

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.20) – MARCH 2015

PREPARED FOR  
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
(CEDD)

Date	Reference No.	Prepared By	Certified By
16 April 2015	TCS00670/13/600/R0355v2	 Nicola Hon (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	13 April 2015	First Submission
2	16 April 2015	Amended against the IEC's comments on 15 April 2015

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17 April 2015

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**By Email & Post**

**Attention: Mr Simon LEUNG**

Dear Sir

**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. 20) – March 2015**

With reference to the Monthly EM&A Report No. 20 for March 2015 (Version 2) certified by the ET Leader provided to us on 17 April 2015, 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/C.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995 8120 or by email to antony.wong@smec.com; or our Mr Francis LEE on tel. 3995 8144 or by email to francis.lee@smec.com.

Yours faithfully  
for and on behalf of  
SMEC Asia Limited



**Antony WONG**

Independent Environmental Checker

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## EXECUTIVE SUMMARY

ES01 This is the 20<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 March 2015** (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	96
	24-hour TSP	6	36
Construction Noise	L <sub>eq(30min)</sub> Daytime	8	43
Water Quality	Water sampling	5	13 <sup>(*)</sup>
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 2	4
		Contract 3	5
		Contract 5	4

<sup>(\*)</sup> Monitoring day

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

ES04 In the Reporting Period, no noise and air quality exceedance was registered for the Project. However, a total of sixteen (16) water quality exceedances were recorded at W1 and W4 in which eleven (11) exceedances were found at WM1 whereas four (4) events exceedances were found at WM4. 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 <sub>eq(30min)</sub> Daytime	0	0	0	--	--
Water Quality	DO	0	14	14	All exceedances were not project related	N/A
	Turbidity	0	0	0	Investigation in progress	N/A
	SS	1	1	2	<ul style="list-style-type: none"> <li>Exceedance at WM1 was in progress.</li> <li>Exceedance at WM4 was not project related</li> </ul>	N/A

### 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 **6, 13, 19 and 27 March 2015**. 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 **2, 11, 18, 23 and 30 March 2015**. 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 **5, 12, 20 and 26 March 2015**. No non-compliance was noted.

**FUTURE KEY ISSUES**

ES11 In upcoming wet season, muddy water or other water pollutants from site surface flow to local stream such as Kong Yiu Channel and Ma Wat Channel or public area will be key environment issue. Water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should paid attention and fully implement.

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 Since most of construction sites under the Project are located adjacent to villages, the Contractors should fully implement air quality mitigation measures to reduce construction dust emission.

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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/C granted on 12 March 2015.
- 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 **20<sup>th</sup>** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **31 March 2015**.

### 1.2 REPORT STRUCTURE

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

<b>Section 1</b>	<i>Introduction</i>
<b>Section 2</b>	<i>Project Organization and Construction Progress</i>
<b>Section 3</b>	<i>Summary of Impact Monitoring Requirements</i>
<b>Section 4</b>	<i>Air Quality Monitoring</i>
<b>Section 5</b>	<i>Construction Noise Monitoring</i>
<b>Section 6</b>	<i>Water Quality Monitoring</i>
<b>Section 7</b>	<i>Waste Management</i>

- 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/B);
- (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 3-month rolling construction program of the Contracts 2, 3 and 5 is enclosed in *Appendix C*.

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

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

- |                 |  |
|-----------------|--|
| Mid-Vent Portal | • Full face excavation   |
| North Portal    | • Permanent slope formation (soil nailing works)<br>• Top heading excavation (canopies) for South Bound Tunnel<br>• Platform excavation for South bound tunnel bench excavation<br>• TBM Site Installation (site formation works, back up cradle, spoil basin, water treatment system installation, slab concreting, tower crane foundation) |
| South Portal    | • Temporary Slope Cut with Soil Installation<br>• Site Formation   |
| Admin Building  | • Preparation works for surcharge backfilling  |

Contract 3 (CV/2012/09)

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

- Abutment construction for Bridge E
- Box Culvert inlet structure
- Cable detection and trial trenches
- E&M work for new valve control and Telemetry House
- Erection of temporary support at DSD nullah for Bridge E
- Filling Works at Tong Hang East
- Lagging wall and capping beam for bored pile wall
- Lay storm drains
- Noise barrier construction
- Pier construction
- Pile cap works
- Pre-drilling
- Piling works
- Road works at Fanling Highway
- Sewer works at Tai Wo Service Road West (TWSRW)
- Utilities duct laying
- Viaduct segment erection
- Waterworks

Contract 4 (Contract number to be assigned)

2.4.4 The contract has not yet been awarded.

Contract 5 (CV/2013/03)

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

- Preparation works for additional rising main at Lin Ma Hang (LMH) road
- Construction of secondary boundary fencing
- Construction of Depressed Road at BCP3
- Construction of retaining wall No.2b
- Waterproofing and backfilling works for Western pedestrian subway & staircase at LMH
- Deck construction works at Bridge J
- Construction of chain link fence and trapezoidal channel at BCPA
- Construction of retaining wall No.5
- Soil cement slope along BCP Area
- Drainage works at existing/proposed LMH Road
- Drainage works (Connection to Box 3, Box 4 & construction of sedimentation tank) at BCP Area
- Water works at proposed LMH Road
- Formation works at BCPB Area
- Transplanting of trees at BCP4
- Installation of Underground utilities at proposed and existing LMH road
- Road works (kerb laying) for proposed and existing LMH road
- Bituminous laying at existing LMH road

Contract 6 (CV/2013/08)

2.4.6 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
- Contamination Assessment Report (CAR) 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	<b>North Portal</b> Waste Producers Number: No. 5213-652-D2523-01	Valid from 25 Mar 2014
		<b>Mid-Vent Portal</b> Waste Producers Number: No. 5213-634-D2524-01	Valid from 25 Mar 2014
		<b>South Portal</b> Waste Producers Number: No. 5213-634-D2526-01	Valid from 9 Apr 2014
3	Water Pollution Control Ordinance - Discharge License	No.WT00018374-2014	Valid from 3 Mar 2014 to 28 Feb 2019
		No.: W5/1I389	Valid from 28 Mar 2014 to 31 Mar 2019
		No.: W5/1I390	Valid from 24 Mar 2014 to 31 Mar 2019 Surrendered, effective 19 June 2014
		No.: W5/1I391	Valid from 28 Mar 2014 to 31 Mar 2019
		No.: W5/1I392	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-RN0693-14	Valid 11 Nov 2014 - 10 May 2015
		GW-RN0092-15	Valid 23 Feb 2015 - 22 May 2015
		GW-RN0091-15	Valid 23 Feb 2015 - 22 May 2015
		GW-RN0778-14	Valid 29 Dec 2014 - 28 Jun 2015
		GW-RN0087-15	Valid 23 Feb 2015 - 22 May 2015

Item	Description	License/Permit Status	
		GW-RN0195-15	Valid 30 Mar 2015 - 30 May 2015
<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-RN0684-14	Valid on 16 Nov 2014 till 26 Apr 2015
		GW-RN0095-15	Valid on 24 Feb 2015 till 18 Jul 2015
		GW-RN0129-15	Valid on 3 Mar 2015 till 30 May 2015
		GW-RN0120-15	Valid on 8 Mar 2015 till 1 Jul 2015
<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 Road	Contract 2, Contract 6
NM7	Po Kat Tsai Village	Po Kat Tsai	Contract 2
NM8	Village House, Tong Hang	Fanling	Contract 2 Contract 3
NM9	Village House, Kiu Tau Village	Fanling	Contract 3
NM10	Nam Wa Po Village House No. 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>24-Hr TSP</b>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
<b>1-Hour TSP</b>	
Portable Dust Meter	Sibata LD-3B Laser Dust monitor Particle Mass Profiler & 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.

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
Thermometer & DO meter	YSI PRO20 Handheld Dissolved Oxygen Instrument / YSI 550A Multifunctional Meter
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 pump to draw sample aerosol through the optic chamber where TSP is measured;
  - A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
  - 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 Tisch Environmental, Inc. Model TE-5170 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:
- An anodized aluminum shelter;
  - A 8”x10” stainless steel filter holder;
  - A blower motor assembly;
  - A continuous flow/pressure recorder;
  - A motor speed-voltage control/elapsed time indicator;
  - A 7-day mechanical timer, and
  - 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 or YSI 550A Multifunctional Meter 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
	Limit Level	67.6	33.8	12.3	14.0	38.4
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
	Limit Level	64.9	17.3	12.4	12.9	45.5

**Remarks:**

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

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

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

3.8.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix 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 **96** events of 1-hour TSP and **36** 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-Mar-15	51	6-Mar-15	11:17	112	143	123
7-Mar-15	50	12-Mar-15	10:41	34	24	31
13-Mar-15	38	18-Mar-15	10:34	87	119	123
19-Mar-15	40	24-Mar-15	12:40	139	120	96
25-Mar-15	75	30-Mar-15	10:36	78	67	96
31-Mar-15	51					
Average (Range)	<b>51</b> (38 – 75)	Average (Range)		<b>93</b> (24 – 143)		

**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-Mar-15	75	6-Mar-15	11:08	142	156	155
7-Mar-15	72	12-Mar-15	10:33	30	23	30
13-Mar-15	85	18-Mar-15	10:22	86	92	91
19-Mar-15	82	24-Mar-15	11:25	150	148	111
25-Mar-15	96	30-Mar-15	10:20	87	76	87
31-Mar-15	69					
Average (Range)	<b>80</b> (69 – 96)	Average (Range)		<b>98</b> (23 – 156)		

**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-Mar-15	56	6-Mar-15	11:00	108	100	107
7-Mar-15	58	12-Mar-15	10:20	21	21	28
13-Mar-15	30	18-Mar-15	10:14	76	96	94
19-Mar-15	80	24-Mar-15	11:05	156	139	106

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
25-Mar-15	93	30-Mar-15	10:09	79	69	76
31-Mar-15	40					
Average (Range)	<b>60</b> (30 – 93)	Average (Range)		<b>85</b> (21 – 156)		

**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-Mar-15	105	2-Mar-15	09:28	102	96	96
7-Mar-15	72	7-Mar-15	10:39	245	228	222
13-Mar-15	76	13-Mar-15	10:28	53	75	72
19-Mar-15	134	19-Mar-15	10:25	97	79	88
25-Mar-15	111	25-Mar-15	13:21	146	107	138
31-Mar-15	84	31-Mar-15	10:14	92	72	68
Average (Range)	<b>97</b> (72 – 134)	Average (Range)		<b>115</b> (53 – 245)		

**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-Mar-15	49	2-Mar-15	14:13	112	120	136
7-Mar-15	52	7-Mar-15	10:59	231	231	182
13-Mar-15	42	13-Mar-15	11:22	71	71	72
19-Mar-15	39	19-Mar-15	10:49	100	77	68
25-Mar-15	76	25-Mar-15	13:53	98	119	133
31-Mar-15	30	31-Mar-15	10:37	56	46	59
Average (Range)	<b>48</b> (30 – 76)	Average (Range)		<b>110</b> (46 – 231)		

**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-Mar-15	63	6-Mar-15	09:17	180	195	142
7-Mar-15	52	12-Mar-15	09:41	34	34	50
13-Mar-15	46	18-Mar-15	13:02	169	205	174
19-Mar-15	<sup>(#)</sup> 93	24-Mar-15	10:13	182	122	90
25-Mar-15	87	30-Mar-15	09:31	94	79	77
31-Mar-15	30					
Average (Range)	<b>55</b> (30 – 87)	Average (Range)		<b>122</b> (34 - 205)		

<sup>(#)</sup> The power of HVS was disconnected by other and the monitoring elapsed time is less than four hours and the result is accounted as invalid

4.2.2 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.

4.2.3 In the Reporting Period, power disconnected by others during monitoring was recorded at AM9b

on 19 March 2015 and the elapsed time of this 24-hour TSP monitoring event was less than four hours. The monitoring result is therefore accounted as invalid.

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 43 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 ( $L_{eq30min}$ ), dB(A)									
Date	NM1	NM2	NM8	NM9	NM10 <sup>(*)</sup>	Date	NM5	NM6	NM7
6-Mar-15	49	59	60	64	66	2-Mar-15	57	63	59
12-Mar-15	50	63	62	60	61	7-Mar-15	55	60	59
18-Mar-15	52	63	59	59	75	13-Mar-15	58	60	68
24-Mar-15	52	66	58	61	64	19-Mar-15	56	61	64
30-Mar-15	60	64	59	62	61	25-Mar-15	46	61	62
						31-Mar-15	53	60	65
<b>Limit Level</b>	<b>75 dB(A)</b>								

Remarks

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

5.2.2 As shown in **Table 5-1**, the noise level measured at the designated monitoring locations NM1, NM2, NM5, NM6, NM7, NM8, NM9 and NM10, were below 75dB(A). Furthermore, there was no noise complaints (Action Level exceedance) received by the RE, Contractors or CEDD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.

