207680	14256.23	14280.23	1440.00	20	20	20.0	28.8	1004.8	0.59	856	2.7264	2.7652	0.0388	45
8-Aug-14	207695	14280.23	14304.23	1440.00	29	30	29.5	28.8	1004.4	0.90	1297	2.7064	2.7499	0.0435	34
14-Aug-14	27090	14306.11	14330.18	1444.20	26	28	27.0	28.4	1005.4	0.82	1186	2.7095	2.7405	0.0310	26

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-HR TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
20-Aug-14	27058	14330.18	14354.19	1440.60	34	36	35.0	24.7	1010.4	1.09	1569	2.8415	2.8825	0.0410	26
26-Aug-14	27079	14354.19	14378.19	1440.00	43	45	44.0	30.1	1010.6	1.42	2044	2.8220	2.8587	0.0367	18

Remark: # 24-hr TSP monitoring was rescheduled from 8 Aug to 12 Aug due to power failure of HVS.

**Construction Noise Monitoring Results, dB(A)**

Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	façade correction
<b>NM1 - Tsung Yuen Ha Village House No. 63</b>																					
6-Aug-14	11:05	57.4	59.3	53.1	54.3	56.3	51.4	55.1	57.5	51.0	60.0	61.1	51.3	60.2	62.1	50.8	57.8	60.8	50.6	58	NA
12-Aug-14	10:44	54.4	55.9	50.4	52.4	54.7	49.1	51.7	53.4	48.2	52.6	54.7	49.2	53.1	57.2	49.4	54.9	57.1	50.6	53	NA
18-Aug-14	11:09	53.7	56.2	50.2	55.8	58.0	49.7	54.1	56.6	48.6	51.5	53.2	47.8	53.1	54.9	46.9	55.4	52.8	45.0	54	NA
23-Aug-14	10:50	61.1	61.9	54.4	56.1	57.8	50.2	55.8	57.4	47.7	53.1	54.7	50.2	52.6	53.8	50.0	52.6	54.8	47.6	56	NA
29-Aug-14	10:43	53.7	56.1	47.5	56.8	60.8	49.6	57.3	60.3	49.8	56.7	59.3	51.1	56.7	58.8	52.7	58.4	62.5	51.9	57	NA
<b>NM2 - Village House near Lin Ma Hang Road</b>																					
6-Aug-14	17:02	60.2	62.4	52.7	59.5	62.6	52.3	62.5	66.7	45.7	62.1	68.7	46.6	64.1	68.0	44.6	61.2	63.9	44.6	62	NA
12-Aug-14	11:28	62.2	66.9	46.5	62.0	66.2	51.0	60.3	64.4	44.3	59.4	63.9	43.9	60.5	65.4	42.6	56.9	56.0	43.1	61	NA
18-Aug-14	13:48	61.9	65.6	53.0	61.8	66.7	52.7	59.7	63.5	49.6	60.1	64.4	50.2	58.9	63.0	49.8	65.7	67.1	50.6	62	NA
23-Aug-14	10:48	65.1	71.7	45.8	56.9	61.1	46.1	53.4	54.0	45.4	55.2	59.4	45.4	59.2	56.9	44.9	57.7	56.1	44.5	60	NA
29-Aug-14	11:23	61.1	65.1	43.1	58.4	61.5	42.0	58.5	62.8	41.7	60.1	59.2	40.5	58.1	60.1	40.8	61.4	65.6	41.5	60	NA
<b>NM5- Ping Yeung Village House (façade facing northeast)</b>																					
4-Aug-14	10:20	53.1	56.5	48.3	54.0	56.9	48.5	52.5	56.1	47.4	55.2	58.7	48.8	54.9	58.5	49.2	53.3	56.1	49.2	54	NA
9-Aug-14	10:58	57.1	59.3	51.8	57.0	60.1	51.2	55.7	59.0	48.6	55.7	58.8	50.4	57.4	60.8	51.3	57.7	60.2	50.8	57	NA
15-Aug-14	10:04	57.7	59.0	56.3	55.4	57.2	50.7	54.7	57.8	48.6	54.1	57.1	49.8	51.8	55.5	47.5	54.3	56.6	49.0	55	NA
21-Aug-14	10:53	61.8	66.0	47.7	53.4	57.4	44.4	60.8	64.0	46.7	56.2	59.5	46.6	57.1	60.5	48.1	57.1	61.0	48.4	59	NA
27-Aug-14	11:04	53.8	56.7	47.6	54.2	57.3	49.9	55.7	59.3	48.9	56.1	58.5	49.5	54.2	57.2	49.1	55.1	58.9	49.3	55	NA
<b>NM6 – Tai Tong Wu Village House 2</b>																					
4-Aug-14	9:42	61.3	65.2	52.2	60.1	64.3	51.2	61.7	65.3	53.3	61.4	65.3	53.7	62.1	65.7	52.8	60.4	64.7	48.6	61	NA
9-Aug-14	11:37	60.8	65.1	50.9	61.1	64.5	52.5	60.3	64.1	53.1	60.7	64.4	48.3	61.7	65.8	52.4	62.1	64.8	53.0	61	NA
15-Aug-14	10:02	62.5	66.6	52.6	61.7	65.1	53.8	63.1	66.5	56.4	63.3	66.6	53.6	62.7	66.6	50.7	61.2	65.1	50.0	62	NA
21-Aug-14	10:07	60.9	64.3	50.7	61.1	64.7	55.0	61.0	65.0	51.3	60.3	64.2	51.6	62.9	66.8	51.1	61.3	65.2	52.8	61	NA
27-Aug-14	10:14	61.4	64.9	50.7	62.7	66.6	51.7	60.4	64.4	51.3	61.8	65.5	53.8	62.6	66.7	50.5	61.1	65.3	50.7	62	NA
<b>NM7 – Po Kat Tsai Village</b>																					
4-Aug-14	17:00	67.5	68.9	55.4	73.1	69.2	56.0	66.7	67.0	55.8	59.5	62.6	54.8	65.9	66.0	55.6	62.3	66.1	56.8	68	NA
9-Aug-14	11:09	81.6	83.0	78.9	79.4	81.7	76.0	78.8	80.4	74.6	84.3	85.0	74.8	79.9	82.9	76.9	87.1	90.1	80.0	83	NA
15-Aug-14	10:24	62.5	65.1	54.3	63.9	65.9	53.9	66.0	69.4	55.7	69.1	73.1	58.3	66.5	68.5	56.6	61.8	64.5	56.6	66	NA
21-Aug-14	10:31	66.1	69.8	56.4	63.2	64.8	55.2	67.1	66.4	53.7	60.7	62.9	53.4	61.6	65.9	53.8	71.1	72.1	54.5	66	NA
29-Aug-14	16:39	65.7	67.3	54.0	59.9	64.5	54.5	57.9	61.1	52.0	57.3	60.9	50.1	69.0	72.4	52.3	68.2	72.1	57.3	65	NA
<b>NM8 - Village House, Tong Hang</b>																					
6-Aug-14	15:51	58.5	64.2	52.6	60.3	62.6	50.8	59.4	61.7	50.5	59.3	63.5	51.3	58.2	62.0	50.1	58.1	62.1	50.3	59	NA

Date	Start Time	1 <sup>st</sup> Leq <sub>5min</sub>	L10	L90	2 <sup>nd</sup> Leq <sub>5min</sub>	L10	L90	3 <sup>rd</sup> Leq <sub>5min</sub>	L10	L90	4 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	5 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	6 <sup>th</sup> Leq <sub>5min</sub>	L10	L90	Leq30	façade correction
12-Aug-14	13:19	60.5	64.4	52.5	57.9	62.4	50.2	58.7	61.5	49.3	57.5	62.4	48.6	56.2	60.2	49.2	57.3	61.2	50.4	58	NA
18-Aug-14	13:06	60.8	62.9	52.4	59.9	64.5	50.5	58.0	63.0	51.8	59.1	62.4	51.9	58.4	64.5	52.0	59.3	63.3	50.4	59	NA
23-Aug-14	14:37	57.8	61.7	50.6	57.3	62.9	49.1	60.2	66.1	51.3	57.9	63.1	50.2	58.4	62.8	51.0	58.2	63.1	51.0	58	NA
29-Aug-14	10:47	69.4	72.0	53.6	69.6	73.3	55.2	70.6	73.4	54.4	71.6	74.6	55.4	68.7	72.9	54.9	69.8	73.7	54.5	70	NA
<b>NM9 - Village House, Kiu Tau Village</b>																					
6-Aug-14	15:09	54.7	56.9	50.9	55.5	57.6	49.7	54.3	56.1	48.2	53.2	55.3	50.3	52.6	56.9	48.4	53.5	56.1	47.3	54	NA
12-Aug-14	13:51	55.4	57.3	50.2	54.3	58.3	49.4	54.6	56.1	50.9	53.8	58.4	49.3	52.7	56.2	49.7	52.0	56.9	48.2	54	NA
18-Aug-14	10:56	55.7	58.1	52.0	56.3	58.9	52.2	56.0	59.6	52.5	57.2	59.2	53.9	55.3	58.3	52.0	56.5	59.4	52.1	56	NA
23-Aug-14	13:58	59.6	61.5	57.6	57.0	61.6	48.2	52.8	56.0	46.7	56.9	56.1	46.2	58.4	55.8	47.0	57.2	56.1	47.0	57	NA
29-Aug-14	13:42	56.1	56.2	52.1	55.5	57.5	53.1	56.8	57.4	53.5	56.8	58.8	54.8	57.7	57.0	53.9	55.5	59.2	52.0	56	NA
<b>NM10 - Nam Wa Po Village House No. 80</b>																					
6-Aug-14	10:12	64.6	65.2	63.4	64.2	64.1	62.4	63.3	65.0	63.5	64.3	64.3	62.6	62.2	63.4	61.2	63.9	64.2	62.1	64	67
12-Aug-14	10:07	58.4	60.1	55.9	66.8	72.0	57.6	69.4	71.0	66.8	68.8	70.0	67.4	67.2	68.8	61.4	67.4	68.7	62.2	67	70
18-Aug-14	10:15	64.2	65.0	62.8	62.5	65.2	63.5	63.4	64.1	63.3	63.5	65.2	62.4	63.7	64.8	62.2	63.0	65.9	63.1	63	66
23-Aug-14	13:13	62.9	67.6	55.2	67.0	69.1	60.8	68.6	70.4	60.3	68.4	72.5	58.2	67.6	70.9	60.1	66.2	69.9	60.4	67	70
29-Aug-14	10:01	63.6	64.1	62.1	64.5	64.5	63.2	64.7	65.6	62.3	62.5	65.2	61.5	63.4	64.4	62.4	64.8	63.2	625.0	64	67

**Water Quality Monitoring Data for Contract 5**

Date	2-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	14:35	0.53	32.9	32.9	7.93	7.9	109.3	109.5	10.6	10.5	8.1	8.1	2	2.0
			32.9		7.95		109.7		10.4		8		2	
WM1	14:07	0.71	33.1	33.2	8.35	8.2	114.8	112.5	41.0	41.3	8.1	8.1	27	27.0
			33.2		8.01		110.2		41.5		8.1		27	

Date	4-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	18:17	0.57	30	30.0	2.94	3.0	38.8	39.0	overrange	overrange	8	8.0	301	302.5
			30		2.98		39.2		8		304			
WM1	17:52	0.76	29.6	29.6	6.8	6.8	89.6	89.7	27.6	27.1	8.6	8.6	17	17.5
			29.6		6.83		89.8		26.6		8.6		18	

Date	6-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:07	0.66	29.7	29.7	5.81	5.8	75.7	74.9	55.2	55.0	8.3	8.3	21	21.5
			29.6		5.77		74.1		54.7		8.3		22	
WM1	11:50	0.66	28.5	28.4	7.16	7.2	91.9	92.2	34.2	34.5	8.5	8.5	7	7.5
			28.2		7.2		92.4		34.7		8.5		8	