## 6 WATER QUALITY MONITORING

### 6.1 GENERAL

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

- WM1 – Contract 5 working site downstream at Kong Yiu Channel;
- WM1 – Control – Contract 5 working site upstream at Kong Yiu Channel;
- WM4 –South Portal of Contract 2 and 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 for Contracts 2, 3 and 5 of the Project. 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 Contracts 2 and 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-Mar-15	4.95	6.65	3.12	25.4	11.9	17.2	29.5	11.5	16.0
4-Mar-15	4.49	6.03	3.35	19.5	12.2	18.0	17.5	9.0	15.0
6-Mar-15	4.66	7.30	3.19	31.9	9.7	12.2	<b>48.0</b>	5.0	15.0
9-Mar-15	5.28	8.22	3.92	29.6	25.6	24.4	20.5	4.0	5.5
11-Mar-15	4.89	8.68	4.32	30.1	29.3	20.0	22.5	10.5	10.5
13-Mar-15	4.47	7.26	2.02	13.1	4.5	8.5	16.5	8.5	12.0
17-Mar-15	4.78	7.53	3.12	22.6	15.5	23.0	15.0	2.5	9.5
19-Mar-15	5.13	6.63	2.08	19.2	12.6	21.6	11.5	5.0	6.0
21-Mar-15	4.89	6.08	3.29	34.1	25.6	35.1	13.0	13.0	5.5
23-Mar-15	4.21	5.94	1.77	27.9	20.0	21.0	8.0	7.5	5.0
25-Mar-15	<b>3.98</b>	6.13	1.88	24.2	16.4	10.9	9.5	3.5	6.5
27-Mar-15	<b>3.82</b>	6.26	1.89	8.3	12.3	5.2	14.0	22.5	8.5
30-Mar-15	<b>3.60</b>	6.40	3.51	28.5	32.7	24.7	10.0	11.5	6.5

Remark: bold and underline value indicated Limit 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-Mar-15	<b>0.84</b>	10.40	11.9	16.8	9.0	14.0
4-Mar-15	<b>0.61</b>	6.83	20.2	19.8	16.5	15.0
6-Mar-15	<b>1.85</b>	7.49	17.8	12.4	11.5	3.5
9-Mar-15	<b>3.84</b>	7.80	11.3	10.7	39.5	5.5
11-Mar-15	<b>1.61</b>	7.84	36.7	20.9	25.0	6.5
13-Mar-15	<b>0.41</b>	7.76	50.5	56.0	<b>59.0</b>	35.5
17-Mar-15	<b>0.18</b>	6.23	48.5	49.7	25.5	14.0
19-Mar-15	<b>0.20</b>	7.57	20.6	20.4	9.5	13.0
21-Mar-15	<b>0.29</b>	5.22	45.6	53.0	25.5	15.0
23-Mar-15	<b>0.31</b>	10.04	46.2	39.6	21.0	16.5

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
25-Mar-15	<b><u>0.24</u></b>	7.12	46.6	16.7	42.0	18.0
27-Mar-15	3.97 #	11.26	43.1 #	40.5	37.5 #	25.5
30-Mar-15	0.32 #	6.63	189.0 #	40.6	97.5 #	11.5

Remark:

- i. *bold and underlined indicated Limit Level exceedance.*
  - ii. *bold and italic indicated Action Level exceedance*
- # *water sampling was not able to carry out due to shallow water and water monitoring was conducted at close downstream*

**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	<b>11</b>	0	0	<b>1</b>	0	<b>1</b>	<b>11</b>
WM4	0	<b>3</b>	0	0	0	<b>1</b>	0	<b>4</b>
<b>No of Exceedance</b>	0	<b>14</b>	0	0	<b>1</b>	<b>1</b>	<b>1</b>	<b>15</b>

- 6.2.2 During water monitoring 27 and 30 March 2015, very shallow water was observed at the proposed water monitoring location and water sampling at WM1 was unable to carry out. To avoid missing of monitoring data, water sampling was carried out near the box culvert at close downstream and the data is served as reference only.
- 6.2.3 In this Reporting Period, there were four (4) Limit Level exceedances were recorded at WM4, namely three (3) exceedances of DO on 25, 27 and 30 March 2015 and one (1) exceedance of suspended solids (SS) on 6 March 2015. For WM1, a total of twelve (12) Action/ Limit exceedances were recorded, namely eleven (11) Limit Level exceedance of DO and one (1) Action Level exceedance of SS on 13 March 2015.
- 6.2.4 NOE was issued to relevant parties upon confirmation of the monitoring result. Except for exceedance of SS at WM1 on 13 March 2015, the investigation for the cause of exceedance was completed and submitted to relevant parties. The investigation results are summarized in below.

**Investigation Result for DO Exceedance at WM1 between 2 to 25 March 2015**

- 6.2.5 According to the site information provided by the Contractor, deck construction at Bridge J, drainage work and formation work at BCP area were conducted during 2 to 25 March 2015. The active construction works under the Contract were located at far upstream of WM1 and these construction activities did not disturb the water body.
- 6.2.6 During of the course of water sampling between 2 to 25 March 2015, large amount of algae growth was observed throughout the channel especially at close upstream of WM1. Moreover, very slow water flow was observed due to the diversion works at downstream was observed during weekly site inspections in March 2015,
- 6.2.7 As advised by the SRJV, no organic pollution resulting in high BOD was caused by the works of C5. However, large amount of algae were observed growing in the water body which was considered as the major factor resulting to low DO level. DO level exceedances were continually recorded where algae growth observed near WM1. Based on above investigation, it is concluded that the DO exceedances during 2 to 25 March 2015 were not related to the project.

**Investigation Result for Suspended Solids Exceedance at WM1 on 13 March 2015**

- 6.2.8 It is under investigation and the result will be reported in next Reporting Period.

**Investigation Result for Suspended Solids Exceedance at WM4 on 6 March 2015 (Contract 2)**

- 6.2.9 Site information was obtained from the Contractor of C2 (DHK), construction activities carried out at South Portal on 6 March 2015 included site formation, hoarding erection, construction of site office, spoil transportation and slope stabilization. All works were carried out far from the river course and no discharge was made on 6 March 2015.
- 6.2.10 During weekly site inspection by the ET on 6 March 2015, it was observed all wastewater generated from works was treated by the onsite wastewater treatment system and treated water was recycled for further use such as wheel washing. The site boundary of South Portal was kept clear of muddy water / runoff and no discharge was made.
- 6.2.11 As advised by DHK, wastewater daily testing was conducted to check the quality of discharge such as pH and turbidity level. According to the visual test record on 6 March 2015, the turbidity performance was acceptable.
- 6.2.12 According to the daily rainfall distribution record from HKO, rainfall was recorded at Tai Po and Fanling District on 5 and 6 March 2015. Moreover, water sampling was carried out during rain, it is likely that the water samples collected were influenced by rain in increasing of river flow and disturbed the riverbed. In view of the above, it was consider that the exceedance was not related to the works under Contract 2.

**Investigation Result for Suspended Solids Exceedance at WM4 on 6 March 2015 (Contract 3)**

- 6.2.13 According to site information provided by Contractor of C3 (Chun Wo), construction works carried out on 6 March 2015 included backfilling, compaction, installation of sheet pile, welding and breaking works. These works did not disturb the water environment and no wastewater was generated from the abovementioned construction activities.
- 6.2.14 Daily inspection for wastewater treatment facilities within the site area was conducted by Chun Wo, when there is water discharge observed, visual test would be carried out to check the performance of discharge and the surrounding environment. According to the inspection record on 6 March 2015, water discharge was recorded at WWTS no. 4 and WWTS no.5 and the visual test results for both WWTS were satisfactory.
- 6.2.15 During weekly site inspection by the ET on 2 and 11 March 2015, muddy water was observed flowing from an outfall at the upstream outside site boundary. This external polluted water source deteriorated the existing stream water and possibly recorded at WM4.
- 6.2.16 According to the daily rainfall distribution record from HKO, rainfall was recorded at Tai Po and Fanling District on 5 and 6 March 2015. Moreover, water sampling was carried out during rain, it is likely that the water samples collected were influenced by rain in increasing of river flow and disturbed the riverbed. In view of the above, it was consider that the exceedance was not related to the works under Contract 3

**Investigation Result for DO Exceedance at WM4 on 25, 27 and 30 March 2015 (Contract 2)**

- 6.2.17 Site information was obtained from the Contractor of C2 (DHK), construction activities carried out at South Portal on 25, 27 and 30 March 2015 included site formation, site installation, spoil transportation and slope stabilization. All works were carried out far from the river course and no discharge was made on 25, 27 and 30 March 2015.
- 6.2.18 During weekly site inspection by the ET on 19 and 27 March 2015, it was observed all wastewater generated from works was treated by the onsite wastewater treatment system and treated water was recycled for further use such as wheel washing.

6.2.19 Moreover, low DO levels were recorded the upstream control station WM4-CB during the exceedance days as well. It is considered that the exceedances were likely due to natural variation and not related to the works under Contract 2.

**Investigation Result for DO Exceedance at WM4 on 25, 27 and 30 March 2015 (Contract 3)**

6.2.20 According to site information provided by the Contractor of C3 (Chun Wo), construction works carried out on 6 March 2015 included backfilling, compaction, installation of sheet pile, welding and breaking works. (refer to Figure 1) These works did not disturb the water environment and the abovementioned construction activities comprised none of DO depleting characteristics.

6.2.21 During weekly site inspection by the ET on 23 and 30 March 2015, it was observed that muddy water flowed from an outfall at the upstream outside site boundary. This external unknown muddy may water deteriorate the existing stream water and affect the water quality at throughout the stream course at downstream.

6.2.22 Moreover, low DO levels were recorded the upstream control station WM4-CB during the exceedance days as well. It is considered that the exceedances were likely due to natural variation and not related to the works under Contract 3.

**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> )	78.1235	--	3.713	--	0	--	81.8365
Reused in this Project (Inert) (in '000 m <sup>3</sup> )	0.3613	--	0.270	--	0	--	0.6313
Reused in other Projects (Inert) (in '000 m <sup>3</sup> )	77.4397	C5	0	--	0	--	77.4397
Disposal as Public Fill (Inert) (in '000 m <sup>3</sup> )	0.3225	Tuen Mun 38	3.443	Tuen Mun 38	0	--	3.7655

**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 ('000kg) #	0	-	0	-	0	--	0
Recycled Paper / Cardboard Packing ('000kg) #	0.2920	Licensed collector	0	-	0	--	0.2920
Recycled Plastic ('000kg) #	0	-	1.030	Licensed collector	0	--	1.030
Chemical Wastes ('000kg) #	0.7040	-	0	Licensed collector	0	--	0.7040
General Refuses ('000m <sup>3</sup> )	0.1293	NENT	0.080	NENT	0.375	NENT	4.3498

*Remark #:* Unit of recycled metal, recycled paper/ cardboard packing, recycled plastic and chemical waste for Contractor 3 was in ('000m<sup>3</sup>).

**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 **6, 13, 19 and 27 March 2015**. 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>
6 March 2015	<ul style="list-style-type: none"> <li>Air compressor without NEL was observed. The contractor was reminded to provide valid NEL before the plant operation.. (South Portal)</li> <li>The contractor was reminded to provide drip tray for all chemical containers located on site to prevent leakage.</li> </ul>	<ul style="list-style-type: none"> <li>NEL has displayed on the air compressor.</li> <li>Not required for reminder</li> </ul>
13 March 2015	<ul style="list-style-type: none"> <li>Heavy smoke emitted from the generator was observed. The contractor should provide proper maintenance to prevent dark smoke emission (<b>South Portal</b>).</li> <li>Air compressor without drip tray was observed. The contractor should provide drip tray underneath (<b>North Portal</b>).</li> <li>Grouting works without proper cover was observed. The contractor should provide proper cover to comply with the requirement to reduce dust impact (<b>North Portal</b>).</li> </ul>	<ul style="list-style-type: none"> <li>The generator is under maintenance to avoid any black smoke emission while in operation.</li> <li>Proper drip tray has been placed at the air compressor underneath to avoid land contamination come from any oil leakage incident.</li> <li>The grouting workstation of 3-sides and top has had covered tarpaulin to avoid dust emission.</li> </ul>
19 March 2015	<ul style="list-style-type: none"> <li>Another one air compressor without drip tray was observed. The contractor should place the drip tray underneath to prevent leakage. (South Portal)</li> <li>The broken water barriers was observed. The contractor should replace the broken barriers to prevent water ponding and mosquito breeding on site. (North Portal)</li> </ul>	<ul style="list-style-type: none"> <li>Proper drip tray has been placed at the air compressor underneath to avoid land contamination come from any oil leakage incident.</li> <li>At before site inspection on 27 March 2015, the damaged water barriers has been replaced.</li> </ul>
27 March 2015	<ul style="list-style-type: none"> <li>A waste skip observed is full. The contractor should be to increase cleanup frequency. (North Portal)</li> </ul>	<ul style="list-style-type: none"> <li>The general refuse in the waste skip was cleared.</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
	<ul style="list-style-type: none"> <li>Reminder that all vehicles should be clean before leaving the site and all the cleaning works should be undertaken within the site area. (Mid-Vent)</li> <li>Reminder that the wheel-washing water retained inside the bay should be cleanup in regular and increase frequency. (Mid-Vent)</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder</li> <li>Not required for reminder</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 **2, 11, 18, 23 and 30 March 2015**. 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
2 March 2015	<ul style="list-style-type: none"> <li>Oil spill was observed on bare ground, the Contractor should clean the oil spill in accordance with the chemical waste disposal ordinance. (SA12)</li> </ul>	<ul style="list-style-type: none"> <li>The contaminated soil has been removed and disposed properly.</li> </ul>
11 March 2015	<ul style="list-style-type: none"> <li>Opened sand stockpile was observed, the Contractor should cover the stockpile with impervious sheet properly. (SA12)</li> <li>C&amp;D wastes placed next to the retained tree was observed, the Contractor should remove the waste and provide protection fence for the tree. (SA2)</li> <li>Dry haul road was observed, the Contractor should provide water spraying more frequently to minimize dust impact. (SA12)</li> </ul>	<ul style="list-style-type: none"> <li>The opened sand stockpile was removed.(SA12)</li> <li>C&amp;D wastes placed next to the retained tree were removed. (SA2)</li> <li>Water spraying was provided at site exit of SA12 to keep the haul road wet.</li> </ul>
18 March 2015	<ul style="list-style-type: none"> <li>Scattered C&amp;D waste was observed at area BC02, the Contractor should improve the housekeeping of site area.</li> <li>Sand and mud cumulated inside the drip tray of a generator was observed at area SA4, the Contractor should remove the sand and mud and provide proper plug for the drip tray.</li> </ul>	<ul style="list-style-type: none"> <li>C&amp;D wastes were removed and housekeeping at BC02 has been improved.</li> <li>The sand and mud inside the drip tray were removed and a plug has been installed.</li> </ul>
23 March 2015	<ul style="list-style-type: none"> <li>Dry haul road was observed near the works area of Bridge E, the Contractor should implement dust mitigation measures such as water spraying on dry road surface.</li> </ul>	<ul style="list-style-type: none"> <li>Water spraying on haul roads was observed near the works area of Bridge E.</li> </ul>
30 March 2015	<ul style="list-style-type: none"> <li>The Contractor was reminded to update the Environmental Permit at all site entrance.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
	<ul style="list-style-type: none"> <li>The contractor was reminded to wash all vehicles leaving the site.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>

8.2.5 Furthermore, the Contractor of Contract 3 was reminded to provide water spraying during dusty works, such as breaking and excavation.

**The Contract 5**

8.2.6 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 **5, 12, 20 and 26 March 2015**. No non-compliance was noted.

8.2.7 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
26 February 2015	<ul style="list-style-type: none"> <li>The Contractor should remove the C&amp;D wastes regularly to maintain site cleanliness and avoid mosquito breeding.</li> </ul>	<ul style="list-style-type: none"> <li>Part of the C&amp;D wastes was removed and the rest of the C&amp;D debris will be removed in sequence.</li> </ul>
5 March 2015	No environmental issue was observed during the site inspection.	NA
12 March 2015	No environmental issue was observed during the site inspection.	NA
20 March 2015	<ul style="list-style-type: none"> <li>As a reminder, water spraying should be provided to dry haul road</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
26 March 2015	No environmental issue was observed during the site inspection.	NA

8.2.8 Overall, general housekeeping such as daily site tidiness and cleanliness should be maintained for all Contracts. Furthermore, the Contractors were reminded to implement Waste Management Plan of the Project.

**Other Contracts**

8.2.9 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.

9.1.2 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 – 28 Feb 2015	Contract 2	0	11	<ul style="list-style-type: none"> <li>• (4) Water Quality</li> <li>• (5) Construction Dust</li> <li>• (2) Noise</li> </ul>
06 Nov 2013 – 28 Feb 2015	Contract 3	0	3	<ul style="list-style-type: none"> <li>• (1) Construction Dust</li> <li>• (2) Water quality</li> </ul>
16 Aug 2013 – 28 Feb 2015	Contract 5	0	2	<ul style="list-style-type: none"> <li>• (2) Construction Dust</li> </ul>
1 – 31 Mar 2015	Contract 2	0	11	<ul style="list-style-type: none"> <li>• (4) Water Quality</li> <li>• (5) Construction Dust</li> <li>• (2) Noise</li> </ul>
	Contract 3	0	3	<ul style="list-style-type: none"> <li>• (1) Construction Dust</li> <li>• (2) Water quality</li> </ul>
	Contract 5	0	2	<ul style="list-style-type: none"> <li>• (2) Construction Dust</li> </ul>

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

Reporting Period	Contract No	Environmental Summons Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 28 Feb 2015	Contract 2	0	0	NA
06 Nov 2013 – 28 Feb 2015	Contract 3	0	0	NA
16 Aug 2013 – 28 Feb 2015	Contract 5	0	0	NA
1 – 31 Mar 2015	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 – 28 Feb 2015	Contract 2	0	0	NA
06 Nov 2013 – 28 Feb 2015	Contract 3	0	0	NA
16 Aug 2013 – 28 Feb 2015	Contract 5	0	0	NA
1 – 31 Mar 2015	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA

#### The Other Contracts

9.1.3 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 2, 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 wastewater treatment facilities i.e. sedimentation tank or AquaSed before discharge.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>Maintain damp / wet surface on access road</li> <li>Keep slow speed in the sites</li> <li>All vehicles must use wheel washing facility before off site</li> <li>Sprayed water during breaking works</li> <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**

- Mid-Vent Portal • Tunnel excavation
- North Portal • Permanent slope formation
- South Bound Tunnel Bench Excavation
- Tunnel Boring Machine (TBM) Site Installation
- TBM Delivery and Assembly
- Top heading excavation (canopies) for North Bound Tunnel
- South Portal • Temporary Slope Cut with Soil Nails Installation
- Rock excavation to Ventilation Building Formation
- Admin Building • Backfilling for surcharge

**Contract 3**

- Abutment construction for Bridge E
- Cable detection and trial trenches
- Demolition of central divide at Fanling Highway
- E&M work for new valve control & Telemetry House

- Erection of temporary support at DSD nullah
- Filling works at Tong Hang East
- Lagging wall and capping beam for bored pile wall
- Laying storm drains
- Noise barrier construction
- Pier construction
- Pier table construction
- Pile cap works
- Pre-drilling works and piling works for viaduct
- Road works at Fanling Highway
- Sewer works at Tai Wo Service Road West (TWSRW)
- Socket H-pile load test
- Tree felling works
- Utilities duct laying
- Viaduct segment erection
- Waterworks
- Catch Fence Erection
- Diversion of DN1400 watermain deck construction of bridge E

#### **Contract 5**

- Installation of additional rising main at LMH road
- Bituminous laying at proposed and existing LMH
- Construction of secondary boundary fencing
- Construction of retaining wall No.2b
- Brick laying at footpath of proposed LMH road
- Road works (kerb laying) for proposed LMH road and existing LMH road
- Formation Works at BCP Area
- Installation of precast and vehicular parapet of Bridge J.
- Construction of Depressed Road at BCP3
- Filing Works for ArchSD permanent office
- Drainage works at proposed and exiting LMH Road
- Water works at proposed LMH Road
- Irrigation system at proposed and existing LMH Road
- Drainage works at BCP area
- Installation of Underground utilities at proposed and 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 Contract 4 and Contract 6 have not yet commenced and no environmental issue is presented.

## 11 CONCLUSIONS AND RECOMMENDATIONS

### 11.1 CONCLUSIONS

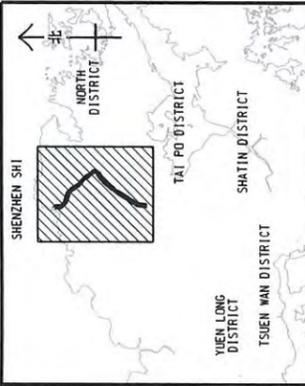
- 11.1.1 This is 20<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 31 March 2015.
- 11.1.2 No 24-hour or 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.
- 11.1.3 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in the Reporting Period. No NOEs or the associated corrective actions were therefore issued.
- 11.1.4 For water quality monitoring, there were four (4) Limit Level exceedances were recorded at WM4, namely three (3) exceedances of DO on 25, 27 and 30 March 2015 and one (1) exceedance of suspended solids (SS) on 6 March 2015. For WM1, a total of twelve (12) Action/ Limit exceedances were recorded, namely eleven (11) Limit Level exceedance of DO and one (1) Action Level exceedance of SS on 13 March 2015. Except for exceedance of SS at WM1 on 13 March 2015, the investigation for the cause of exceedance was completed and submitted to relevant parties.
- 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, four (4), five (5) and four (4) events of joint site inspection by the RE, IEC, ET with the relevant 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.

### 11.2 RECOMMENDATIONS

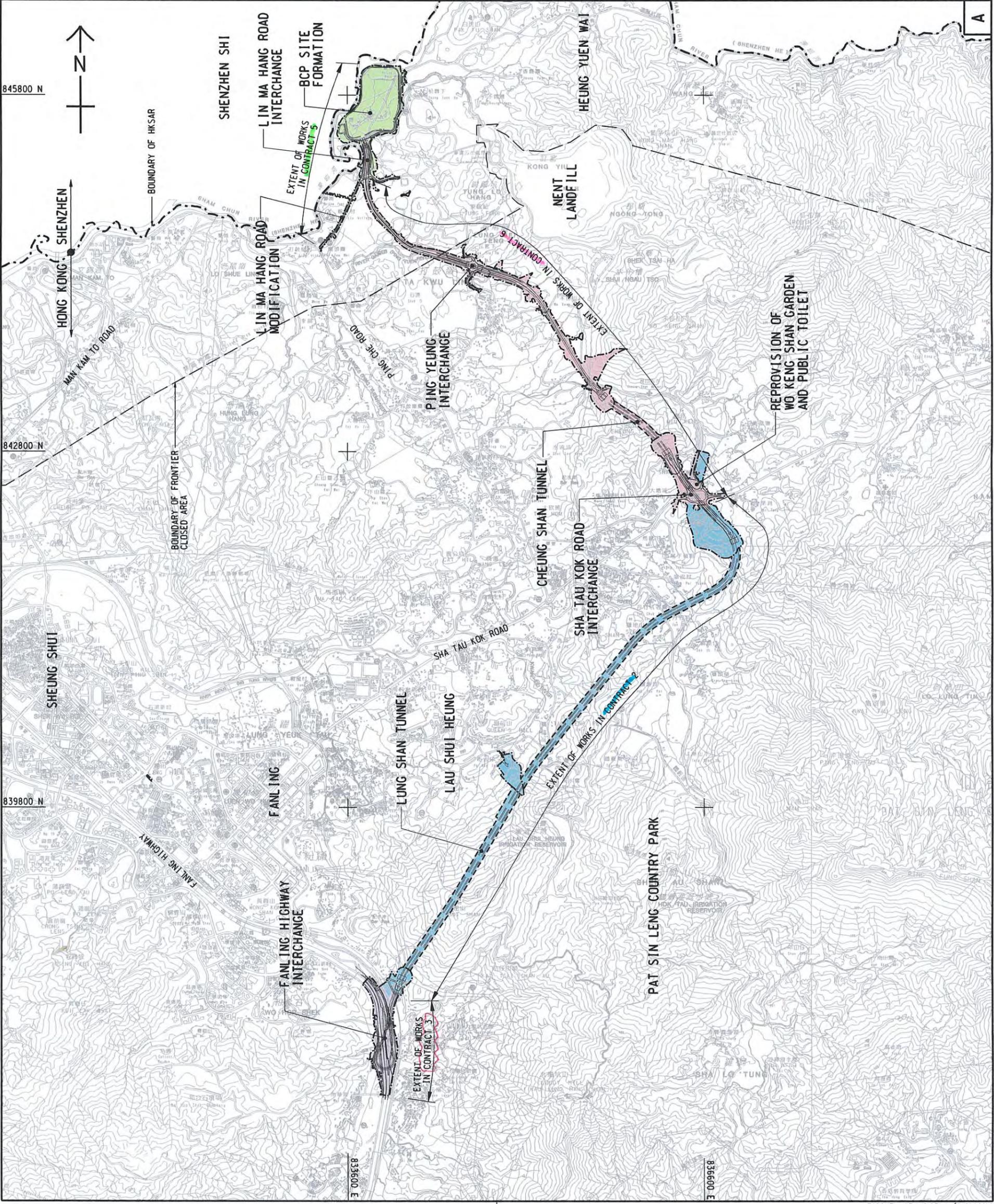
- 11.2.1 In upcoming wet season, muddy water or other water pollutants from site surface runoff into Kong Yiu Channel and Ma Wat Channel will be key environment issue. Water quality mitigation measures to prevent surface runoff into nearby water bodies and public areas should be paid on special attention. The Contractors should fully implement the water quality mitigation measures.
- 11.2.2 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EM&A requirement.
- 11.2.3 Since most of construction sites under the Project are adjacent to villages, the contractors should be paid attention on the construction dust emission. The Contractor should fully implement the construction dust mitigation measures properly.
- 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**



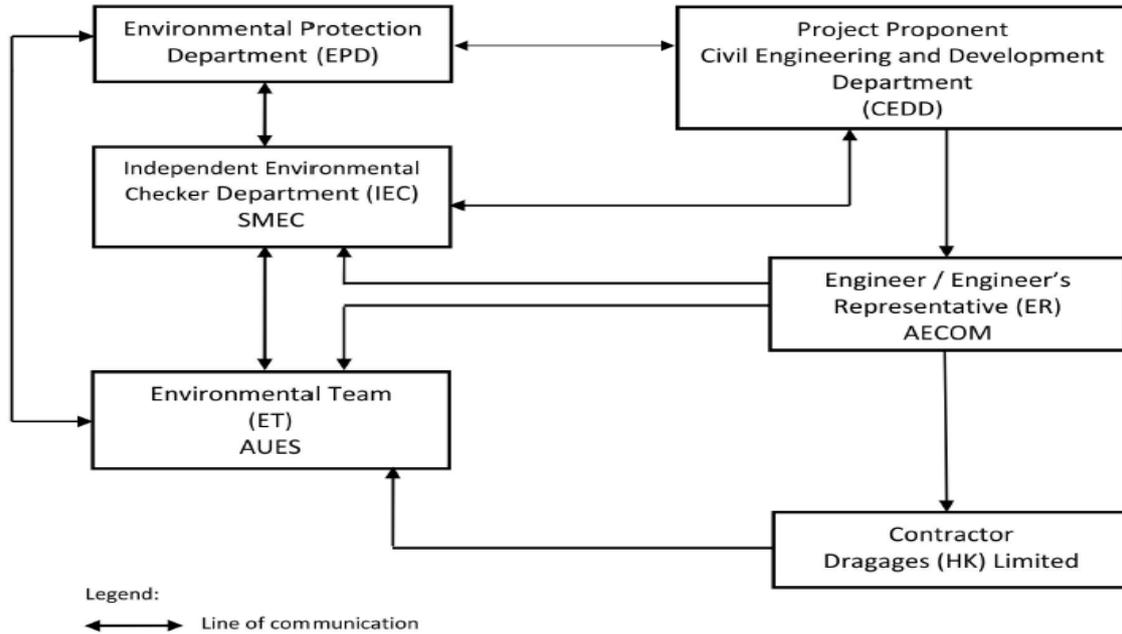
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DRAWN BY 繪圖員 ZJ	CHECKED BY 校核員 A1
SCALE 比例尺 1 : 15000	STATUS 狀態 已批核
SHEET NO. IN TOTAL 圖號在總圖中 1 / 1	
UNIT 單位 METRES 公尺	
© COPYRIGHT RESERVED 版權保留	