Date	9-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	12:31	0.42	32.1	32.1	6.43	6.4	84.8	84.2	13.6	13.1	8.8	8.8	5	4.5
			32		6.31		83.6		12.6		8.8		4	
WM1	12:48	0.54	33.5	33.5	7.3	7.3	101.3	101.1	26.8	27.0	8.1	8.2	27	26.5
			33.4		7.28		100.9		27.1		8.2		26	

Date	12-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:44	0.56	30.4	30.4	5.1	5.1	67.8	67.6	16.9	16.7	8.6	8.6	7	7.5

			30.3		5.06		67.3		16.5		8.6		8	
WM1	11:30	0.73	31.3	31.6	7.82	7.8	105.6	105.2	24.7	24.4	8.4	8.5	25	25.0
			31.9		7.77		104.7		24.1		8.5		25	

Date		14-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:50	0.51	29.7	29.7	6.44	6.5	6.4	6.5	15.1	15.3	8.6	8.6	6	6.0
			29.6		6.59		6.6		15.4		8.6		6	
WM1	12:17	0.53	30	30.0	6.69	6.7	6.7	6.7	103.0	<b>105.0</b>	7.9	8.0	52	51.0
			29.9		6.7		6.7		107.0		8		50	

Date		16-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:25	0.57	30.6	30.6	6.88	6.8	91.6	90.8	14.8	14.8	8.9	8.9	8	8.0
			30.6		6.73		90.0		14.7		8.9		8	
WM1	11:45	0.66	31.4	31.5	6.48	6.4	87.4	87.0	45.8	46.6	8.2	8.3	81	<b>81.5</b>
			31.5		6.4		86.6		47.4		8.3		82	

Date		18-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:25	0.57	30.1	30.1	5.56	5.6	73.3	73.3	16.1	15.9	8.6	8.6	9	9.0
			30		5.54		73.2		15.6		8.6		9	
WM1	12:13	0.62	33.4	33.4	7.72	7.7	108.3	107.4	69.4	<b>69.0</b>	8.2	8.2	69	<b>69.0</b>
			33.4		7.61		106.5		68.5		8.2		69	

Date		21-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:20	0.32	29	29.0	7.01	7.0	91.2	90.7	24.9	25.0	7.8	7.8	13	13.0
			29		6.96		90.2		25.1		7.8		13	
WM1	12:01	0.64	29.3	29.3	5.9	5.9	80.6	80.2	88.4	<b>87.8</b>	8	8.1	73	<b>73.0</b>
			29.3		5.86		79.7		87.1		8.1		73	

Date	23-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:00	0.50	30.1	30.0	7.69	7.6	99.2	98.6	15.6	15.8	9.1	9.1	11	11.0
			29.8		7.59		98.0		16.0		9.1		11	
WM1	11:35	0.63	29.5	29.5	6.72	6.8	89.5	90.2	76.5	<b>76.9</b>	8.3	8.4	76	<b>76.0</b>
			29.5		6.82		90.8		77.3		8.4		76	

Date	25-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	14:10	0.43	31.6	31.7	6.95	6.9	94.5	93.7	7.2	7.5	8	8.1	2	2.5
			31.7		6.88		92.8		7.8		8.1		3	
WM1	14:40	0.58	31.9	32.0	6.58	6.6	89.6	89.4	55.7	<b>55.4</b>	8.2	8.2	71	<b>70.5</b>
			32		6.53		89.2		55.1		8.2		70	

Date	27-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	12:45	0.43	30.6	30.6	8.33	8.3	109.3	108.5	11.6	11.6	8.6	8.6	5	5.0
			30.6		8.21		107.6		11.5		8.6		5	
WM1	12:11	0.69	31.5	31.5	7.57	7.5	101.4	100.7	42.9	41.8	8.6	8.6	50	51.5
			31.5		7.47		100.0		40.7		8.6		53	

Date	29-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:39	0.51	30.3	30.3	9.61	9.8	127.6	129.5	9.0	9.0	8.6	8.6	<2	2.0
			30.3		10.03		131.3		9.0		8.6		<2	
WM1	11:03	0.73	31.3	31.3	7.51	7.5	105.3	105.0	26.5	26.1	8.6	8.6	14	15.0
			31.2		7.47		104.6		25.7		8.5		16	

**Water Quality Monitoring Data for Contract 3**

Date	2-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	16:37	0.08	31.6	31.6	6.81	6.8	92.1	92.3	4.3	4.4	8.5	8.5	7	6.5
			31.5		6.84		92.4		4.5		8.5		6	
WM4-CB	12:22	0.29	32.5	32.5	7.57	7.5	103.6	102.5	9.0	9.1	7.9	7.9	6	7.0
			32.5		7.41		101.3		9.3		7.8		8	
WM4	16:21	0.44	33	33.0	7.98	7.9	110.1	109.6	14.3	14.7	7.8	7.9	9	8.5
			33		7.83		109.0		15.0		7.9		8	

Date	4-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	13:05	0.12	29.9	29.9	7.78	7.7	102.7	101.9	15.5	15.2	8.7	8.8	8	8.0
			29.9		7.65		101.0		14.8		8.8		8	
WM4-CB	13:20	0.14	31	31.0	7.3	7.3	98.5	98.0	7.7	7.7	8.2	8.2	6	6.0
			31		7.24		97.4		7.7		8.2		6	
WM4	12:35	0.52	31.1	31.1	7.53	7.6	100.7	101.2	34.9	34.6	8.7	8.7	24	23.0
			31.1		7.61		101.7		34.3		8.6		22	

Date	6-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:08	0.08	28.2	28.2	7.67	7.7	98.4	98.4	34.4	34.2	8.6	8.6	18	18.5
			28.2		7.67		98.3		33.9		8.6		19	
WM4-CB	14:28	0.19	30.3	30.3	6.23	6.3	82.8	83.9	12.9	12.3	8	8.0	5	5.0
			30.2		6.4		84.9		11.6		8		5	
WM4	13:30	0.39	28.8	28.8	7.48	7.4	96.9	95.3	32.2	31.9	8.3	8.3	39	39.0
			28.8		7.23		93.7		31.6		8.3		39	

Date	9-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	16:35	0.08	29.9	30.0	6.34	6.5	84.5	85.1	6.2	6.1	9	9.0	4	4.0
			30		6.58		85.7		6.1		8.9		4	

WM4-CB	16:50	0.19	30.5 30.7	30.6	4.59 4.54	4.6	61.4 60.8	61.1	9.5 9.4	9.4	8.9 8.3	8.6	11 11	11.0
WM4	16:16	0.29	31.8 31.9	31.9	5.99 6.04	6.0	80.6 81.0	80.8	19.5 20.1	19.8	8.8 8.9	8.9	22 23	22.5

Date	12-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:07	0.15	30.1 29.6	29.9	7.19 7.16	7.2	94.2 93.6	93.9	5.5 5.4	5.5	8.7 8.7	8.7	2 3	2.5
WM4-CB	15:33	0.20	30 29.9	30.0	4 3.85	3.9	52.8 50.9	51.9	11.9 11.4	11.7	8.1 8.1	8.1	11 11	11.0
WM4	14:44	0.35	30.8 30.7	30.8	6.3 6.32	6.3	84.3 84.5	84.4	54.8 53.4	<b>54.1</b>	8.6 8.6	8.6	45 43	44.0

Date	14-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:01	0.16	28.5 28.4	28.5	6.77 6.81	6.8	88.6 88.3	88.5	7.7 7.7	7.7	8.5 8.5	8.5	4 5	4.5
WM4-CB	15:32	0.22	29.5 29.5	29.5	5.15 5.13	5.1	67.4 67.2	67.3	15.2 14.7	15.0	8 8.1	8.1	14 13	13.5
WM4	14:33	0.26	29.8 29.7	29.8	6.85 6.68	6.8	90.3 87.9	89.1	19.7 20.0	19.9	8.3 8.3	8.3	15 15	15.0

Date	16-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:09	0.08	31.9 31.9	31.9	6.68 6.8	6.7	90.8 92.1	91.5	4.8 4.5	4.7	8.7 8.7	8.7	3 3	3.0
WM4-CB	15:25	0.20	32.4 32.4	32.4	5.19 5.2	5.2	71.6 71.4	71.5	11.6 11.2	11.4	8.1 8.1	8.1	11 12	11.5
WM4	14:45	0.31	34.3 33.7	34.0	7.19 7.19	7.2	101.0 100.9	101.0	17.7 17.3	17.5	8.5 8.5	8.5	16 16	16.0

Date	18-Aug-14													
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Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	15:17	0.08	32	32.1	6.66	6.6	91.3	90.5	15.2	14.9	8.6	8.7	11	11.0
			32.1		6.55		89.7		14.6		8.7		11	
WM4-CB	15:37	0.20	32.6	32.6	5.12	5.1	70.8	70.3	12.6	12.4	7.8	7.8	9	10.0
			32.6		5.05		69.8		12.1		7.8		11	
WM4	14:47	0.25	34	34.0	7.2	7.2	102.3	102.6	27.6	27.3	8.4	8.5	18	18.0
			33.9		7.23		102.8		27.0		8.5		18	

Date		21-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	15:24	0.12	31.5	31.5	6.89	6.9	91.4	90.9	33.9	33.7	8.5	8.5	45	43.5	
			31.5		6.81		90.4		33.5		8.5		42		
WM4-CB	15:47	0.21	31.4	31.4	5.02	5.0	67.2	67.5	8.3	8.3	8	8.0	9	8.5	
			31.4		5.06		67.8		8.4		8		8		
WM4	15:06	0.28	32.9	32.9	7.32	7.3	100.6	100.8	15.2	15.1	8.4	8.4	11	11.5	
			32.9		7.36		101.0		14.9		8.4		12		

Date		23-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	16:28	0.04	30	30.0	5.48	5.5	72.6	73.3	24.4	23.5	8.8	8.9	56	55.5	
			30		5.51		73.9		22.6		8.9		55		
WM4-CB	16:46	0.21	30.1	30.1	4.18	4.1	54.8	54.4	11.8	11.9	8.1	8.2	12	12.5	
			30.1		4.09		53.9		11.9		8.2		13		
WM4	16:13	0.26	31.1	31.1	6.29	6.3	84.5	85.2	10.8	10.5	8.4	8.4	8	8.0	
			31.1		6.36		85.9		10.1		8.4		8		

Date		25-Aug-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)		
WM4-CA	15:55	0.12	31.9	31.9	6.79	6.7	92.7	91.8	10.4	56.2	8.4	8.5	20	19.5	
			31.8		6.65		90.8		102.0		8.5		19		
WM4-CB	16:23	0.20	33.1	33.1	4.17	4.1	56.5	55.1	17.7	17.5	8	8.0	15	15.5	
			33.1		4.03		53.7		17.3		8		16		
WM4	15:25	0.30	34.3	34.3	6.75	6.8	96.1	96.2	9.9	9.9	8.2	8.2	9	8.5	