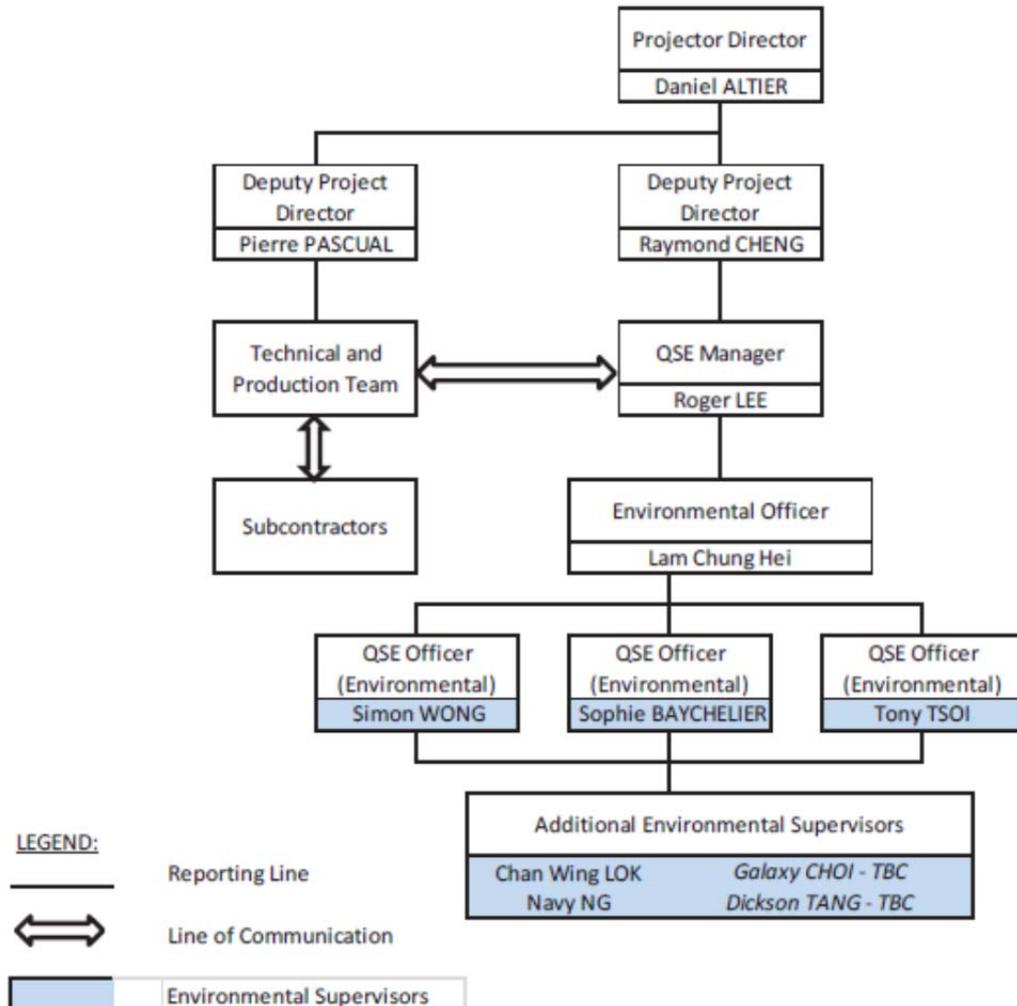
## **Appendix B**

### **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 Officer	Lam Chung Hei	2171 3004	2171 3299
DHK	QSE Officer (Environmental)	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:

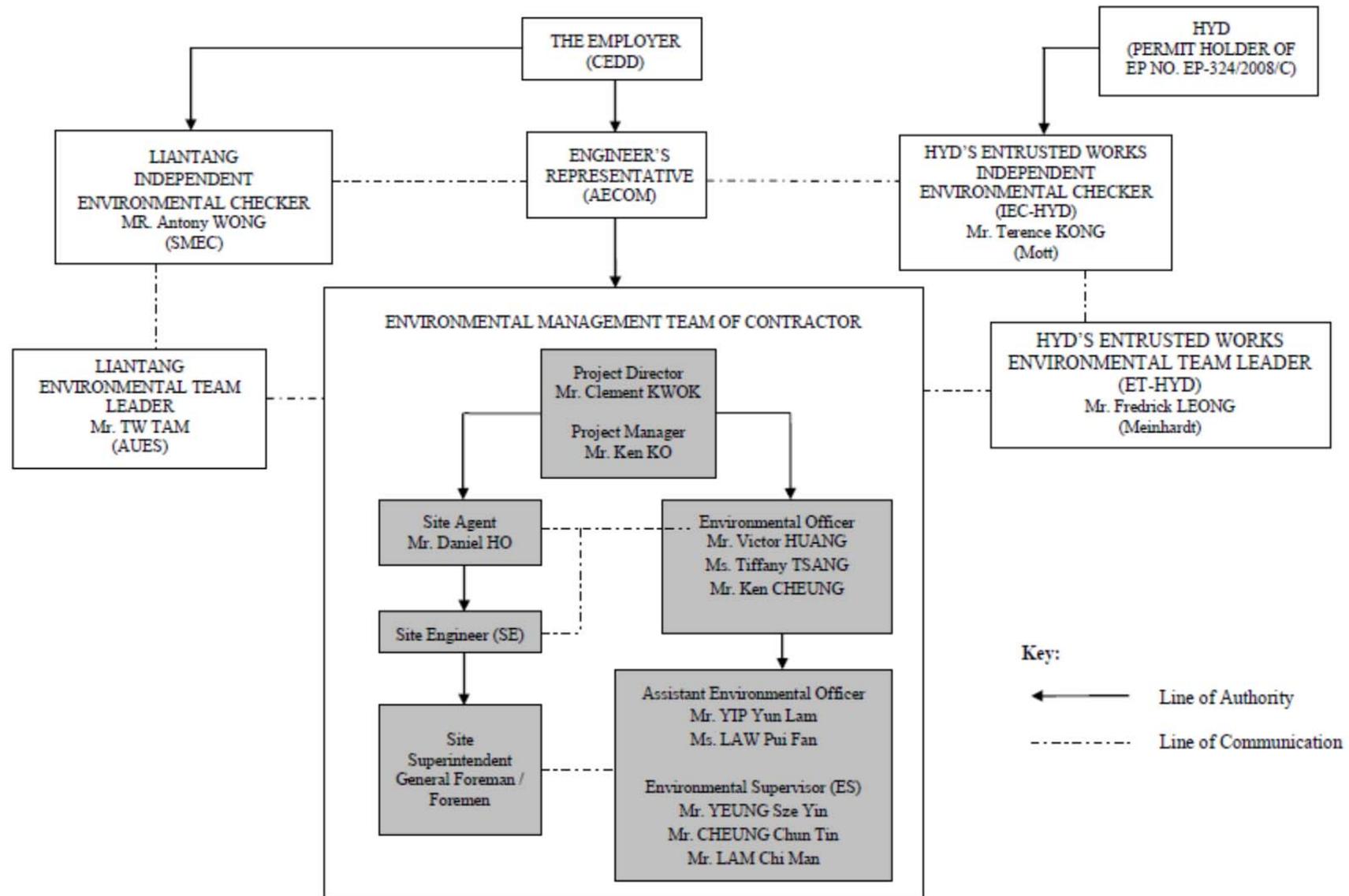
*CEDD (Employer) – Civil Engineering and Development Department*

*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	Victor Huang Tiffany Tsang Ken Cheung	2638 6115	2638 7077
Chun Wo	Assistant Environmental Officer	Yip Yun Lam Law Pui Fan	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:

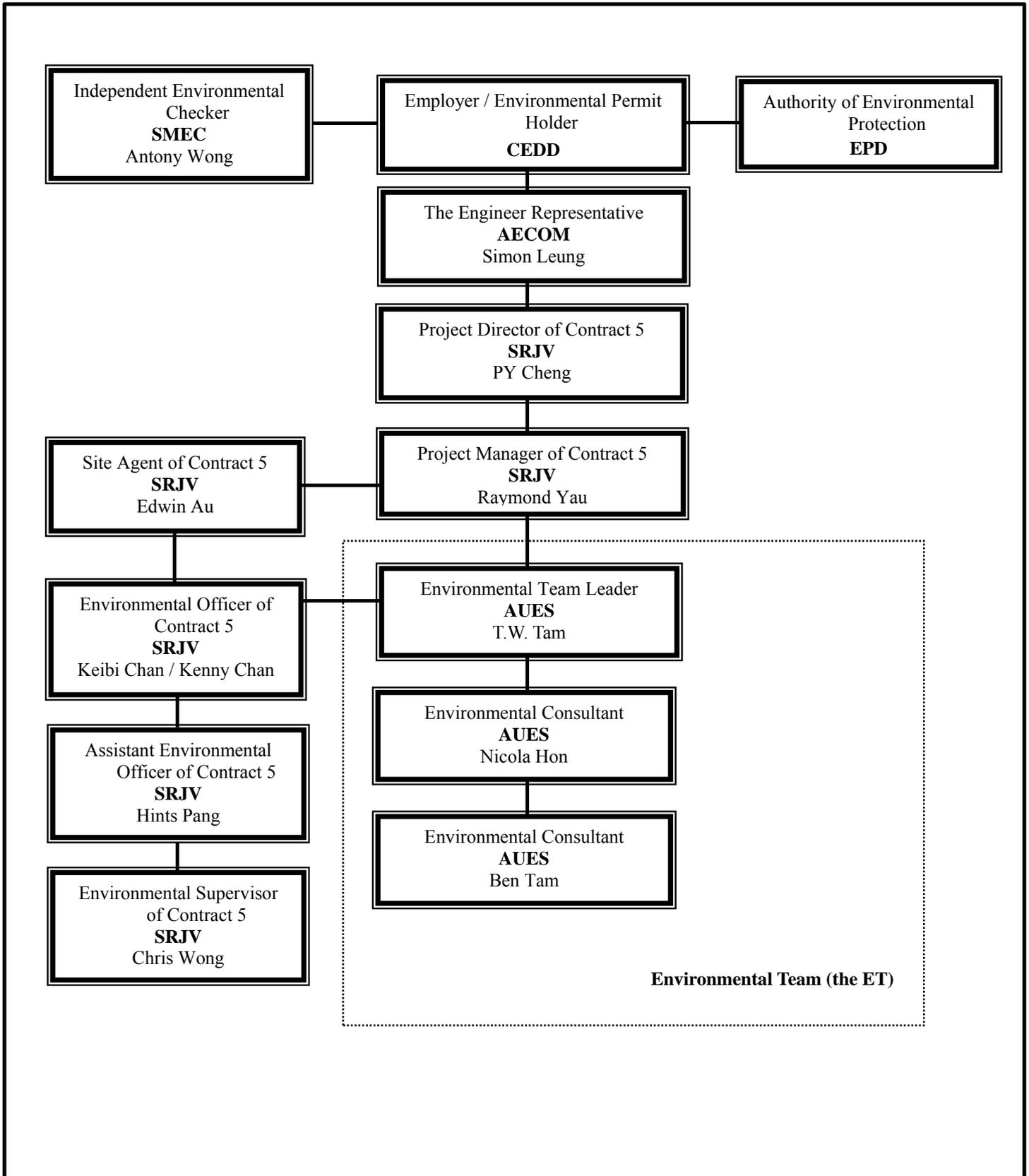
*CEDD (Employer) – Civil Engineering and Development Department*

*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**

### **3-month rolling construction program**

## Contract 2

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2015			
					Mar	Apr	May	Jun
<b>Total</b>		1023	20-Jan-14	10-Jul-17				
<b>HKLTH Works Programme update 20-Mar-2015 [wpd]</b>		1023	20-Jan-14	10-Jul-17				
<b>2 General</b>		952	17-Apr-14	10-Jul-17				
<b>Geotechnical Interpretative Report 2nd Revision</b>		65	09-Dec-14	25-Feb-15				
<b>DDA Submission</b>		65	09-Dec-14	25-Feb-15				
GIR21021940	IPs/ ER's Review	28	09-Dec-14	13-Jan-15				
GIR21021960	Preparation of DDA with ICE Certification for resubmission to ER/ICE/IP	13	14-Jan-15	28-Jan-15				
GIR21022050	ER/IP's Approval	28	29-Jan-15	25-Feb-15				
<b>Project Wide E&amp;M</b>		952	17-Apr-14	10-Jul-17				
<b>E&amp;M Design Works for Civil Design Interface</b>		180	29-Aug-14	18-Feb-15				
PD.AE.1130	E&M Spatial Study and Structural Provisions Check for Ventilation Buildings	110	29-Aug-14	10-Jan-15				
PD.AE.1140	E&M Spatial Study and Structural Provisions Check for Administration Building	125	20-Sep-14	18-Feb-15				
<b>E&amp;M Design &amp; Engineering Works</b>		460	17-Apr-14	29-Aug-15				
<b>Engineering Design Submission</b>		340	17-Apr-14	12-Jun-15				
PD.FS.DS	Fire Service System Submission and Approval by the Engineer	230	21-Jul-14	30-Apr-15				
PD.CM.DS	CMCS 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>Shop Drawing &amp; Builder's Drawing Submission</b>		179	17-Dec-14	29-Aug-15				
PD.DW.1000	Shop Drawings & Builder's Drawings Preparation	176	17-Dec-14	27-Jul-15				
PD.DW.1010	Shop Drawings & Builder's Drawings Submission & Approval	177	22-Jan-15	29-Aug-15				
<b>Equipment Selection &amp; Submission</b>		509	01-Aug-14	17-Mar-16				
PD.PQ.1480	ELV System Submission and Approval by the Engineer	294	01-Aug-14	29-Jul-15				
PD.PQ.1910	P&D System Submission and Approval by the Engineer	169	01-Nov-14	30-May-15				
PD.PQ.2260	ECS System Submission and Approval by the Engineer	263	02-May-15	17-Mar-16				
<b>Manufacturing &amp; Delivery of Major Equipment</b>		678	02-Mar-15	10-Jul-17				
PD.FS.MD	Manufacturing and Delivery of FS System	398	19-May-15	17-Sep-16				
PD.PD.MD	Manufacturing and Delivery of P&D System	409	28-Mar-15	15-Aug-16				
PD.PQ.1040	Manufacturing and Delivery of ELV/CMCS/LAN/TEL System	588	02-Mar-15	23-Feb-17				
PD.PQ.1410	Manufacturing and Delivery of Electrical Services System	649	02-May-15	10-Jul-17				
<b>3 South Portal Area</b>		286	13-Oct-14	04-Sep-15				
<b>3.1 South Portal Subcontract &amp; Procurement</b>		120	29-Jan-15	29-Jun-15				
SPS&P0060	Subcontract : Ventilation Building Foundation Works	60	29-Jan-15	16-Apr-15				
SPS&P0070	Subcontract : Retaining Wall Structure Works	60	17-Apr-15	29-Jun-15				
<b>3.2 South Portal Design Submission</b>		197	15-Dec-14	08-Aug-15				
<b>South Portal: Ventilation Buildings - Foundation Design</b>		28	01-Jan-15	28-Jan-15				
<b>DDA Submission</b>		28	01-Jan-15	28-Jan-15				
DSN07990	ER/IP's Approval	28	01-Jan-15	28-Jan-15				
<b>South Portal: Temp Works For D&amp;B Tunnelling</b>		28	28-Dec-14	24-Jan-15				
<b>DDA Submission</b>		28	28-Dec-14	24-Jan-15				
DSN010320	ER/IP's Approval	28	28-Dec-14	24-Jan-15				
<b>South Tunnel Permanent Lining</b>		173	18-Feb-15	11-Jul-15				