			34.2		6.78		96.3		10.0		8.2		8	
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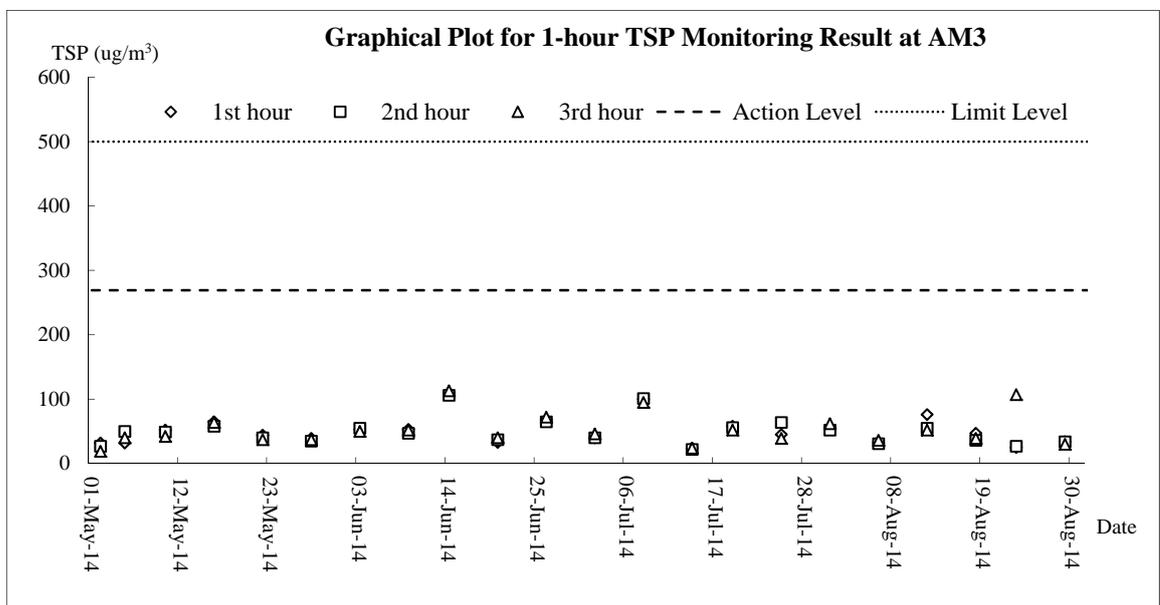
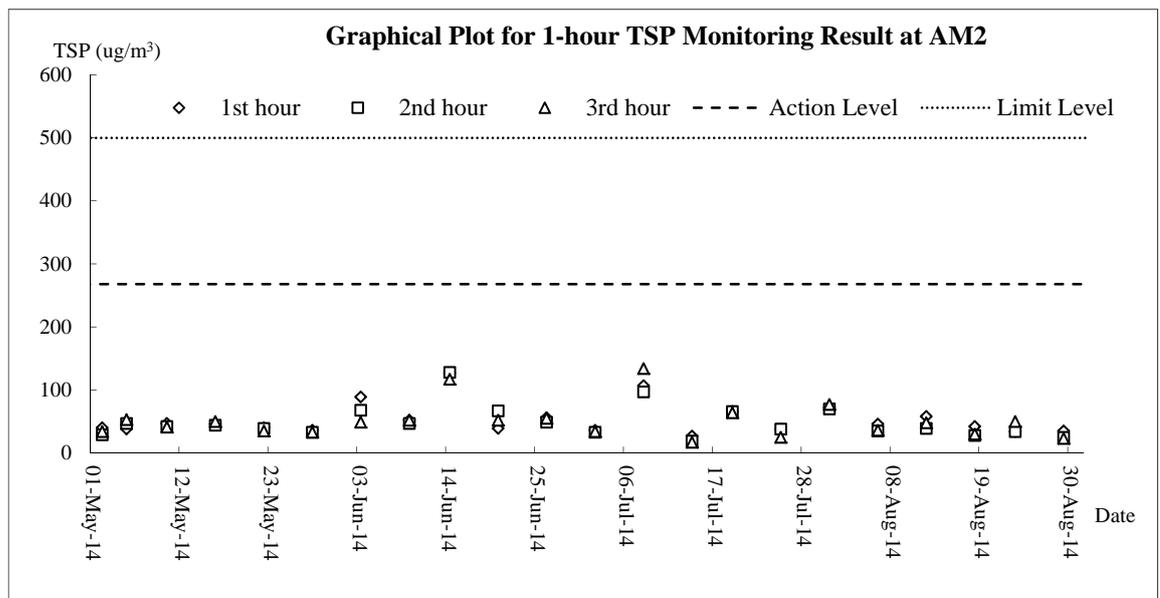
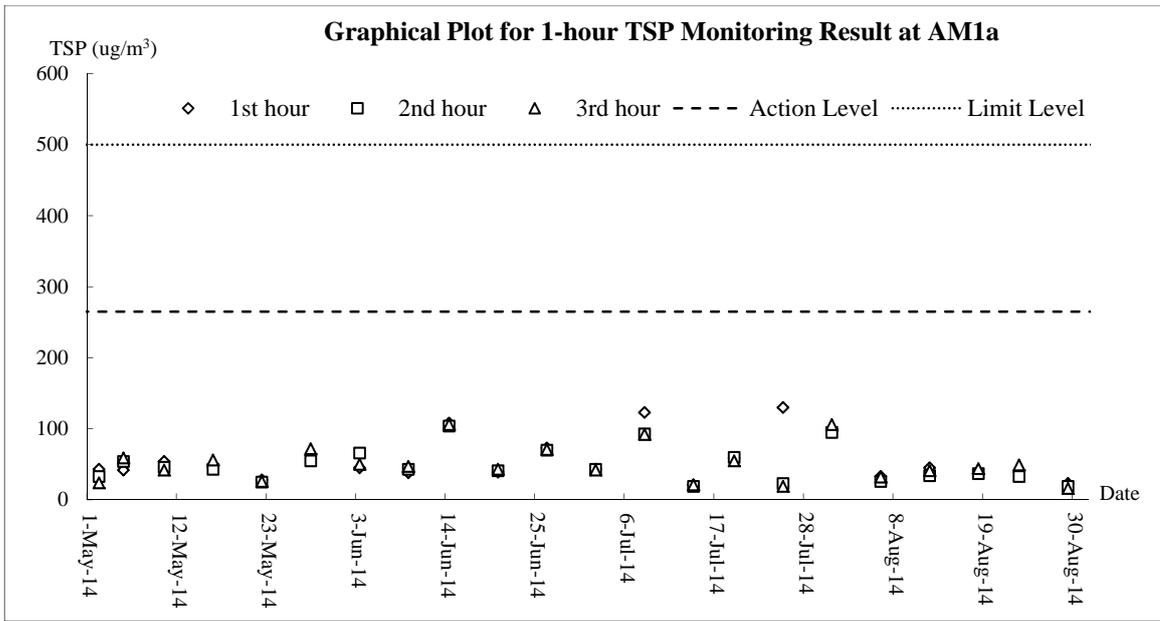
Date		27-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:48	0.12	30.7	30.7	7.16	7.1	94.9	94.2	7.4	7.3	8.7	8.7	8	8.0
			30.7		7.07		93.5		7.2		8.7		8	
WM4-CB	15:17	0.19	31.3	31.3	5.31	5.3	71.2	70.7	6.2	6.1	8.2	8.2	3	3.0
			31.3		5.24		70.1		6.0		8.2		3	
WM4	14:28	0.24	31.6	31.6	8.22	8.1	111.5	110.3	8.8	8.6	8.5	8.6	4	4.5
			31.6		8.04		109.0		8.5		8.6		5	

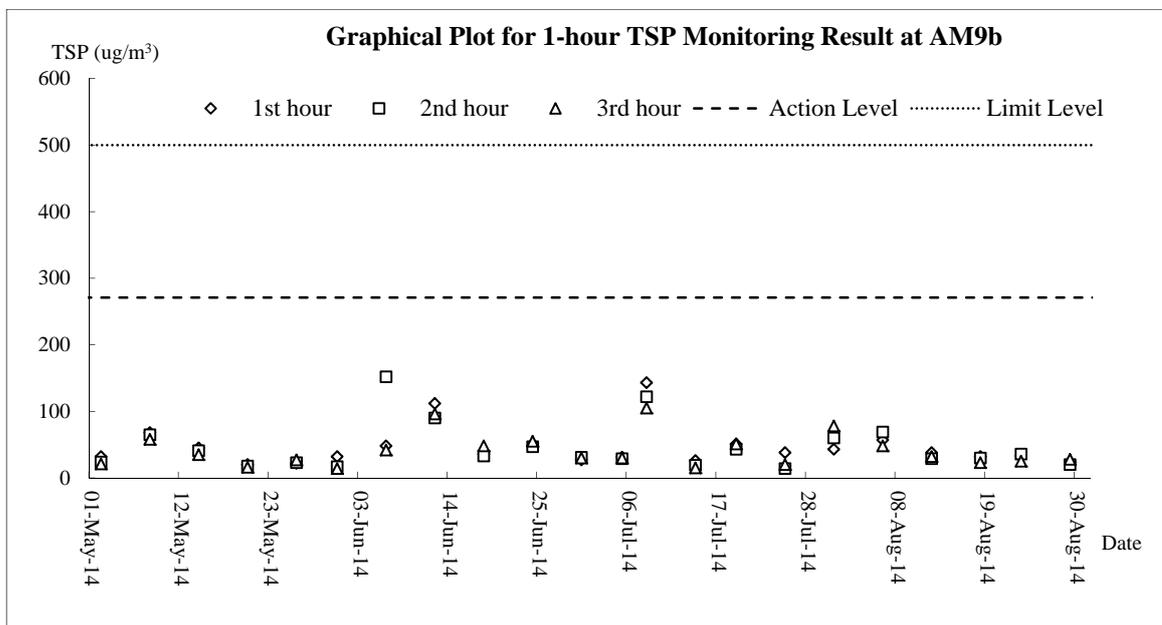
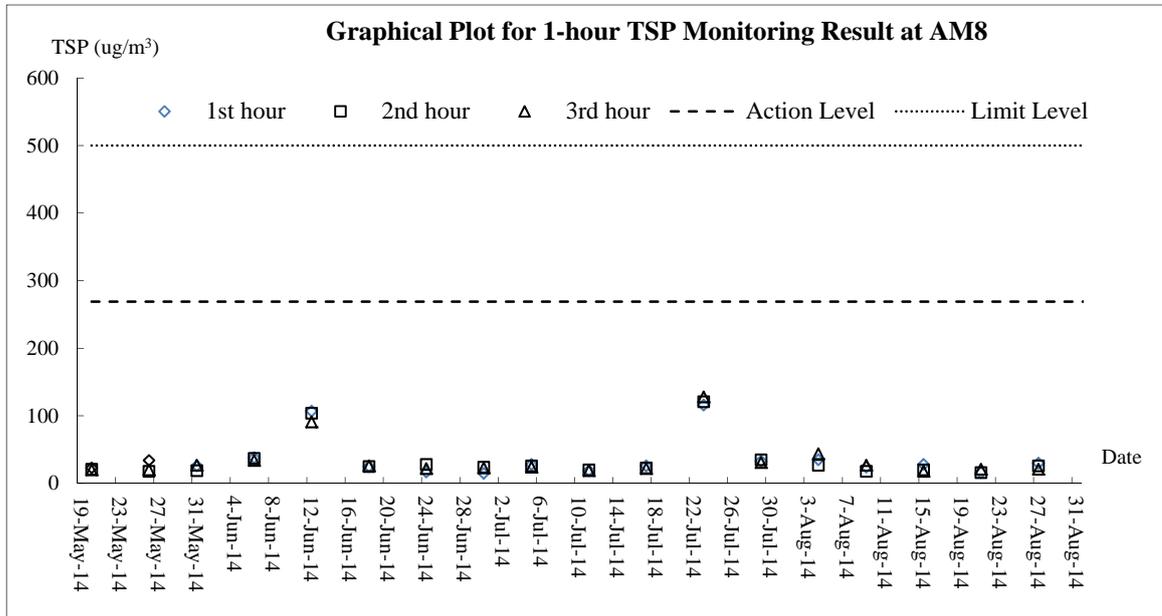
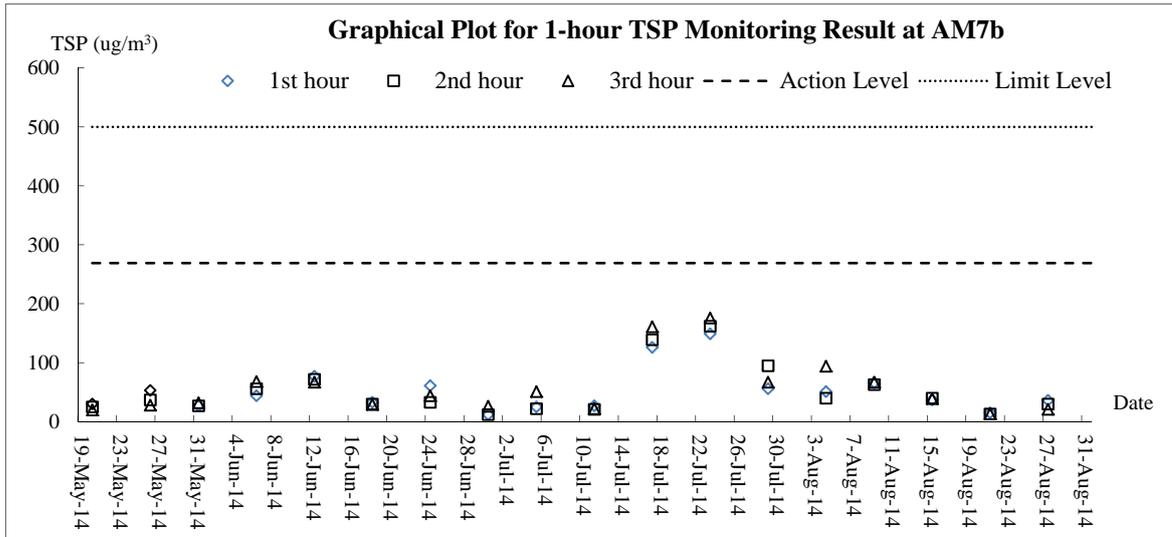
Date		29-Aug-14												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:16	0.00	34.2	34.2	7.29	7.3	100.3	100.6	5.5	5.5	8.8	8.8	7	7.0
			34.2		7.34		100.8		5.4		8.8		7	
WM4-CB	14:37	0.20	34.9	34.9	5.6	5.6	80.5	80.7	11.1	11.0	8.1	8.1	6	6.5
			34.8		5.64		80.8		10.9		8.1		7	
WM4	13:56	0.25	34.9	34.9	8.24	8.2	117.3	116.7	10.7	10.4	8.6	8.6	7	7.0
			34.9		8.18		116.1		10.1		8.6		7	

## **Appendix J**

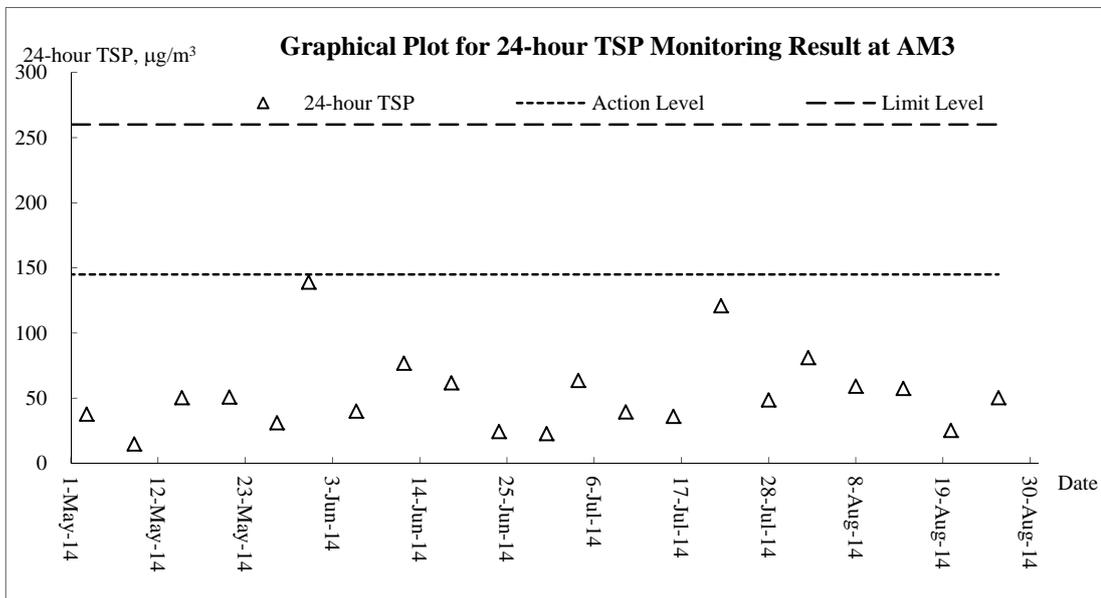
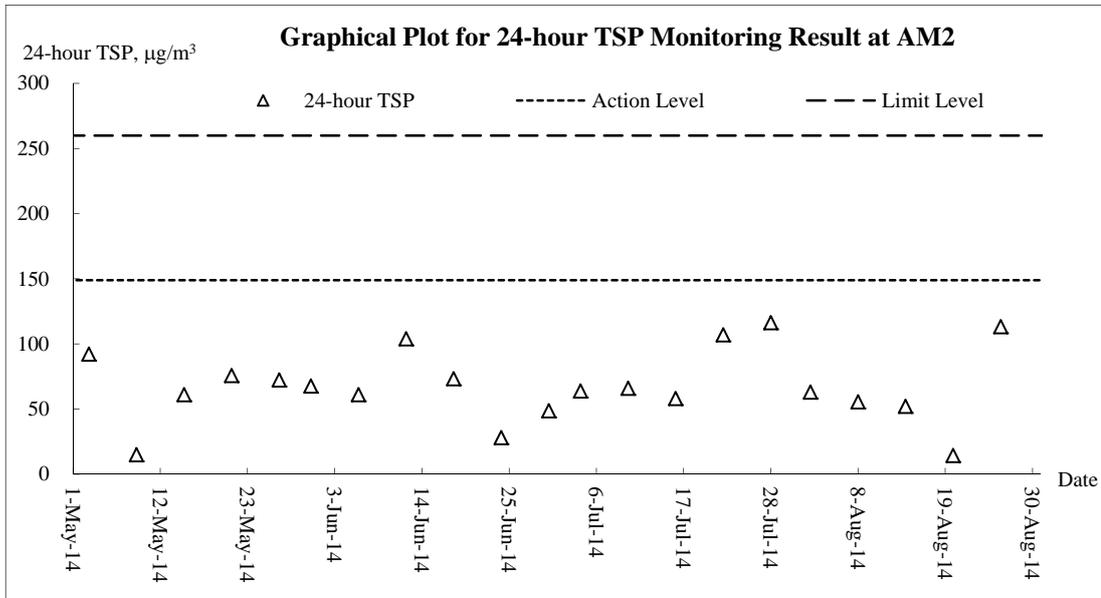
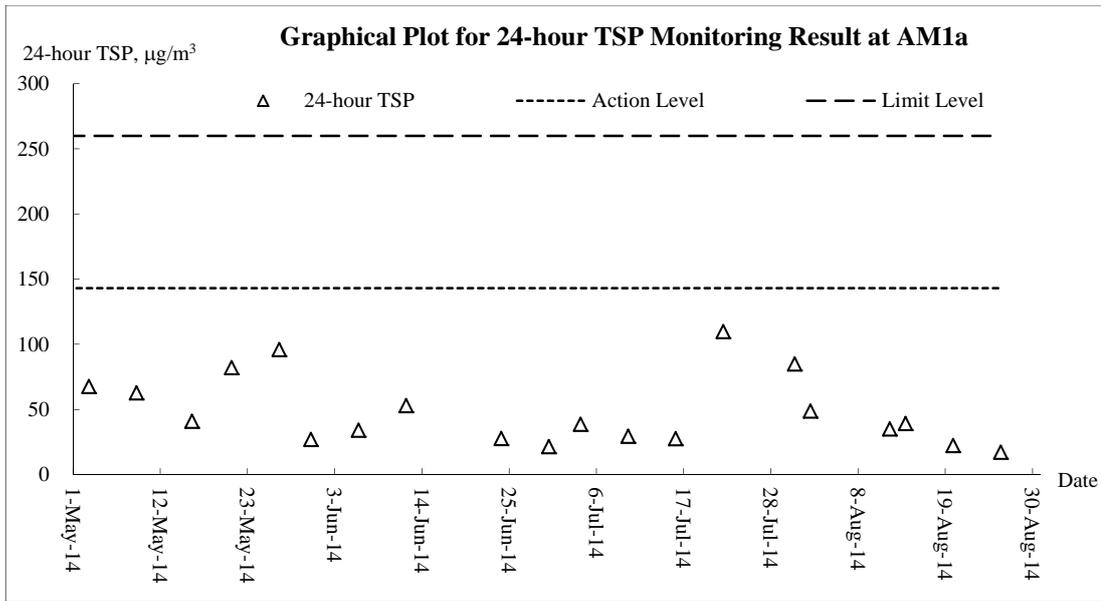
### **Graphical Plots for Monitoring Result**

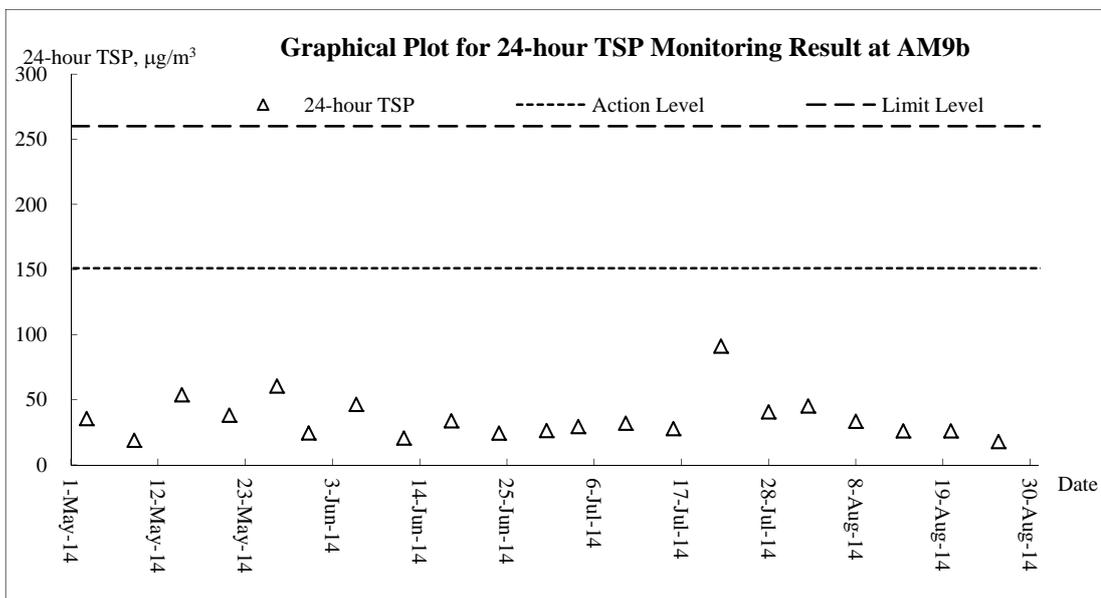
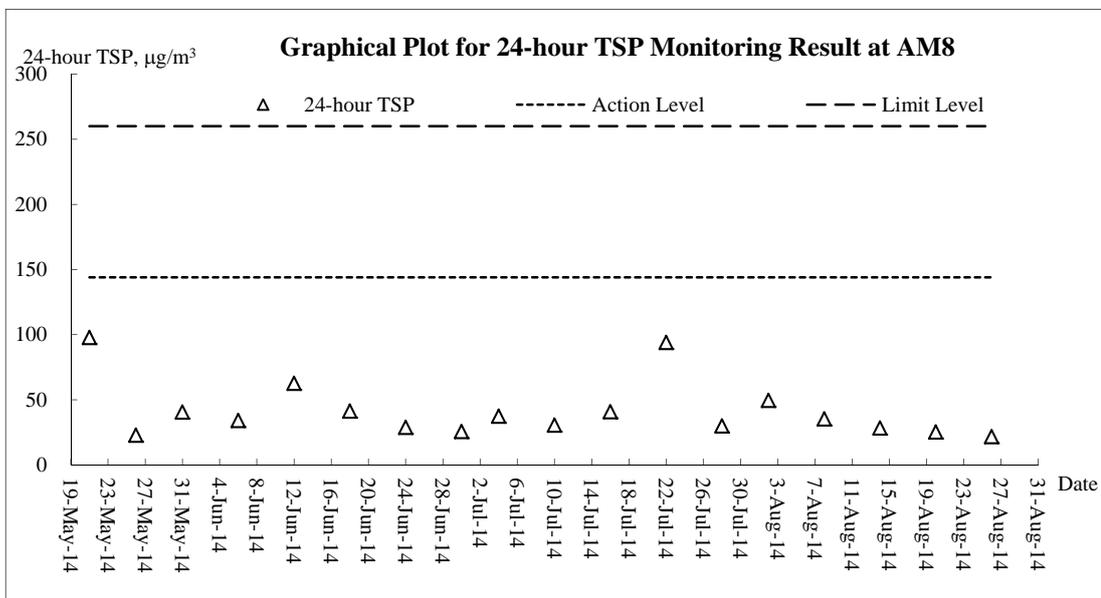
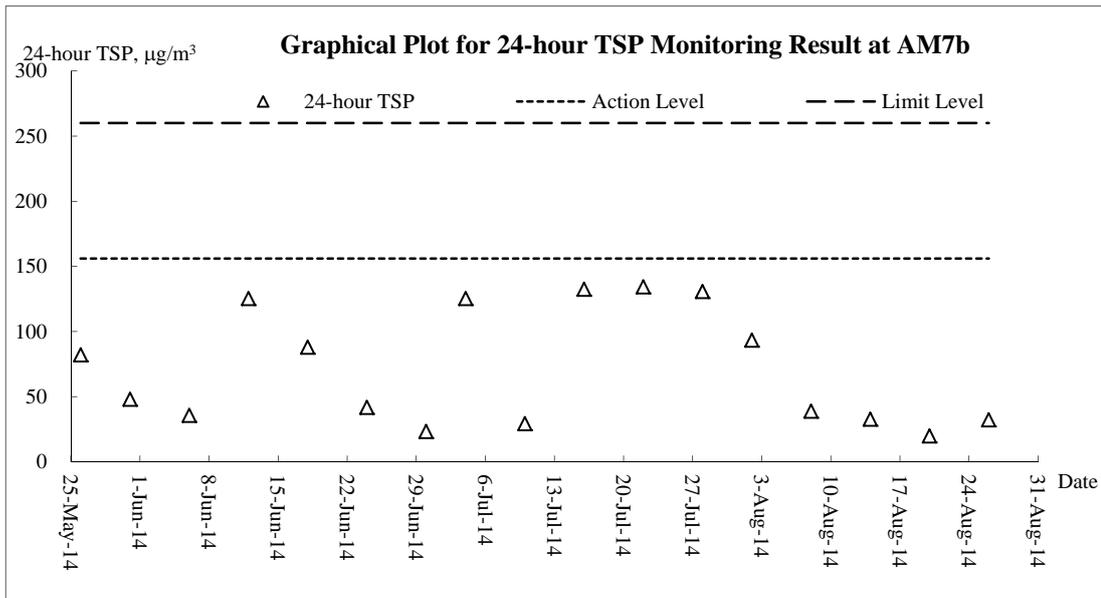
**Air Quality – 1-hour TSP**