					<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages Hong Kong <small>A member of the Bouygues Construction group</small>		<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department		<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00036/A		
									DOC. STATUS FOR INFO.		CREATION DATE 20/03/2015	REVISION A			
									PAPER SIZE A3		SCALE N/A	PAGE 1 of 7			
A	Monthly Report No.15	20/03/2015	RAN	RBS/SJO	PPL/DAL										
REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED										

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2015			
					Mar	Apr	May	Jun
<b>DDASubmission</b>								
STPL1023520	Preparation for formal submission to ER/ICE/IP	48	18-Feb-15	22-Apr-15	[Bar from Mar 18 to Apr 22]			
STPL1023570	IPs/ ER's Review	24	23-Apr-15	21-May-15	[Bar from Apr 23 to May 21]			
STPL1023590	Preparation for resubmission to ER/ICE/IP with ICE Certification	19	22-May-15	13-Jun-15	[Bar from May 22 to Jun 13]			
STPL1023690	ER/IP's Approval	28	14-Jun-15	11-Jul-15	[Bar from Jun 14 to Jul 11]			
<b>South Tunnel Internal Structures</b>								
<b>DDASubmission</b>								
STIS1L1023520	Preparation for formal submission to ER/ICE/IP	45	30-Mar-15	27-May-15	[Bar from Mar 30 to May 27]			
STIS1L1023570	IPs/ ER's Review	24	28-May-15	25-Jun-15	[Bar from May 28 to Jun 25]			
<b>Cross Passages -Temp Works D&amp;B Tunnel - Soft Ground</b>								
<b>DDASubmission</b>								
DSN26930	Preparation for formal submission to ER/ICE/IP	50	27-Jan-15	28-Mar-15	[Bar from Jan 27 to Mar 28]			
DSN26980	IPs/ ER's Review	28	30-Mar-15	06-May-15	[Bar from Mar 30 to May 6]			
DSN27000	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	07-May-15	08-Jun-15	[Bar from May 7 to Jun 8]			
DSN27100	ER/IP's Approval	28	09-Jun-15	06-Jul-15	[Bar from Jun 9 to Jul 6]			
<b>Cross Passages -Temp Works D&amp;B Tunnel - Rock</b>								
<b>DDASubmission</b>								
FL326930	Preparation for formal submission to ER/ICE/IP	18	15-Jun-15	07-Jul-15	[Bar from Jun 15 to Jul 7]			
FL326980	IPs/ ER's Review	28	08-Jul-15	08-Aug-15	[Bar from Jul 8 to Aug 8]			
<b>CIA- South Portal &amp; South D&amp;B Tunnels inc Mid Vent Junction &amp; CP</b>								
SC01175	*Final CIA Report (14d)	21	15-Dec-14	04-Jan-15	[Bar from Dec 15 to Jan 4]			
<b>3.3 South Portal Method Statement Submission</b>								
<b>South Portal: Tunnel Mechanical Excavation</b>								
FL2022093	Prepare Method Statement	48	24-Jan-15	24-Mar-15	[Bar from Jan 24 to Mar 24]			
FL2022094	Engineer's Comment	28	25-Mar-15	30-Apr-15	[Bar from Mar 25 to Apr 30]			
FL2022095	Re-submission Method Statement	24	02-May-15	30-May-15	[Bar from May 2 to May 30]			
FL2022096	Engineer's Approval	28	01-Jun-15	04-Jul-15	[Bar from Jun 1 to Jul 4]			
<b>South Tunnels: Blasting Method Statement</b>								
FL2022101	Preparation and Submission of Blasting Method Statement	135	13-Oct-14	25-Mar-15	[Bar from Oct 13 to Mar 25]			
FL2022104	Engineer's/IP's Review & Approval	113	06-Dec-14	28-Apr-15	[Bar from Dec 6 to Apr 28]			
<b>South Portal: Bored Piling Works</b>								
A25485	Prepare Method Statement	48	24-Jan-15	24-Mar-15	[Bar from Jan 24 to Mar 24]			
A25486	Engineer's Comment	28	25-Mar-15	30-Apr-15	[Bar from Mar 25 to Apr 30]			
A25487	Re-submission Method Statement	24	02-May-15	30-May-15	[Bar from May 2 to May 30]			
A25488	Engineer's Approval	28	01-Jun-15	04-Jul-15	[Bar from Jun 1 to Jul 4]			
<b>South Portal: Pilecap, Footings &amp; Tie beams</b>								
A2340	Engineer's Comment	28	22-Dec-14	26-Jan-15	[Bar from Dec 22 to Jan 26]			
A2350	Re-submission Method Statement	24	27-Jan-15	26-Feb-15	[Bar from Jan 27 to Feb 26]			
A2360	Engineer's Approval	28	27-Feb-15	31-Mar-15	[Bar from Feb 27 to Mar 31]			
<b>South Portal: Permanent Retaining Walls</b>								
A25481	Prepare Method Statement	48	08-Dec-14	04-Feb-15	[Bar from Dec 8 to Feb 4]			
A25482	Engineer's Comment	28	05-Feb-15	12-Mar-15	[Bar from Feb 5 to Mar 12]			
A25483	Re-submission Method Statement	24	13-Mar-15	14-Apr-15	[Bar from Mar 13 to Apr 14]			
A25484	Engineer's Approval	28	15-Apr-15	18-May-15	[Bar from Apr 15 to May 18]			
<b>3.5 South Portal Works</b>								
<b>South Portal: CLP Substation</b>								
SCLP2060	Sub-station Construction + CLP Installation	106	18-Oct-14	28-Feb-15	[Bar from Oct 18 to Feb 28]			
SCLP2090	Energization	1	28-Feb-15	28-Feb-15	[Bar at Feb 28]			
<b>South Portal: Slopeworks</b>								
		120	05-Nov-14	06-Jul-15	[Bar from Nov 5 to Jul 6]			

<table border="0"> <tr> <td colspan="2">MAIN CONTRACTOR</td> <td colspan="2">CLIENT</td> <td colspan="2">THE ENGINEER</td> </tr> <tr> <td colspan="2">  </td> <td colspan="2">  </td> <td colspan="2">  </td> </tr> <tr> <td colspan="2">  </td> <td colspan="2"></td> <td colspan="2">PROJECT</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Contract No. CV/2012/08</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Liantang/Heung Yuen Wai Boundary Control Point</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">Site Formation and Infrastructure Works Contract 2</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">DOCUMENT NO.</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">LTH/DHK/PGR/PW/PLP/00036/A</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>DOC. STATUS</td> <td>CREATION DATE</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>FOR INFO.</td> <td>20/03/2015</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>REVISION</td> <td>A</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>PAPER SIZE</td> <td>SCALE</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>A3</td> <td>N/A</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>PAGE</td> <td>2 of 7</td> </tr> </table>						MAIN CONTRACTOR		CLIENT		THE ENGINEER												PROJECT						Contract No. CV/2012/08						Liantang/Heung Yuen Wai Boundary Control Point						Site Formation and Infrastructure Works Contract 2						DOCUMENT NO.						LTH/DHK/PGR/PW/PLP/00036/A						DOC. STATUS	CREATION DATE					FOR INFO.	20/03/2015					REVISION	A					PAPER SIZE	SCALE					A3	N/A					PAGE	2 of 7
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Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2015			
					Mar	Apr	May	Jun
SV2690	Permanent Cut Slope (+68.0 to apprx +45.0mPD)	55	05-Nov-14	10-Jan-15				
SV2700	Temporary Slope Cut below +45.0mPD (soft) w/Soil Nails	48	12-Jan-15	14-Mar-15	█			
SV2701dwp	Temporary Slope Cut below +45.0mPD (soft) w/Soil Nails	48	16-Mar-15	18-May-15		█		
SV2702dwp	Temporary Soil Nails between +44.6mPd to +26.7mPD	71	16-Feb-15	23-May-15	█			
SV2710	Rock Excavation to Vent. Bldg. Formation	36	19-May-15	06-Jul-15			█	
<b>South Tunnels: Southbound Tunnel</b>		101	06-May-15	04-Sep-15				
DB6300	D&B Setup / Site Installation	101	06-May-15	04-Sep-15			█	
<b>4 Middle Portal Area</b>		426	26-Sep-14	29-Aug-15				
<b>4.1 Middle Portal Subcontract &amp; Procurement</b>		175	05-Feb-15	11-Aug-15				
MPS&P0040	Subcontract : Tunnel Lining Works	60	05-Feb-15	23-Apr-15	█			
MPS&P0050	Subcontract : Tunnel Lining Formworks (Design, Fabrication, Delivery, & On-Site Assembly)	150	05-Feb-15	11-Aug-15	█			
MPS&P0060	Subcontract : Ventilation Building Foundation Works	60	12-Feb-15	30-Apr-15	█			
MPS&P0070	Subcontract : Ventilation Building Structure Works	60	02-May-15	14-Jul-15			█	
<b>4.2 Middle Portal Design Submission</b>		331	03-Dec-14	28-Aug-15				
<b>Mid Vent Building - Foundation</b>		26	12-Dec-14	11-Feb-15				
<b>DDA Submission</b>		26	12-Dec-14	11-Feb-15				
DSN29064	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	12-Dec-14	14-Jan-15				
DSN29065	ER/IP's Approval	28	15-Jan-15	11-Feb-15				
<b>Mid Vent Adit Permanent Lining</b>		28	03-Dec-14	04-Feb-15				
<b>DDA Submission</b>		28	03-Dec-14	04-Feb-15				
DSN29076	Preparation for resubmission to ER/ICE/IP with ICE Certification	28	03-Dec-14	07-Jan-15				
DSN29077	ER/IP's Approval	28	08-Jan-15	04-Feb-15				
<b>Mid Vent Adit Internal Structure</b>		67	16-Apr-15	28-Aug-15				
<b>DDA Submission</b>		67	16-Apr-15	28-Aug-15				
DSN29082	Preparation for formal submission to ER/ICE/IP	49	16-Apr-15	13-Jun-15		█		
DSN29083	IPs/ ER's Review	28	15-Jun-15	18-Jul-15				█
DSN29084	Preparation for resubmission to ER/ICE/IP with ICE Certification	35	20-Jul-15	28-Aug-15				
<b>Mid Vent Adit/Junction - Temp Works For D&amp;B Tunnelling</b>		51	29-Dec-14	28-Feb-15				
<b>DDA Submission</b>		51	29-Dec-14	28-Feb-15				
DSN29088	Preparation for resubmission to ER/ICE/IP with ICE Certification	29	29-Dec-14	31-Jan-15				
DSN29089	ER/IP's Approval	28	01-Feb-15	28-Feb-15	█			
<b>Mid Vent Adit/Junction Permanent Lining &amp; Backfill</b>		101	23-Feb-15	30-Jun-15				
<b>DDA Submission</b>		101	23-Feb-15	30-Jun-15				
DSN29094	Preparation for formal submission to ER/ICE/IP	49	23-Feb-15	24-Apr-15	█			
DSN29095	IPs/ ER's Review	28	25-Apr-15	29-May-15		█		
DSN29096	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	30-May-15	30-Jun-15			█	
<b>Mid Vent Junction Internal Structure</b>		77	21-Apr-15	23-Jul-15				
<b>DDA Submission</b>		77	21-Apr-15	23-Jul-15				
DSN29102	Preparation for formal submission to ER/ICE/IP	49	21-Apr-15	18-Jun-15		█		
DSN29103	IPs/ ER's Review	28	19-Jun-15	23-Jul-15				█
<b>4.3 Middle Portal Method Statement Submission</b>		265	14-Oct-14	29-Aug-15				
<b>Cavern Blasting Method Statement</b>		220	14-Oct-14	03-Mar-15				
FL2022107	Preparation and Submission of Blasting Method Statement	90	14-Oct-14	29-Jan-15				
FL2022108	Engineer's/IP's Review & Approval	90	12-Nov-14	03-Mar-15	█			
<b>Middle Ventilation Adit Lining Works</b>		121	05-Feb-15	16-Jul-15				
A25513	Prepare Method Statement	48	05-Feb-15	09-Apr-15	█			
A25514	Engineer's Comment	28	10-Apr-15	13-May-15		█		
A25515	Re-submission Method Statement	24	14-May-15	11-Jun-15			█	
A25516	Engineer's Approval	28	12-Jun-15	16-Jul-15				█