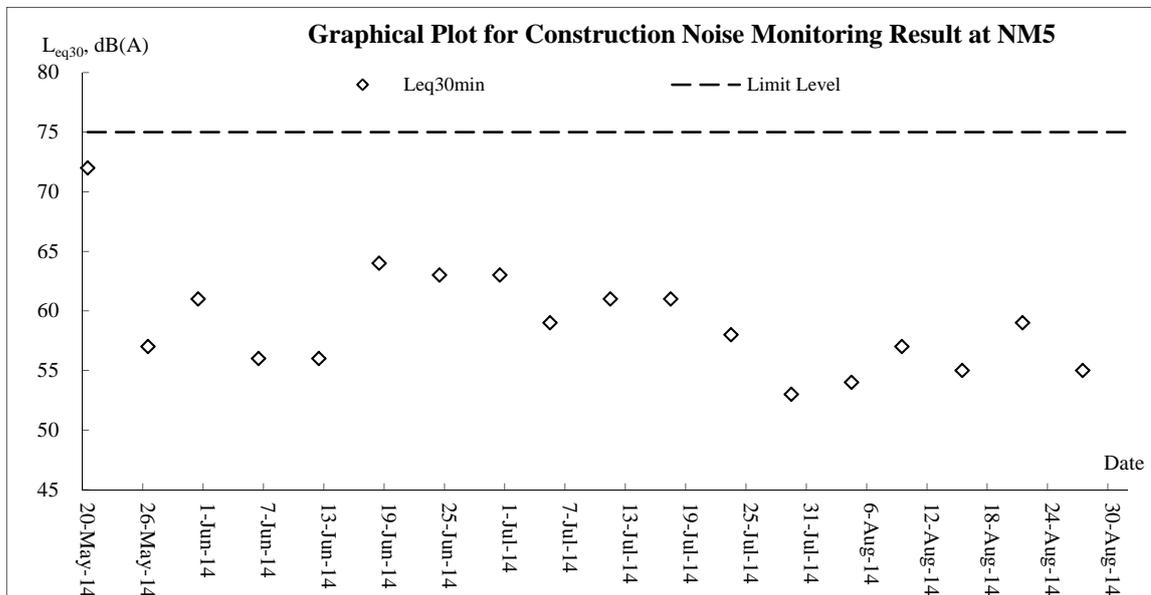
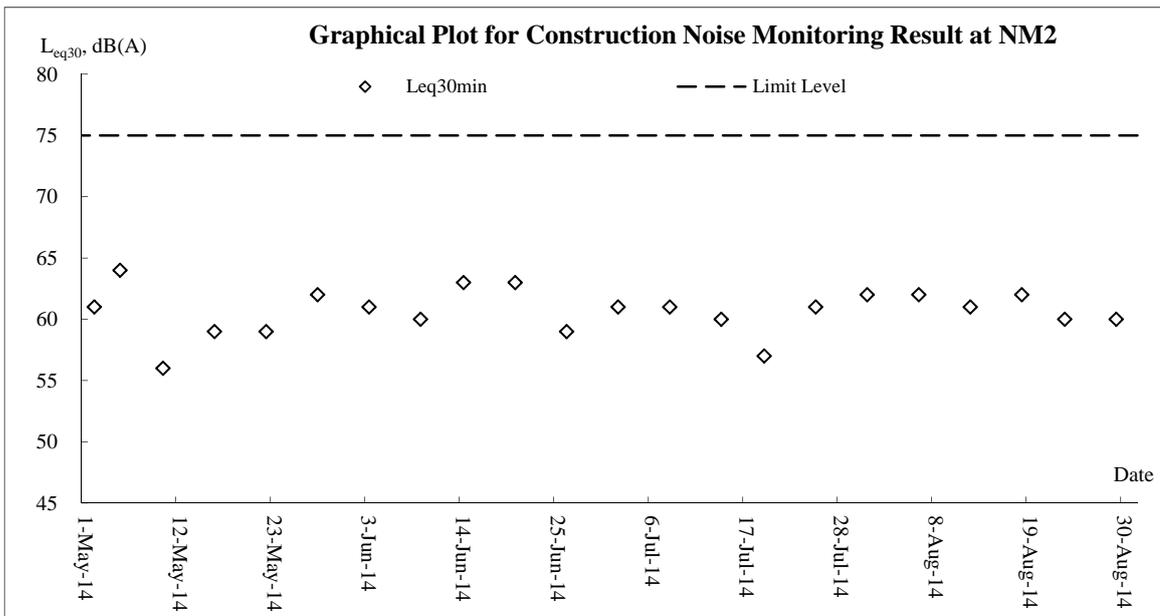
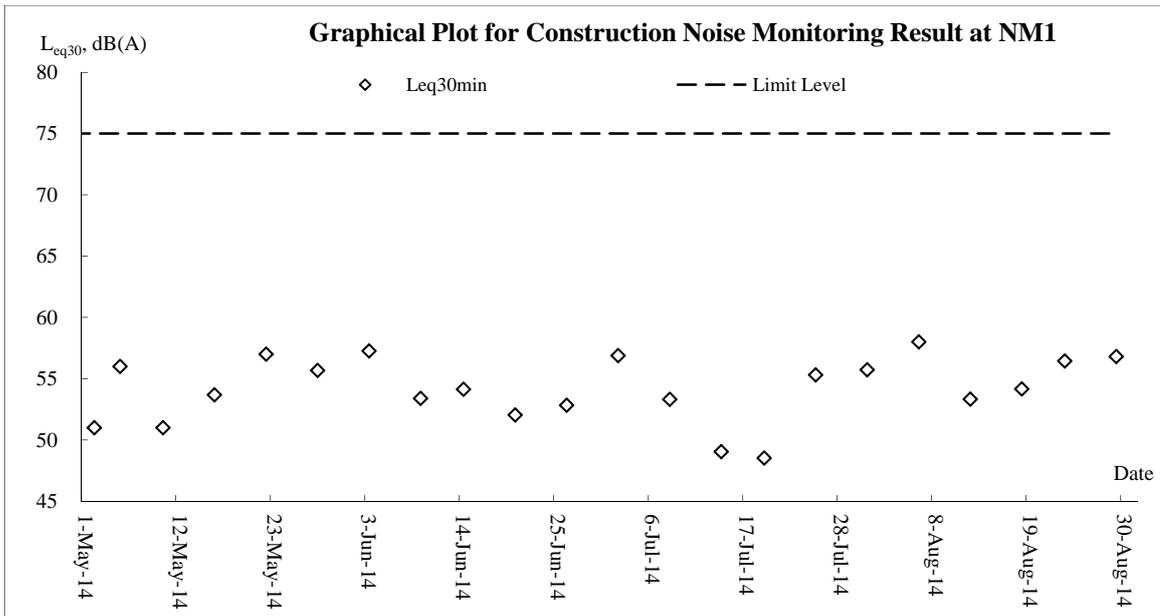


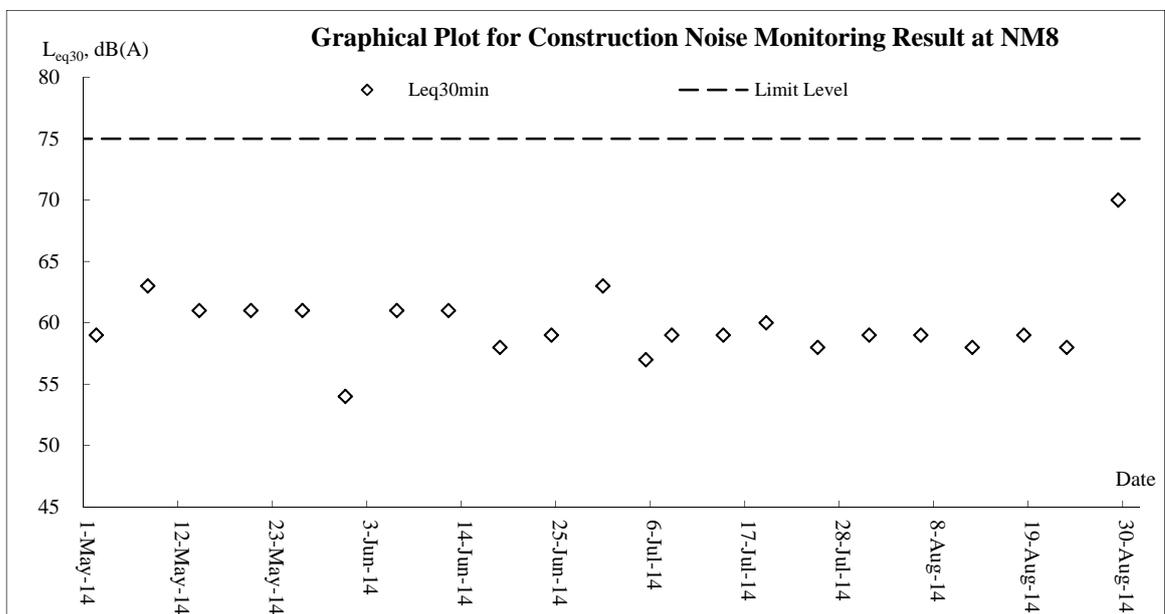
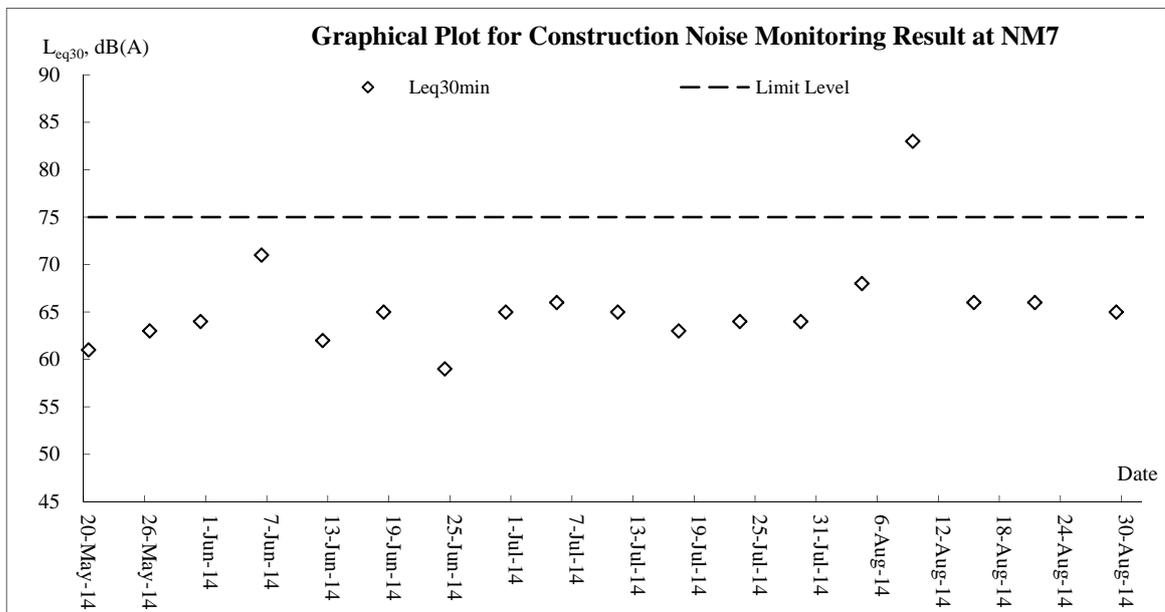
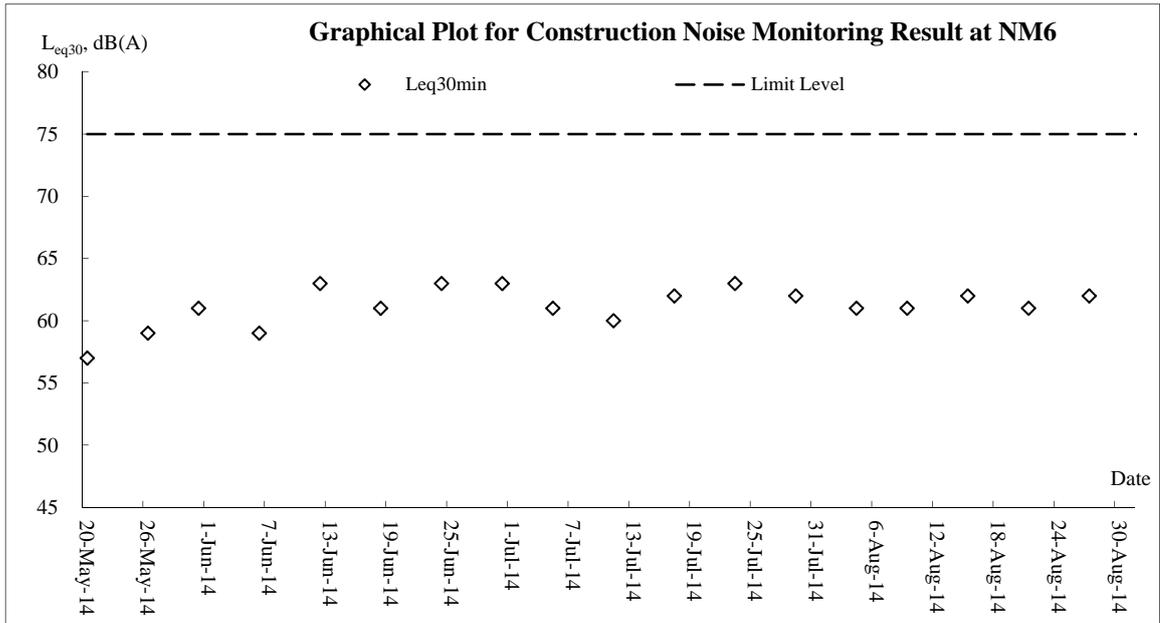
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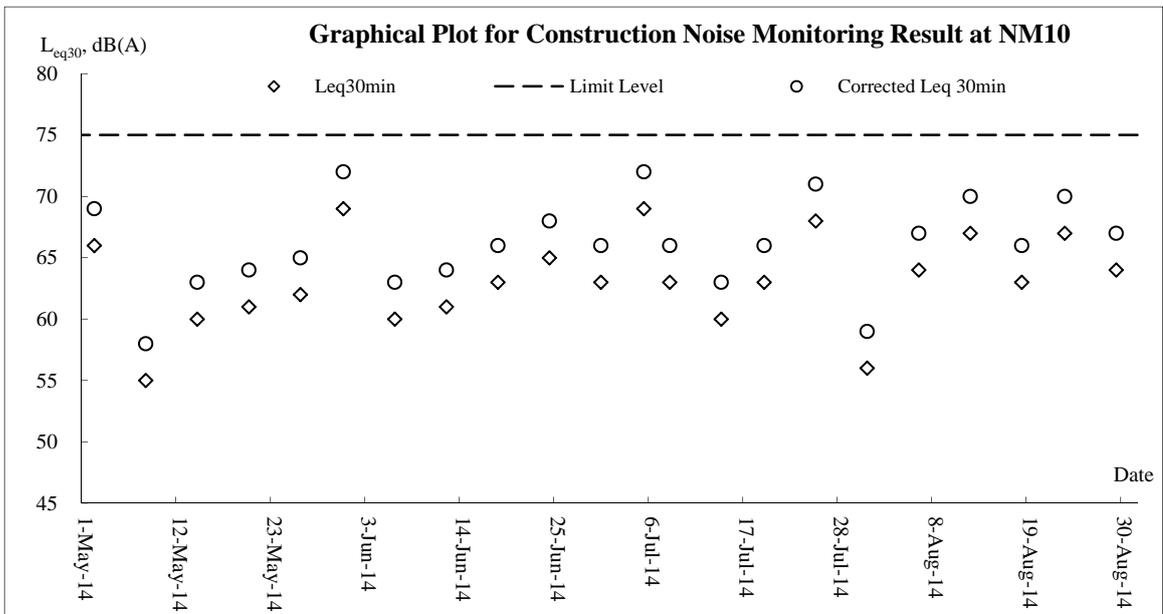
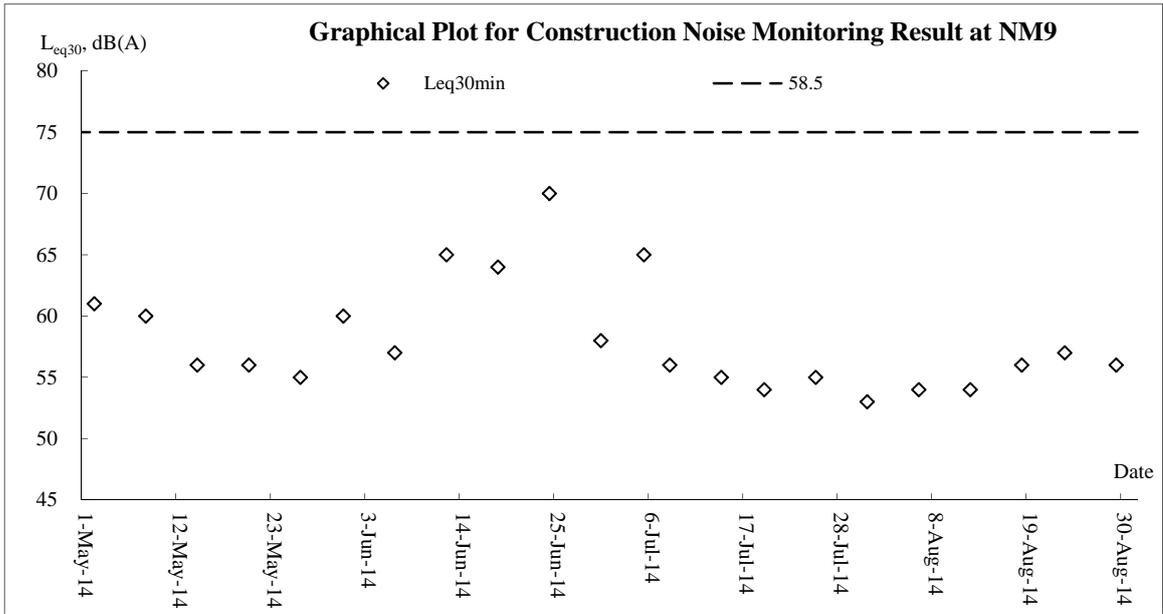