					<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages HongKong <small>A member of the Bouygues Construction group</small>		<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department		<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00036/A		
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					Mar	Apr	May	Jun
<b>Cavern Permanent Lining</b>								
A25521	Prepare Method Statement	48	01-Jun-15	29-Jul-15				
A25522	Engineer's Comment	28	29-Jul-15	29-Aug-15				
<b>Mid Vent Bldg. Foundation</b>								
A25509	Prepare Method Statement	48	12-Feb-15	16-Apr-15				
A25510	Engineer's Comment	28	17-Apr-15	20-May-15				
A25511	Re-submission Method Statement	24	21-May-15	18-Jun-15				
A25512	Engineer's Approval	28	19-Jun-15	23-Jul-15				
<b>Mid Vent Building Construction</b>								
FL5900	Prepare Method Statement for Mid Vent Building Construction	48	14-Jan-15	13-Mar-15				
FL5910	Engineer's Comment	28	14-Mar-15	20-Apr-15				
FL5920	Re-submission Method Statement for Mid Vent Building Construction	24	21-Apr-15	19-May-15				
FL5930	Engineer's Approval	28	20-May-15	23-Jun-15				
<b>4.5 Middle Portal Works</b>								
<b>Middle Portal: CLP Substation</b>								
TSS3P2060	Sub-station Construction + CLP Installation	110	26-Sep-14	06-Feb-15				
TSS3P2090	Energization	1	07-Feb-15	07-Feb-15				
<b>Adit Construction - Mid Portal</b>								
MV2490dwp2a	Top Heading Canopies & Bench Excavation Ch24>Ch70	91	14-Oct-14	29-Jan-15				
MV2490dwp3	Blast door installation + Noise Measurement and 24Hr permit approval	30	30-Jan-15	05-Mar-15				
MV2490dwp4	D&B Full Face Ch70>Ch133; 63m	41	06-Mar-15	23-Apr-15				
MV2490dwp5	D&B Full Face Ch133>Ch302 169m	70	24-Apr-15	17-Jul-15				
<b>5 North Portal Area</b>								
<b>5.1 North Portal Subcontract &amp; Procurement</b>								
NPS&P0070	Subcontract : Tunnel Lining Works	60	05-Jun-15	15-Aug-15				
NPS&P0080	Subcontract : Tunnel Concreting Works	60	05-Jun-15	15-Aug-15				
NPS&P0090	Subcontract : Tunnel Lining Formworks (Design, Fabrication, Delivery, & On-Site Assembly)	150	05-Jun-15	02-Dec-15				
<b>North Portal: TBM Procurement &amp; Delivery</b>								
DSN027980	TBM Procurement, Fabrication & Delivery	405	20-Jan-14	28-Feb-15				
DSN027981	Conveyor Belt System Procurement & Delivery	90	03-Nov-14	31-Jan-15				
N21410a	Precast Segment Fabrication (1.6m Ring) - Temporary Segments	190	30-Sep-14	23-May-15				
<b>5.2 North Portal Design Submission</b>								
<b>North Tunnel Curved Section Southbound Temp Support For Enlargement</b>								
<b>DDA Submission</b>								
FL2022145	Preparation for formal submission to ER/ICE/IP	56	25-Nov-14	31-Jan-15				
FL2022146	IPs/ER's Review	28	02-Feb-15	09-Mar-15				
FL2022147	Preparation for resubmission to ER/ICE/IP with ICE Certification	22	10-Mar-15	08-Apr-15				
FL2022148	ER/IP's Approval	28	09-Apr-15	06-May-15				
<b>Bored Tunnel OHVD Slab</b>								
<b>DDA Submission</b>								
FL2022165	Preparation for formal submission to ER/ICE/IP	42	13-Jan-15	05-Mar-15				
FL2022166	IPs/ER's Review	28	06-Mar-15	11-Apr-15				
FL2022167	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	13-Apr-15	07-May-15				
FL2022168	ER/IP's Approval	28	08-May-15	04-Jun-15				
<b>Bored Tunnel Internal Structure (except OHVD Slab)</b>								
<b>DDA Submission</b>								
FL2022173	Preparation for formal submission to ER/ICE/IP	42	13-Jan-15	05-Mar-15				
FL2022174	IPs/ER's Review	28	06-Mar-15	11-Apr-15				
FL2022175	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	13-Apr-15	07-May-15				

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					Mar	Apr	May	Jun
FL2022176	ER/IP's Approval	28	08-May-15	04-Jun-15				
<b>Bored Tunnel/ D&amp;B Tunnel Transition - Headwall Structure (N/B &amp; S/B)</b>		95	17-Mar-15	14-Jul-15				
<b>DDA Submission</b>		95	17-Mar-15	14-Jul-15				
FL2022181	Preparation for formal submission to ER/ICE/IP	95	17-Mar-15	14-Jul-15				
<b>Northbound TBM Dismantling Cavern Temporary Works</b>		116	03-Jan-15	26-May-15				
<b>DDA Submission</b>		116	03-Jan-15	26-May-15				
FL2022185	Preparation for formal submission to ER/ICE/IP	42	03-Jan-15	24-Feb-15				
FL2022186	IPs/ ER's Review	28	25-Feb-15	28-Mar-15				
FL2022187	Preparation for resubmission to ER/ICE/IP with ICE Certification	22	30-Mar-15	28-Apr-15				
FL2022188	ER/IP's Approval	28	29-Apr-15	26-May-15				
<b>North Tunnel Curved Section Cross Passages - Temp Works</b>		42	29-May-15	18-Jul-15				
<b>DDA Submission</b>		42	29-May-15	18-Jul-15				
FL2022189	Preparation for formal submission to ER/ICE/IP	42	29-May-15	18-Jul-15				
<b>Bored Tunnel Cross Passages Temp Works (Soft Ground)</b>		146	27-Jan-15	06-Jul-15				
<b>DDA Submission</b>		146	27-Jan-15	06-Jul-15				
FL2022197	Preparation for formal submission to ER/ICE/IP	50	27-Jan-15	28-Mar-15				
FL2022198	IPs/ ER's Review	28	30-Mar-15	06-May-15				
FL2022199	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	07-May-15	08-Jun-15				
FL2022200	ER/IP's Approval	28	09-Jun-15	06-Jul-15				
<b>Bored Tunnel Cross Passages Temp Works (Rock)</b>		135	27-Jan-15	06-Jul-15				
<b>DDA Submission</b>		135	27-Jan-15	06-Jul-15				
FL2022201	Preparation for formal submission to ER/ICE/IP	50	27-Jan-15	28-Mar-15				
FL2022202	IPs/ ER's Review	28	30-Mar-15	06-May-15				
FL2022203	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	07-May-15	08-Jun-15				
FL2022204	ER/IP's Approval	28	09-Jun-15	06-Jul-15				
<b>Bored Tunnel Cross Passages Permanent Lining (Soft Ground)</b>		146	20-Dec-14	23-Jun-15				
<b>AIP Submission</b>		35	20-Dec-14	03-Feb-15				
FL2022207	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	20-Dec-14	06-Jan-15				
FL2022208	ER/IP's Approval	28	07-Jan-15	03-Feb-15				
<b>DDA Submission</b>		72	24-Mar-15	23-Jun-15				
FL2022209	Preparation for formal submission to ER/ICE/IP	72	24-Mar-15	23-Jun-15				
<b>Bored Tunnel Cross Passages Permanent Lining (Rock)</b>		127	20-Dec-14	17-Jul-15				
<b>AIP Submission</b>		35	20-Dec-14	03-Feb-15				
FL2022215	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	20-Dec-14	06-Jan-15				
FL2022216	ER/IP's Approval	28	07-Jan-15	03-Feb-15				
<b>DDA Submission</b>		92	24-Mar-15	17-Jul-15				
FL2022217	Preparation for formal submission to ER/ICE/IP	92	24-Mar-15	17-Jul-15				
<b>Bored Tunnel Cross Passages Internal Structures</b>		267	27-Nov-14	15-Aug-15				
<b>AIP Submission</b>		166	27-Nov-14	16-Apr-15				
FL2022221	Preparation for formal submission to ER/ICE/IP	42	27-Nov-14	17-Jan-15				
FL2022222	IPs/ ER's Review	28	19-Jan-15	23-Feb-15				
FL2022223	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	24-Feb-15	19-Mar-15				
FL2022224	ER/IP's Approval	28	20-Mar-15	16-Apr-15				
<b>DDA Submission</b>		75	18-May-15	15-Aug-15				
FL2022225	Preparation for formal submission to ER/ICE/IP	75	18-May-15	15-Aug-15				
<b>Temp Gallery for TBM Segment Del in Curved Section</b>		169	03-Dec-14	25-Apr-15				
<b>DDA Submission</b>		169	03-Dec-14	25-Apr-15				
FL2022229	Preparation for formal submission to ER/ICE/IP	42	03-Dec-14	23-Jan-15				
FL2022230	IPs/ ER's Review	28	24-Jan-15	28-Feb-15				
FL2022231	Preparation for resubmission to ER/ICE/IP with ICE Certification	24	02-Mar-15	28-Mar-15				

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					Mar	Apr	May	Jun
FL2022232	ER/IP's Approval	28	29-Mar-15	25-Apr-15				
<b>5.3 North Portal Method Statement Submission</b>		<b>182</b>	<b>13-Nov-14</b>	<b>22-Aug-15</b>				
<b>North Tunnel (D&amp;B Section) Blasting Method Statement</b>		60	13-Nov-14	24-Jan-15				
FL2022110	Engineer's/IP's Review & Approval	60	13-Nov-14	24-Jan-15				
<b>North Tunnel (Cross Passages) Blasting Method Statement</b>		70	01-Jun-15	22-Aug-15				
FL2022111	Preparation and Submission of Blasting Method Statement	70	01-Jun-15	22-Aug-15				
<b>MS for TBM On-Site Assembly</b>		41	23-Dec-14	14-Feb-15				
FL4885	Prepare & Re-submit Method Statement	18	23-Dec-14	15-Jan-15				
FL4890	ER's Approval for Method Statement	30	16-Jan-15	14-Feb-15				
<b>MS for TBM Launching</b>		174	02-Dec-14	13-Apr-15				
FL2022061	Prepare & Submit Method Statement	40	02-Dec-14	20-Jan-15				
FL2022062	ER's Comment for Method Statement	30	21-Jan-15	19-Feb-15				
FL2022063	Prepare & Re-submit Method Statement	18	23-Feb-15	14-Mar-15				
FL2022064	ER's Approval for Method Statement	30	15-Mar-15	13-Apr-15				
<b>MS for TBM Excavation</b>		65	01-Jan-15	26-Mar-15				
FL2880	ER's Comment for Method Statement	30	01-Jan-15	30-Jan-15				
FL2885	Prepare & Re-submit Method Statement	18	31-Jan-15	24-Feb-15				
FL2890	ER's Approval for Method Statement	30	25-Feb-15	26-Mar-15				
<b>North Portal: MS for Cross Passage Ground Treatment</b>		62	04-May-15	19-Jul-15				
FL2022065	Prepare & Submit Method Statement	40	04-May-15	19-Jun-15				
FL2022066	ER's Comment for Method Statement	30	20-Jun-15	19-Jul-15				
<b>North Portal: WSD Tunnel Instrumentation</b>		30	07-Dec-14	05-Jan-15				
FL2022494	ER's Approval for Method Statement	30	07-Dec-14	05-Jan-15				
<b>5.5 North Portal Works</b>		<b>394</b>	<b>07-Oct-14</b>	<b>30-Sep-15</b>				
<b>CLP Substation</b>		151	07-Oct-14	14-Feb-15				
N21060	Sub-station Construction	110	07-Oct-14	14-Feb-15				
N21090	Energization	1	14-Feb-15	14-Feb-15				
<b>North Portal: Site Formation</b>		366	23-Oct-14	30-Sep-15				
N20505	Permanent Slope Formation (Remaining)	200	08-Nov-14	25-Jul-15				
N20635	NB: Stage 2 Excavation from +38mPD to +18mPD w/10 rows Soil Nail	74	23-Oct-14	20-Jan-15				
N20655	NB: Stage 3 Permanent Slope from +75mPD to +30mPD	192	21-Jan-15	30-Sep-15				
<b>North Portal: Site Installation for TBM</b>		80	08-Nov-14	06-May-15				
SC01310	Site Installation and Logistics for TBM Works	60	08-Nov-14	20-Jan-15				
TD1000	Conveyor Belt System Construction	75	26-Jan-15	06-May-15				
<b>Southbound Tunnel (Mined Excavation) inc Enlargement</b>		160	06-Dec-14	18-May-15				
DB6370c	Top Heading Excavation (Canopies) (Ch6,415>Ch6,355) (60m) [P21: 4815 to 4755]	72	06-Dec-14	02-Mar-15				
DB6370d	Platform excavation for bench excavation	22	12-Feb-15	09-Mar-15				
DB6370e	Bench Excavation (Ch6,450>Ch6,355) (95m) [P21: 4850 to 4755]	48	10-Mar-15	06-May-15				
DB6372	RC Slab Cradle for TBM Shifting way	10	07-May-15	18-May-15				
<b>Northbound Tunnel (Mined Excavation)</b>		152	02-Mar-15	31-Aug-15				
DB6400a	Top Heading Canopies (Ch6446>Ch6410); 36m; [P20: 4824 to 4788]	76	02-Mar-15	30-May-15				
DB6400a1	Blast door installation + Noise Measurement and 24Hr permit approval	30	04-May-15	08-Jun-15				
DB6400a2	Top Heading Canopies (Ch6410>Ch6350); 60m; [P20: 4788 to 4728]	70	09-Jun-15	31-Aug-15				
<b>TBM On-Site Assembly</b>		65	02-Mar-15	18-May-15				
TD0990	TBM On-site Assembly and T&C	65	02-Mar-15	18-May-15				
<b>Southbound Tunnel (TBM Tunneling)</b>		138	19-May-15	16-Sep-15				
TD0995	TBM Sliding to Face	6	19-May-15	25-May-15				
TD0995a	Erection of Thrust Frame / Preparation to Start TBM Launch	12	26-May-15	09-Jun-15				
TD1000a	TBM DT (Ch6,355>Ch6,077) 278m	82	10-Jun-15	16-Sep-15				

					<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages HongKong <small>A member of the Bouygues Construction group</small>		<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department		<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00036/A		
<b>A</b> Monthly Report No.15 20/03/2015 RAN RBS/SJO PPL/DAL									DOC. STATUS FOR INFO.		CREATION DATE 20/03/2015	REVISION A			
<b>REV</b> DESCRIPTION DATE PREPARED CHECKED APPROVED									TITLE Monthly Report No.15 3-Months Rolling Programme (Approved Works Programme Rev. D)		PAPER SIZE A3	SCALE N/A	PAGE 6 of 7		