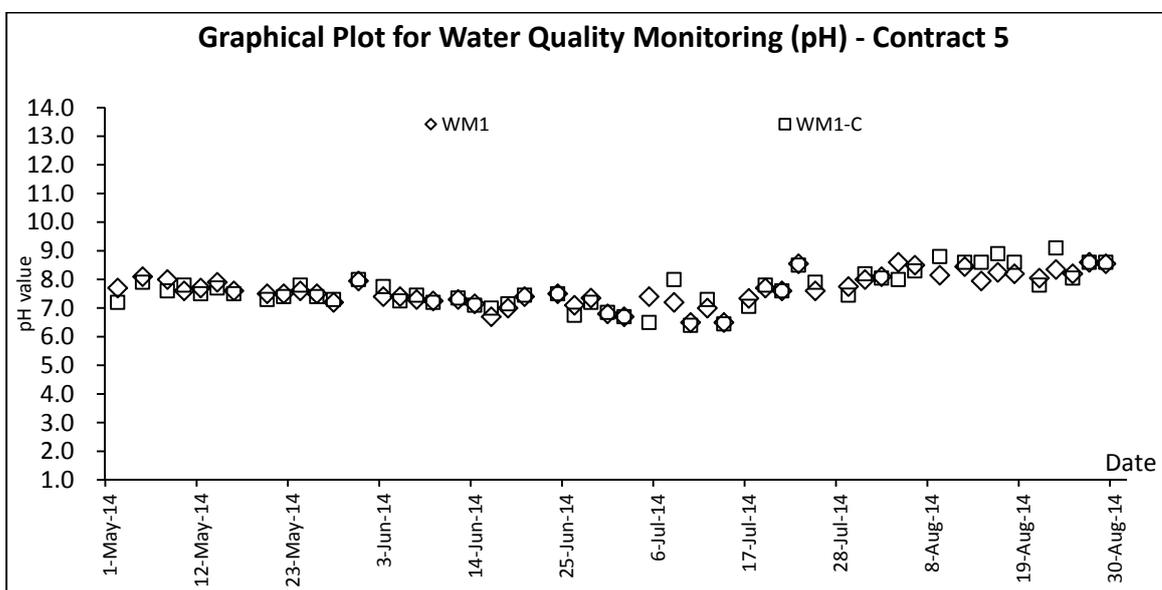
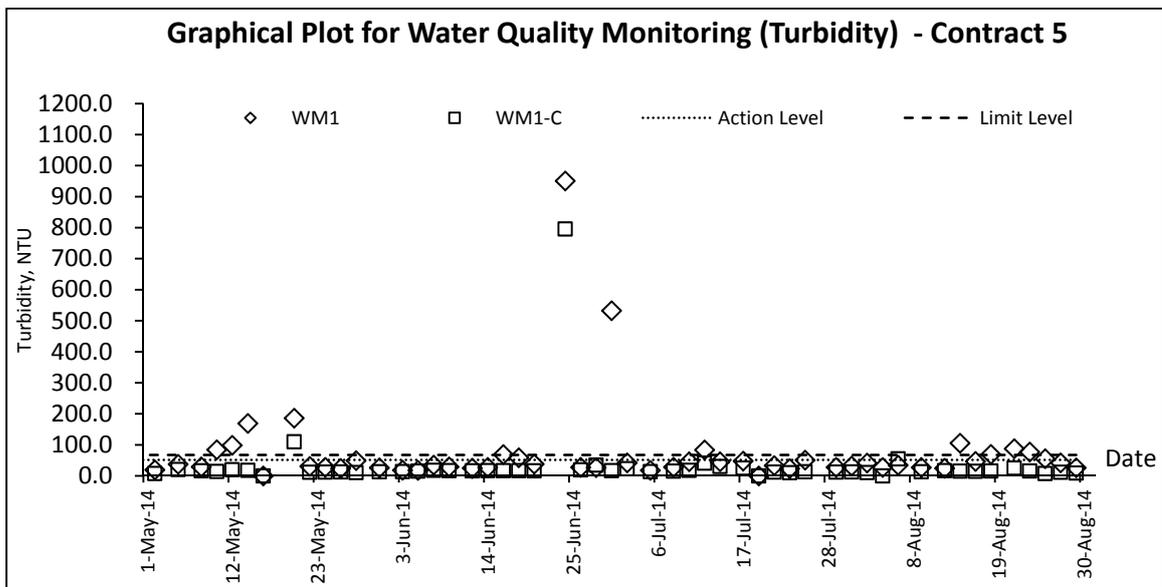
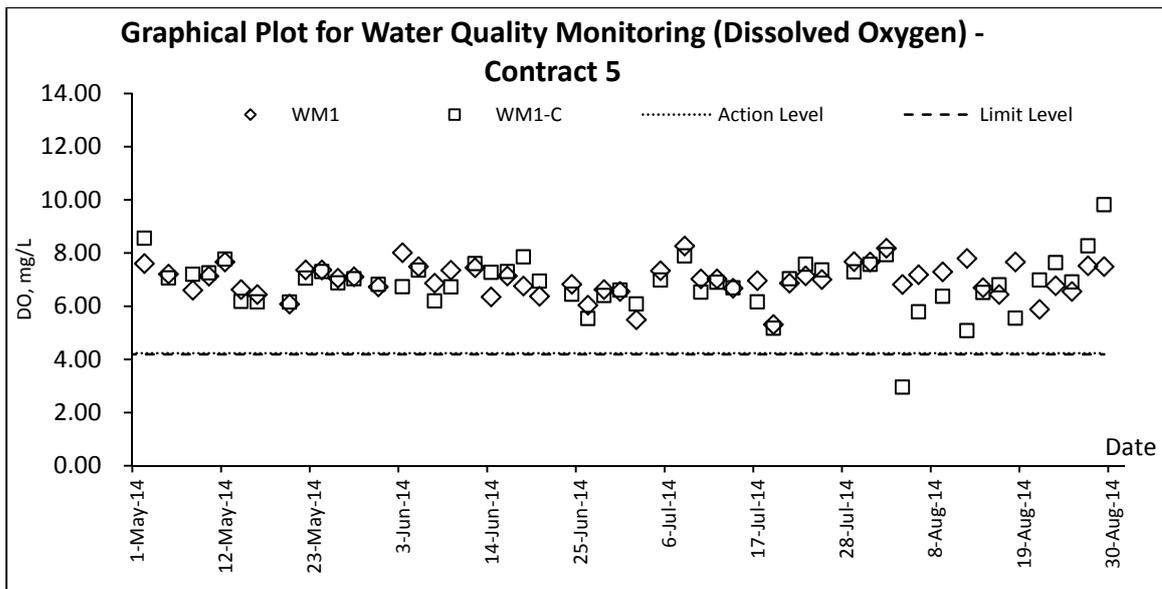
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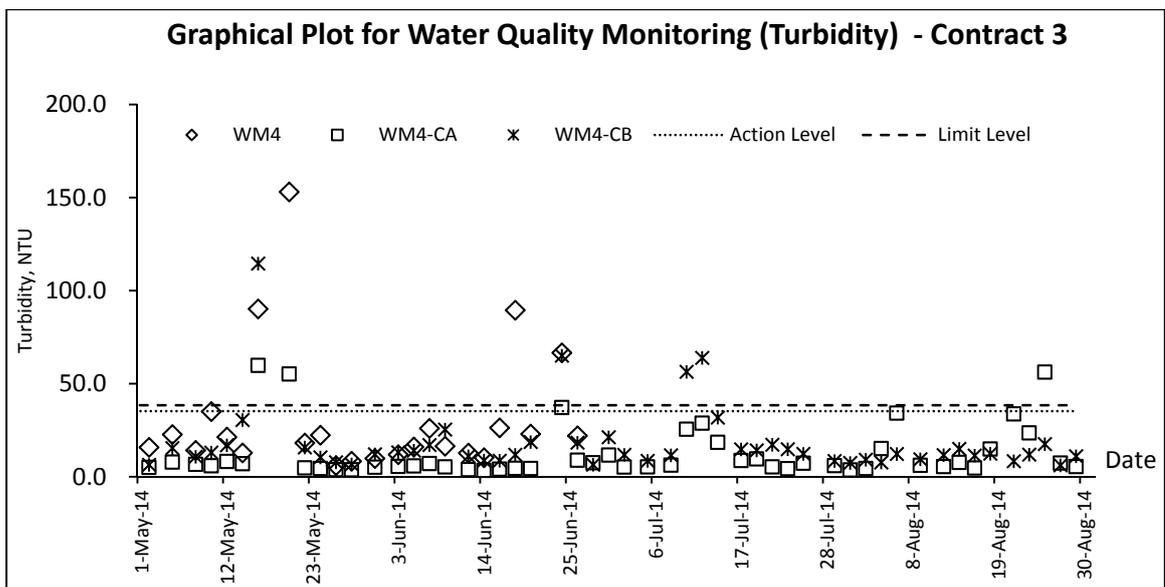
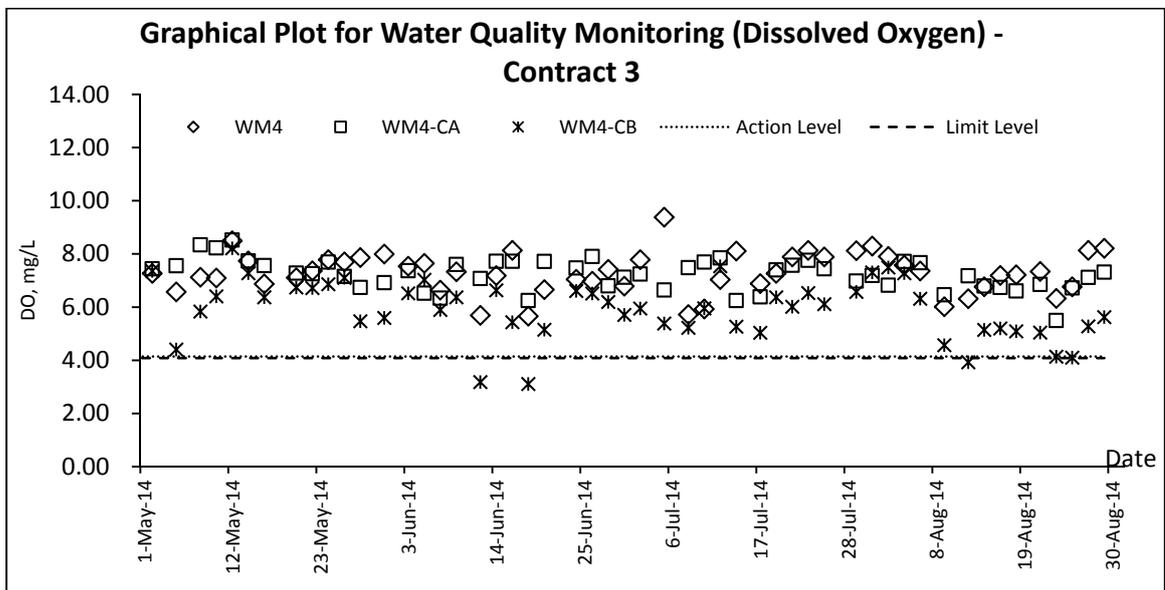
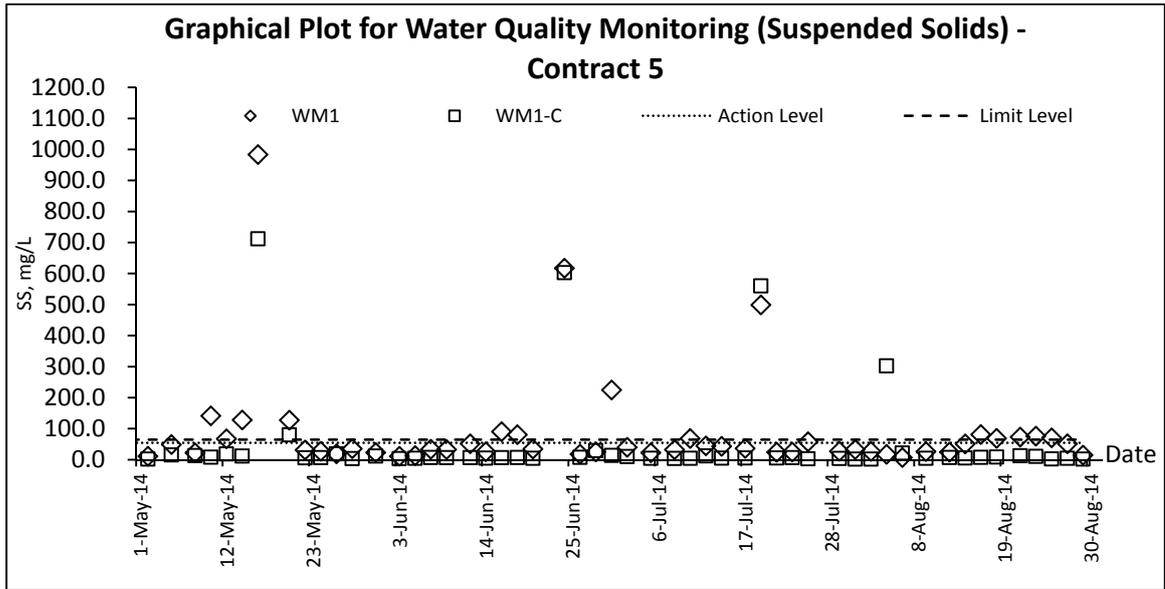