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2015			
					Mar	Apr	May	Jun
TD1000a10	TBM DT (Ch6,355>Ch6,268) 87m	26	10-Jun-15	10-Jul-15				
<b>5.6 Administration Building:</b>		<b>180</b>	<b>20-Dec-14</b>	<b>02-Jul-15</b>				
<b>5.62 Administration Building: Design Submission</b>		<b>149</b>	<b>20-Dec-14</b>	<b>12-May-15</b>				
<b>Admin. Building - Foundation Design</b>		<b>149</b>	<b>20-Dec-14</b>	<b>12-May-15</b>				
<b>DDA Submission</b>		<b>149</b>	<b>20-Dec-14</b>	<b>12-May-15</b>				
DSN29107	Preparation for formal submission to ER/ICE/IP	35	20-Dec-14	02-Feb-15				
DSN29108	IPs/ ER's Review	28	03-Feb-15	10-Mar-15				
DSN29109	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	11-Mar-15	08-Apr-15				
DSN29110	ER/IP's Approval	28	09-Apr-15	12-May-15				
<b>5.63 Administration Building: Method Statement Submission</b>		<b>156</b>	<b>09-Jan-15</b>	<b>28-May-15</b>				
<b>Method Statement for Admin. Building Construction</b>		<b>108</b>	<b>14-Jan-15</b>	<b>28-May-15</b>				
A1990	Prepare Method Statement for Administration Building Construction	24	14-Jan-15	10-Feb-15				
A2000	ER's Comment	28	11-Feb-15	18-Mar-15				
AD2190	Re-submission Method Statement for Building Construction	24	19-Mar-15	20-Apr-15				
AD2200	ER's Approval	28	21-Apr-15	28-May-15				
<b>MS for Administration Building: Demolition</b>		<b>87</b>	<b>09-Jan-15</b>	<b>27-Apr-15</b>				
SV2905	Prepare & Submit Demolition Plan & Method Statement	24	09-Jan-15	05-Feb-15				
SV2910	ER's Comment for Demolition Plan & Method Statement	30	06-Feb-15	07-Mar-15				
SV2915	Prepare & Re-submit Demolition Plan & Method Statement	18	09-Mar-15	28-Mar-15				
SV2920	ER's Approval for Demolition & Method Statement	30	29-Mar-15	27-Apr-15				
<b>5.64 Administration Building: General Submission</b>		<b>55</b>	<b>02-Jan-15</b>	<b>09-Mar-15</b>				
<b>Administration Building: Egress/Ingress</b>		<b>55</b>	<b>02-Jan-15</b>	<b>09-Mar-15</b>				
N21275	Appoint Consultant for TTMs	12	02-Jan-15	15-Jan-15				
N21285	Prepare & Submit Temp. Traffic Management Scheme	12	16-Jan-15	29-Jan-15				
N21295	TMLG Meeting	12	30-Jan-15	12-Feb-15				
N21305	TTMS Reviewed & Comment	12	13-Feb-15	02-Mar-15				
N21315	Notification to RMO	6	03-Mar-15	09-Mar-15				
<b>5.65 Administration Building: Works</b>		<b>69</b>	<b>10-Mar-15</b>	<b>02-Jul-15</b>				
<b>Administration Building: Demolition</b>		<b>24</b>	<b>01-Jun-15</b>	<b>02-Jul-15</b>				
SV2925	Precautionary Measures	24	01-Jun-15	02-Jul-15				
<b>Administration Building: Site Formation</b>		<b>37</b>	<b>10-Mar-15</b>	<b>04-May-15</b>				
AD2000	Site Hoarding	24	31-Mar-15	04-May-15				
AD2050	UU Diversion & Drainage Diversion (if required)	36	10-Mar-15	24-Apr-15				

					<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages HongKong <small>A member of the Bouygues Construction group</small>		<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department		<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00036/A		
									<b>DOC. STATUS</b> FOR INFO.		<b>CREATION DATE</b> 20/03/2015	<b>REVISION</b> A			
									<b>TITLE</b> Monthly Report No.15 3-Months Rolling Programme (Approved Works Programme Rev. D)		<b>PAPER SIZE</b> A3	<b>SCALE</b> N/A	<b>PAGE</b> 7 of 7		
REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED										

## Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2015				
							Mar	Apr	May	Jun	Jul
<b>3-Month Rolling Programme 2015-03-21</b>											
<b>Major Milestones and Events</b>											
MS-2000A2	T1b: TTA to shift FLHS SB eastward to the widened pavement (shift 2 lanes)	1	0	08-Mar-15 A	08-Mar-15 A		T1b: TTA to shift FLHS SB eastward to the widened pavement (shift 2 lanes)				
MS-2000A3	T1c: TTA to shift FLHS SB eastward to the widened pavement (shift 3 lanes)	1	1	22-Mar-15	22-Mar-15	0	T1c: TTA to shift FLHS SB eastward to the widened pavement (shift 3 lanes)				
MS-2000B	T2: TTA to shift FLHS NB eastward	1	1	19-Apr-15	19-Apr-15	1	T2: TTA to shift FLHS NB eastward				
MS-0220	Commissioning of the diverted twin DN1400 Dong Jiang Watermains (Stage 1)	0	0		25-Apr-15	218	Commissioning of the diverted twin DN1400 Dong Jiang Watermains (Stage 1)				
<b>Major Procurement &amp; Delivery</b>											
<b>Water Supply Pipeworks</b>											
MM-1060	E&M equipment for the re-provisioned WSD Valve Control House	60	60	20-Mar-15	04-Jun-15	29	E&M equipment for the re-provisioned WSD Valve Control House				
<b>Precast Bridge Segment Lifting Frames and Precast Yard</b>											
MM-2050	Certification of lifting frame	12	12	20-Mar-15	02-Apr-15	-6	Certification of lifting frame				
<b>Design and Submissions</b>											
<b>Statutory Approval</b>											
PRE-1220	Consent for construction of noise barrier (NB1a) within WSD Tau Pass Restricted Zone - WSD	45	21	09-Apr-14 A	17-Apr-15	125	Consent for construction of noise barrier (NB1a) within WSD Tau Pass Restricted Zone - WSD				
PRE-1500	Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290)	70	14	17-Apr-14 A	09-Apr-15	6	Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290), Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290)				
PRE-1210	Consent for Dong Jiang watermains connection for DN1400 - WSD	0	0		20-Mar-15	223	Consent for Dong Jiang watermains connection for DN1400 - WSD				
PRE-1510	Confirmation of Revised Retaining Structure along Slope no. 3SW-C/C898	0	0		20-Mar-15*	191	Confirmation of Revised Retaining Structure along Slope no. 3SW-C/C898				
<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	28-Apr-15	61	Submission of noise barrier design for absorptive panels, transparent panels and associated fixing details				
<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 SBZ2)</b>											
<b>At-Grade Roadworks (195m)</b>											
FHW-1130*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	40	20-Feb-14 A	11-May-15	738	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)				
<b>Fanling Highway Zone 2 between CH7130 and CH7290</b>											
<b>At-Grade Roadworks (160m)</b>											
FHW-2110B	Noise Barrier NB71 - Footing adjacent to SB lane (96m) (affected due to design change)	150	150	26-Jul-14 A	19-Sep-15	0	Noise Barrier NB71 - Footing adjacent to SB lane (96m) (affected due to design change)				
FHW-2130*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)	210	210	20-Mar-15	02-Dec-15	357	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)				
<b>Fanling Highway Zone 3 between CH7290 and CH7380</b>											
<b>At-Grade Roadworks (130m)</b>											
FHW-3130	Noise Barrier NB71 - Footing adjacent to SB lane (130m) including pile cap	270	55	23-May-14 A	29-May-15	131	Noise Barrier NB71 - Footing adjacent to SB lane (130m) including pile cap				
FHW-3150*	Pipe Laying - DN600, DN1200 Watermains (CHB & CHC) along Fanling Highway (90m long, 3m depth)	150	115	07-Jun-14 A	10-Aug-15	560	Pipe Laying - DN600, DN1200 Watermains (CHB & CHC) along Fanling Highway (90m long, 3m depth)				
FHW-3210	Noise Barrier NB69 - Mini-Piling adjacent to NB lane (CSD: 32nos)	79	79	20-Apr-15	24-Jul-15	1	Noise Barrier NB69 - Mini-Piling adjacent to NB lane (CSD: 32nos)				
FHW-3160	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder)	90	90	23-Apr-15	10-Aug-15	131	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder)				
<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	0	15-Oct-14 A	12-Mar-15 A		Pipe Laying - Twin DN1400 Watermains (CHE & CHG) along Fanling Highway (90m long, 3m depth)				



- █ 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**

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3-Month Rolling Programme updated to 2015-03-21			
Date	Revision	Checked	Approved
26-Mar-15	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2015								
							Mar	Apr	May	Jun	Jul				
FHW-4130*	Pipe Laying - DN600 & DN1200 Watermains (CHB&CHC) abng Fanling Highway (90m long, 3m depth)	60	21	27-Nov-14 A	17-Apr-15	762									
FHW-4100	Noise Barrier NB71 & NB72 - Footing adjacent to SB lane (90m)	140	140	30-May-15	14-Nov-15	354									
<b>Miscellaneous Works for Facilitating Traffic Diversion of Fanling Highway</b>															
FHW-M-1020	Permanent Road Formation with 2 lanes width between CH6935 and CH7130 (Eastern Side) by means of re-construction	45	0	10-Nov-14 A	07-Mar-15 A										
FHW-M-1030	Permanent Road Formation with 3 lanes width between CH6935 and CH7130 (Eastern Side) by means of re-surfacing	12	2	09-Mar-15 A	21-Mar-15	0									
FHW-M-1040	Demolition of a certain section of Central Barrier & Make Good of Road Pavement for further Traffic Diversion	20	20	23-Mar-15	18-Apr-15	0									
<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-5000A2	KT-AB1 - Piling Works (5 out of 12 nos of Pile) - Phase 2, conflict with temp cycle track/ existing tree	25	25	08-Apr-15	07-May-15	4									
FHW-5010B	KT-AB2 - Pile Cap & Abutment	105	105	29-Apr-15	02-Sep-15	201									
FHW-5000E	KT-P4 - Piling Works (8 out of 8 nos of Pile) - Phase 2, conflict with temp cycle track/ existing tree	40	40	08-May-15	25-Jun-15	4									
<b>At-Grade Road Works (130m)</b>															
FHW-5120A	Preparation Works for Implementation of TTA Scheme E2	25	25	29-Apr-15	29-May-15	72									
FHW-5120B	Implementation of TTA - Scheme E2 (shifting TWSR East towards Pier AA4 for pipe laying works at crossing)	0	0	30-May-15		72									
<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	158	30-Aug-13 A	30-Sep-15	8									
<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 Realigned TWSR West (Re-TWSRW: CH530 - 640), 100m long & 2m depth	70	70	28-May-15	19-Aug-15	14									
<b>DN600 Water Mains (CHB)</b>															
WB-1020	Pipe Laying - CHB 245 - 335 (DN600) near Fanling Highway S/B (FHW: CH7380-7470), 90m long (common trench with NB)	60	21	27-Nov-14 A	17-Apr-15	594									
WB-1090	Pipe Laying - CHB 756 - 849 (DN600) near Realigned TWSR East (along Access Road A), 93m long & GL	40	22	03-Mar-15 A	18-Apr-15	52									
WB-1030B	Pipe Laying - CHB 350 - 450 (DN600) from Pier AA4 to Portal AB7/AD9/AC12	30	30	20-Mar-15	28-Apr-15	72									
WB-1010	Pipe Laying - CHB 153 - 245 (DN600) near Fanling Highway S/B (FHW: CH7290-7380), 92m long (common trench with NB)	60	60	30-May-15	10-Aug-15	560									
WB-1030A	Pipe Laying - CHB 335 - 350 (DN600) near crossing TWSRE 15m long & 3m depth	30	30	30-May-15	06-Jul-15	572									
WB-1070	Pipe Laying - CHB 635 - 700 (DN600) near Realigned TWSR East (TWSRE: CH380-456), 65m long & GL	78	78	18-Jun-15	18-Sep-15	37									
<b>DN1200 Water Mains (CHC)</b>															
WC-1050A	Pipe Laying - CHC 155 - 200 (DN1200) near Fanling Highway S/B (FHW: CH6935-7130), 45m long, 4m depth	120	40	15-Oct-14 A	11-May-15	738									
WC-1080	Pipe Laying - CHC 510 - 600 (DN1200) near Fanling Highway S/B (FHW: CH7380-7470), 90m long (common trench with NB)	60	21	27-Nov-14 A	17-Apr-15	762									
WC-1150	Pipe Laying - CHC 1030 - 1123 (DN1200) near Realigned TWSR East (along Access Road A), 93m long & GL	40	30	03-Mar-15 A	28-Apr-15	78									
WC-1060	Pipe Laying - CHC 235 - 420 (DN1200) near Fanling Highway S/B (FHW: CH7130-7290), 185m long (common trench with NB)	95	95	20-Mar-15	17-Jul-15	472									