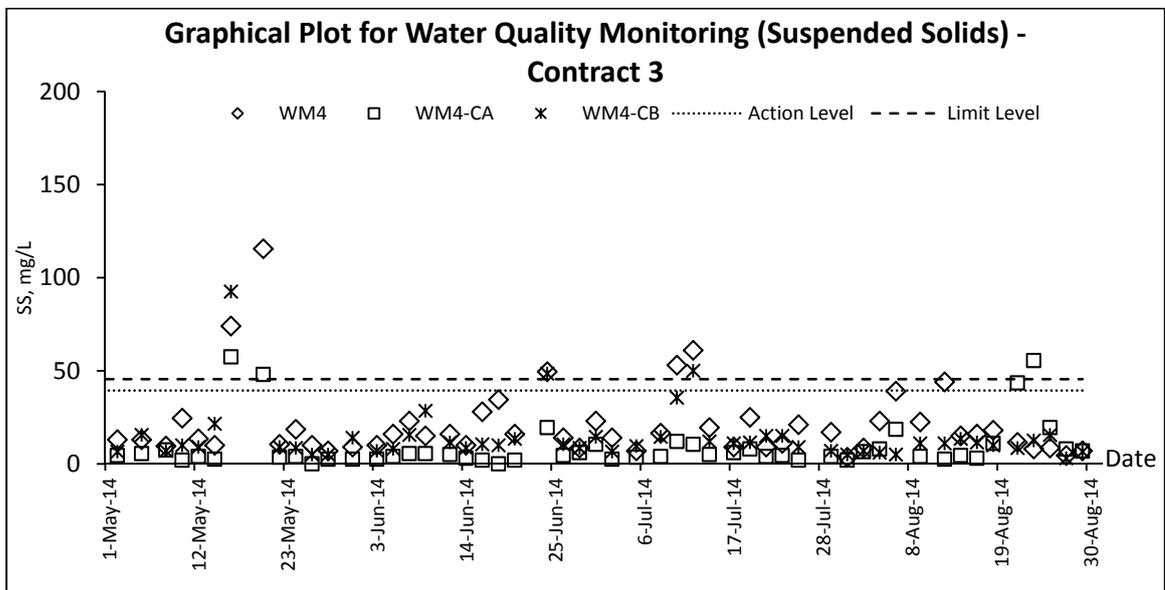
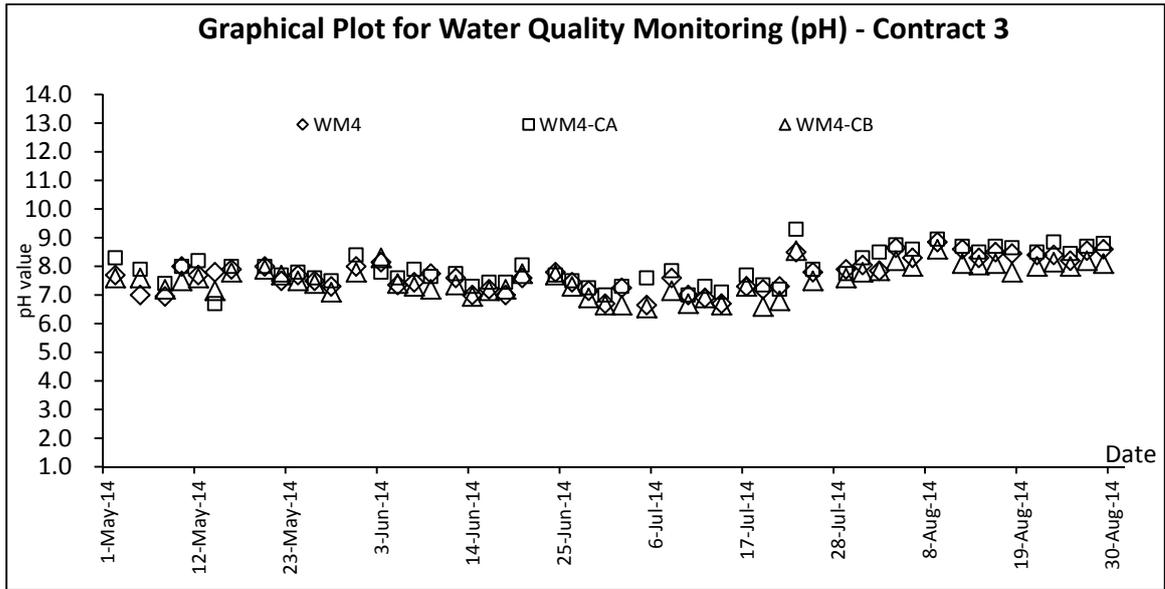




**Water Quality**







## **Appendix K**

### **Meteorological Data**

Date	Weather	Total Rainfall (mm)	Ta Kwu Ling Station				
			Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction	
1-Aug-14	Fri	Mainly fine and very hot apart from isolated showers and thunderstorms. Moderate west to southwesterly winds.	5.9	30.5	14	69.2	SW
2-Aug-14	Sat	Hot with sunny intervals and a few showers. Light to moderate southerly winds.	10.7	29.4	6	75.7	W/SW
3-Aug-14	Sun	Hot with sunny intervals and a few showers. Light to moderate southerly winds.	39.3	29.1	6.9	79.7	S/SW
4-Aug-14	Mon	Sunny periods and a few showers. There will be isolated thunderstorms at first. Moderate southwesterly winds.	12	29.8	8.3	76.5	S/SW
5-Aug-14	Tue	Hot with sunny intervals and a few showers. Light to moderate southerly winds.	21.1	29.2	6	79.7	S/SE
6-Aug-14	Wed	Mainly cloudy with showers and a few thunderstorms. Light to moderate southerly winds.	36.5	28.8	8.2	83.2	E
7-Aug-14	Thu	Cloudy with showers and a few thunderstorms. Moderate southwesterly winds.	14.5	29.2	5.5	80.7	W/SW
8-Aug-14	Fri	Hot with sunny periods. There will be isolated showers. Moderate southwesterly winds.	0	30	6.1	75.7	S/SW
9-Aug-14	Sat	Mainly cloudy with a few showers. Sunny intervals during the day. Moderate southwesterly winds.	0	30.4	9.7	75.5	W/SW
10-Aug-14	Sun	Mainly cloudy with a few showers. Hot with sunny intervals. Moderate to fresh southwesterly winds.	5.1	30.2	7	74	W/SW
11-Aug-14	Mon	Sunny intervals and a few showers. It will be hot. Moderate southwesterly winds, fresh occasionally.	Trace	30	9.7	76.5	S/SW
12-Aug-14	Tue	Cloudy to overcast with showers and squally thunderstorms. Moderate southwesterly winds.	102.9	29.7	8	77.5	W/SW
13-Aug-14	Wed	Cloudy to overcast with showers and squally thunderstorms. Moderate southwesterly winds.	166.1	25.5	9	83.2	E/SE
14-Aug-14	Thu	Mainly fine and hot. Moderate southwesterly winds.	0.5	28.7	8.2	81.2	S/SW
15-Aug-14	Fri	Mainly fine and hot. Moderate southwesterly winds.	0	29.1	5.6	77.2	W/SW
16-Aug-14	Sat	Mainly fine and hot. Moderate southwesterly winds.	0	29.5	6.5	76.2	W/SW
17-Aug-14	Sun	Mainly fine and hot. Moderate southwesterly winds.	0	29	6.5	74.7	W/SW
18-Aug-14	Mon	Mainly fine and hot. Moderate southwesterly winds.	0	29.6	5.3	70.5	W/SW
19-Aug-14	Tue	Mainly cloudy with showers and a few squally thunderstorms. Moderate southwesterly wind.	42.1	28.9	24.5	77.5	S/SW
20-Aug-14	Wed	Mainly cloudy with showers and a few thunderstorms. Light to moderate southerly winds.	88.8	25.4	9.5	90.5	E/SE
21-Aug-14	Thu	Hot with sunny periods. A few showers at first. Light to moderate southerly winds.	0.1	27.6	6.4	82.2	E/SE
22-Aug-14	Fri	Hot with sunny periods. A few showers at first. Light to moderate southerly winds.	0	28	6.9	81.5	E/SE
23-Aug-14	Sat	Mainly fine. Very hot. Light to moderate southeasterly winds.	Trace	27.6	5.3	84.2	E/SE
24-Aug-14	Sun	Mainly fine. Very hot in the afternoon. Light to moderate southeasterly winds.	0	28.7	6.5	75.5	E/NE
25-Aug-14	Mon	Mainly fine. Very hot in the afternoon. Light to moderate southeasterly winds.	0	28.9	6.5	75.7	E/NE
26-Aug-14	Tue	Mainly fine and very hot apart from isolated showers. Moderate easterly winds.	0	29.4	6.5	76.5	E/NE
27-Aug-14	Wed	Mainly cloudy with a few showers. Moderate to fresh easterly winds.	0.7	29.4	11	76.7	E/NE
28-Aug-14	Thu	Mainly fine and very hot, apart from isolated showers at first. Moderate east to southeasterly winds.	0.3	29.3	13.1	78	E
29-Aug-14	Fri	Mainly fine and very hot, apart from isolated showers at first. Moderate east to southeasterly winds.	0	29.5	6.9	73.2	E/NE
30-Aug-14	Sat	Mainly fine and very hot, apart from isolated showers at first. Moderate east to southeasterly winds.	0	29.5	7.5	70.7	E
31-Aug-14	Sun	Mainly fine and very hot, apart from isolated showers at first. Moderate east to southeasterly winds.	1.6	29.3	8.2	80	E

## **Appendix L**

### **Waste Flow Table**

Name of Department :       CEDD      

Contract No./ Work Order No. :       CV/2012/08      

### Appendix J - Monthly Summary Waste Flow Table for 2014

(All quantities shall be rounded off to 3 decimal places)

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m3)						Actual Quantities of Other C&D Materials / Wastes Generated				
	Total Quantities Generated	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported C&D Material	Metal	Paper/ Cardboard Packaging	Plastic (bottles/containers, plastic sheets/ foams from package material)	Chemical Waste	Others (e.g. General Refuse etc.)
	[a+b+c+d]	(a)	(b)	(c)	(d)		(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
January	0.0045	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1773
February	0.9869	0.0000	0.9869	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1102
March	0.1366	0.0000	0.1366	0.0000	0.0000	0.2282	0.0000	0.0000	0.0000	3.2400	0.1825
April	0.2063	0.0000	0.1217	0.0269	0.0577	0.5536	0.0000	0.0000	0.0000	4.2800	0.2069
May	14.5769	0.0000	0.0643	14.4032	0.1094	2.0126	0.0000	0.0000	0.0000	0.0000	0.0887
June	26.0821	0.0000	0.0348	22.1289	3.9183	0.6915	0.0000	0.0000	0.0000	0.0000	1.1851
Half-year total	41.9932	0.0000	1.3487	36.5590	4.0855	3.4859	0.0000	0.0000	0.0000	7.5200	1.9508
July	49.4606	0.0000	0.0069	37.1170	12.3368	0.4385	0.0000	0.0000	0.0000	0.0000	0.0558
August	56.4391	0.0000	0.7325	51.3053	4.4013	0.8477	0.0000	0.0000	0.0000	0.0000	0.0774
September	0.0000										
October	0.0000										
November	0.0000										
December	0.0000										
Yearly Total	147.8930	0.0000	2.0881	124.9813	20.8235	4.7722	0.0000	0.0000	0.0000	7.5200	2.0840

Remark:

- 1) Density of C&D material to be       2.2       metric ton/m3  
 2) Density of General Refuse to be       1.6       metric ton/m3

### 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	2.740	0.450	0.192	0	2.548	0.500	0	0	0	0.020	0.195
Jun	2.215	0.258	0.675	0	1.540	1.075	0	0	0	0.001	0.180
<b>Sub-total</b>	<b>12.615</b>	<b>1.708</b>	<b>3.011</b>	<b>0.000</b>	<b>9.760</b>	<b>1.975</b>	<b>0.002</b>	<b>0.000</b>	<b>0.010</b>	<b>0.060</b>	<b>0.925</b>
Jul	3.596	0.233	0.502	0	3.094	0.747	0	0	0.005	0	0.165
Aug	5.504	0.649	0.732	0	4.772	1.200	0	0	0.005	0.009	0.220
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	<b>21.715</b>	<b>2.590</b>	<b>4.245</b>	<b>0.000</b>	<b>17.626</b>	<b>3.922</b>	<b>0.002</b>	<b>0.000</b>	<b>0.020</b>	<b>0.069</b>	<b>1.310</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
APRIL	0	0	0	0	0	1.664	0.87	0.051	0	0	0.245
MAY	0	0	0	0	0	18.352	0	0	0	0	0.23
JUN	0	0	0	0	0	33.381	0	0.14	0	0	0
Sub Total	0	0	0	0	0	91.608	0.87	0.191	0	6	1.34
JUL	0	0	0	0	0	16.04	2.01	0.241	0	0	0.11
<b>AUG</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.536</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.03</b>
SEP											
OCT											
NOV											
DEC											
Total	0	0	0	0	0	109.18	2.88	0.432	0	6	1.48

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 M**

**Implementation Schedule for  
Environmental Mitigation Measures**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
<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>					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<p>the erosive potential of surface water flows.</p> <ul style="list-style-type: none"> <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