- Actual Work
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**CEDD Contract No. CV/2012/09**  
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**3-Month Rolling Programme**  
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3-Month Rolling Programme updated to 2015-03-21			
Date	Revision	Checked	Approved
26-Mar-15	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2015				
							Mar	Apr	May	Jun	Jul
WC-1090B	Pipe Laying - CHC 615 - 720 (DN1200) from Pier AA4 to Portal AB7/AD9/AC12	30	30	20-Mar-15	28-Apr-15	72			Pipe Laying - CHC 615 - 720 (DN1200) from Pier AA4 to Portal AB7/AD9/AC12		
WC-1090A	Pipe Laying - CHC 600 - 615 (DN1200) near crossing TWSRE 15m long & 3m depth	30	30	30-May-15	06-Jul-15	269					Pipe
WC-1130	Pipe Laying - CHC 910 - 980 (DN1200) near Realigned TWSR East (TWSRE: CH380-456), 70m long & GL	78	78	18-Jun-15	18-Sep-15	37					
<b>Twin DN1400 Water Mains (CHE &amp; CHG)</b>											
WE-1020	Pipe Laying - CHE & CHG 135 - 225 (Twins DN1400) near Fanling Highway S/B (FHW: CH7380-7470), 90m long & 3m depth	155	0	15-Oct-14 A	12-Mar-15 A						Pipe Laying - CHE & CHG
WE-2000B	Pressure Test for CHG (Stage 1 Diversion)	5	5	20-Mar-15	25-Mar-15	218		Pressure Test for CHG (Stage 1 Diversion)			
WE-1040	Pipe Laying - CHE & CHG (Twins DN1400) from Pier AA4 to Portal AB7/AD9/AC12	30	30	20-Mar-15	28-Apr-15	51			Pipe Laying - CHE & CHG (Twins DN1400) from Pier AA4 to Portal AB7/AD9/AC12		
WE-2000A	Pressure Test, for CHE (Stage 1 Diversion)	5	5	26-Mar-15	31-Mar-15	1273		Pressure Test, for CHE (Stage 1 Diversion)			
WE-2020B	Installation of Connecting Pipe for Connection to Existing Mains (CHG)	14	14	26-Mar-15	15-Apr-15	218				Installation of Connecting Pipe for Connection to	
WE-2010B	Cleaning & CCTV Inspection for CHG (Stage 1 Diversion)	10	10	26-Mar-15	10-Apr-15	218		Cleaning & CCTV Inspection for CHG (Stage 1 Diversion)			
WE-2020A	Installation of Connecting Pipe for Connection to Existing Mains (CHE)	14	14	01-Apr-15	21-Apr-15	1273			Installation of Connecting Pipe for Connection to Existing Mains (CHE)		
WE-2010A	Cleaning & CCTV Inspection for CHE (Stage 1 Diversion)	10	10	01-Apr-15	16-Apr-15	1273		Cleaning & CCTV Inspection for CHE (Stage 1 Diversion)			
WE-2030B	Sterilization and Sampling for CHG (Stage 1 Diversion)	3	3	16-Apr-15	18-Apr-15	218				Sterilization and Sampling for CHG	
WE-2050B	Connection to Existing Mains (CHG) (Stage 1 Diversion)	6	6	20-Apr-15	25-Apr-15	218				Connection to Exis	
WE-2030A	Sterilization and Sampling for CHE (Stage 1 Diversion)	3	3	22-Apr-15	24-Apr-15	1273			Sterilization and Sampling for CHE (Stage 1 Diversion)		
WE-2050A	Connection to Existing Mains (CHE) (Stage 1 Diversion)	6	6	28-May-15	03-Jun-15	1247				Connection to Existing Mains (CHE) (Sta	
WE-1030	Pipe Laying - CHE & CHG 225 - 240 (Twins DN1400) near crossing TWSRE 15m long & 3m depth	30	30	30-May-15	06-Jul-15	72					Pipe
<b>DN2300 Water Mains and Leakage Collection System (CHJ &amp; CHKA/CHK)</b>											
WJ-1010A	Pipe Laying - CHJ 0 - 10 (DN2200) near existing TWSR East, 10m long & 6m depth	90	25	13-Oct-14 A	13-Apr-15	52					
WJ-1050	Pipe Laying - CHJ 200 - 292 (DN2300) near Realigned TWSR East (along Access Road A), 92m long & GL	68	16	02-Jan-15 A	11-Apr-15	40			Pipe Laying - CHJ 200 - 292 (DN2300) near Realigned TWSR East (along Access Road A), 92m lon		
WJ-1020B	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth	55	55	12-Apr-15	05-Jun-15	6				Pipe Laying - CHKA 0 - 73 (DN1400) r	
WJ-1100	DN300 Washout at around CHJ 268	65	65	13-Apr-15	30-Jun-15	40					DN300 Wa
WJ-1000	Implementation of TTA - Scheme E2 (Shifting TWSRE toward newly formation area beside Fanling Highway)	21	21	14-Apr-15	08-May-15	43			Implementation of TTA - Scheme E2 (Shifting TWSRE toward newly fo		
WJ-1010C	Pipe Laying - CHJ 50 - 100 (DN2200) near existing TWSR East, 50m long & 6m depth	65	65	17-Apr-15	06-Jul-15	1					Pipe
WJ-1010B	Pipe Laying - CHJ 10 - 50 (DN2200) crossing existing TWSR East, 40m long & 6m depth	40	40	09-May-15	26-Jun-15	43					Pipe Laying - C
WJ-1110	DN300 Washout at CHJ 155	65	65	30-May-15	15-Aug-15	1					
WJ-1020A	Pipe Laying - CHK 0 - 80 (DN1400) near Realigned TWSR East, 80m long & 4m depth	55	55	06-Jun-15	11-Aug-15	5					
<b>Kau Lung Hang Valve Control &amp; Telemetry House Reprovision</b>											
VCTH-1040	ABWF Works	70	30	06-Jan-15 A	28-Apr-15	59			ABWF Works, ABWF Works		
VCTH-1010	BS and E&M Works	90	90	05-Jun-15	19-Sep-15	29					



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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2015				
							Mar	Apr	May	Jun	Jul
<b>Stage 1A - Realignment of Tai Wo Service Road West (KD-7)</b>											
<b>Preliminary Works</b>											
TWSRW-1100	Tree Survey, Tree Felling and Transplanting	81	15	16-Oct-13 A	10-Apr-15	-29	Tree Survey, Tree Felling and Transplanting, Tree Survey, Tree Felling and Transplanting				
<b>TWSRW Zone 1 between CH100 and CH155</b>											
<b>At-Grade Roadworks</b>											
TWSRW-1150	Installation of Cable Ducts for Utilities Diversion Works at Zone 1 & Zone 2 (Approx. 100m) (by utilities undertakers)	167	46	22-Oct-14 A	04-May-15	291					
TWSRW-1160	Road Formation, Road Drainage, Kerb, Planter & Pavement	286	213	15-Nov-14 A	05-Dec-15	33					
<b>TWSRW Zone 2 between CH155 and CH280</b>											
<b>At-Grade Roadworks</b>											
TWSRW-2120	Road Formation, Road Drainage, Kerb, Planter and Pavement	165	213	16-Oct-14 A	05-Dec-15	33					
<b>TWSRW Zone 3 between CH280 and CH315</b>											
<b>At-Grade Roadworks</b>											
TWSRW-3110	Installation of Cable Ducts for Utilities Diversion Works at Zone 3 (Approx. 120m) (by utilities undertakers)	239	239	01-Apr-15*	25-Nov-15	19					
TWSRW-3120	Road Formation, Road Drainage, Kerb, Planter and Pavement	207	207	01-Apr-15	10-Dec-15	29					
<b>TWSRW Zone 4 between CH315 and CH376</b>											
<b>Construction of Bridge E</b>											
TWSRW-4060	Construction of Temporary Support at DSD nullah (Work in dry season)	55	10	22-Jan-15 A	31-Mar-15	0	Construction of Temporary Support at DSD nullah (Work in dry season), Construction of Temporary Support at DSD nullah (Work in dry season)				
TWSRW-4050A	Pile Cap for AE1	55	29	11-Feb-15 A	27-Apr-15	81	Pile Cap for AE1, Pile Cap for AE2				
TWSRW-4050D	Trim Down the existing retaining wall for construction of AE2	29	0	28-Feb-15 A	19-Mar-15 A		Trim Down the existing retaining wall for construction of AE2				
TWSRW-4070	In-situ Casting for Bridge Segment (North Bay & Middle Bay)	100	100	01-Apr-15	04-Aug-15	0					
<b>TWSRW Zone 5 between CH376 and CH520</b>											
<b>Construction of Retaining Structures</b>											
TWSRW-5090	Lagging Wall Construction and Capping Beam	160	54	06-Nov-14 A	28-May-15	7	Lagging Wall Construction and Capping Beam				
TWSRW-5070	Construction of Mass Concrete Wall (FL/RW4)	35	35	16-Apr-15	28-May-15	57	Construction of Mass Concrete Wall (FL/RW4)				
<b>At-Grade Roadworks</b>											
TWSRW-5100	Noise Barrier NB2 - Footing and Retaining Structure adjacent to Realigned TWSRW West (66m)	90	90	10-Apr-15	28-Jul-15	7					
<b>TWSRW Zone 6 between CH520 and CH530</b>											
<b>Box Culvert Extension - BC01</b>											
TWSRW-6070	Inlet structure of the box culvert BC01 (Covered by VO. 41)	70	0	17-Dec-14 A	19-Mar-15 A		Inlet structure of the box culvert BC01 (Covered by VO. 41)				
<b>TWSRW Zone 7 between CH530 and CH640</b>											
<b>At-Grade Roadworks</b>											
TWSRW-7140	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)	233	166	28-Jan-15 A	01-Sep-15	16					
TWSRW-7120*	Pipe Laying - DN450 Watermains (CHA)	70	70	28-May-15	19-Aug-15	14					
<b>TWSRW Zone 8 between CH640 and CH695</b>											
<b>Kiu Tau Footbridge Reprovision (West)</b>											
TWSRW-8010	Installation of Socket H-Pile for Proposed Kiu Tau Footbridge (14 nos of Pile)	75	75	11-Apr-15	11-Jul-15	-29					
<b>Remainder of the Works</b>											
TWSRW-9010*	Utilities Diversion in Area 1 (along Re-aligned TWSRW CH100 - CH280)	167	46	22-Oct-14 A	04-May-15	291	Utilities Diversion in Area 1 (along Re-aligned TWSRW CH100 - CH280)				



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							Mar	Apr	May	Jun	Jul	
TWSRW-9040*	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)	233	166	28-Jan-15 A	01-Sep-15	16						
TWSRW-9020*	Utilities Diversion in Area 2 (along Re-aligned TWSRW CH 280 - CH315)	239	239	01-Apr-15	25-Nov-15	19						
TWSRW-9030	Utilities Diversion in Area 3 (along existing TWSRW, Approx. 150m) (by utilities undertakers)	287	287	01-Apr-15*	12-Jan-16	38						
<b>Remaining Works for Noise Barrier along realigned TWSR West</b>												
TWSRW-NB-110	Noise Barrier Steelworks & Panel for NB4 (105m) at Zones 1 & 2	60	60	03-Jun-15*	13-Aug-15	33						
<b>Stage N4A &amp; N4B - Realignment of Tai Wo Service Road East (KD-13 &amp; KD-14)</b>												
<b>Preliminary Works</b>												
TWSRE-4000	Site Formation, Preparation Works & Tree Transplant	65	20	15-Apr-14 A	16-Apr-15	1						
<b>TWSRE Zone 1 between CH100 and CH270</b>												
<b>At-Grade Roadworks</b>												
TWSRE-1120	Noise Barrier NB3 - Footing adjacent to Realigned TWSR East (96m)	110	47	29-Dec-14 A	19-May-15	1						
TWSRE-1150	Construct no fine concrete, U-channel and filling to required level for pipe laying works	30	16	06-Jan-15 A	11-Apr-15	5						
TWSRE-1110	Noise Barrier NB3 - PC01 & PC02 Pile Cap Construction	55	26	19-Jan-15 A	23-Apr-15	22						
TWSRE-1140*	Pipe laying - DN1400 Watermains (CHKA) along Realigned TWSR East	55	55	12-Apr-15	05-Jun-15	6						
<b>TWSRE Zone 2 between CH270 and CH380</b>												
<b>At-Grade Roadworks</b>												
TWSRE-2010	Noise Barrier NB3 - Footing adjacent to Realigned TWSR East (96m)	110	100	03-Mar-15 A	23-Jul-15	136						
TWSRE-2030B*	Pipe laying - DN1400 Watermains (CHK) along Realigned TWSR East	55	55	06-Jun-15	11-Aug-15	5						
<b>TWSRE Zone 3 between CH380 and CH456</b>												
<b>At-Grade Roadworks</b>												
TWSRE-3010	Noise Barrier NB3 - Footing adjacent to Realigned TWSR East (62m)	85	85	19-Mar-15 A	06-Jul-15	37						
TWSRE-3020A*	Pipe Laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	78	78	18-Jun-15	18-Sep-15	37						
<b>Roundabout A, Slip Road and Access Road</b>												
TWSRE-4050A*	Pipe laying - DN2300 Watermains (CHJ) along Access Road A	68	16	02-Jan-15 A	11-Apr-15	40						
TWSRE-4040A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Access Road A	58	30	03-Mar-15 A	28-Apr-15	78						
TWSRE-4060B	Access Road A - Road Formation, Kerb, Planter and Pavement	51	51	20-Apr-15	19-Jun-15	52						
TWSRE-4080	Preparation Works for Implementation of TTA Scheme E1	48	48	23-Apr-15	19-Jun-15	52						
<b>Stage 1C - Viaduct Structure &amp; TCSS Civil Provisions (KD-9)</b>												
<b>Preliminaries</b>												
B-5010	Provide a Temporary Cycle Track (Scheme 2, along DSD maintenance access)	28	0	05-Feb-15 A	02-Mar-15 A							
B-5020	Demolition of Temporary Cycle Track constructed at FH6	27	12	03-Mar-15 A	02-Apr-15	4						
B-4050	Erection of Catch Fence at Portion FH9 for AB11 and AD12	14	14	23-Mar-15*	11-Apr-15	5						
<b>Foundation &amp; Pier Construction</b>												
<b>Bridge A</b>												
BA-05-1030	Pier AA5 - Pier Construction (Twin Pier)	27	40	29-Oct-14 A	11-May-15	244						

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BA-13-1030	Pier AA13 - Pier Construction	38	20	06-Nov-14 A	16-Apr-15	13	Pier AA13 - Pier Construction, Pier AA13 - Pier Construction				
BA-14-1030	Pier AA14 - Pier Construction	31	15	20-Nov-14 A	10-Apr-15	8	Pier AA14 - Pier Construction, Pier AA14 - Pier Construction				
BA-18-1020	Pier AA18 - Pile Cap	30	0	15-Jan-15 A	16-Mar-15 A		Pier AA18 - Pile Cap				
BA-04-1020	Pier AA4 - Pile Cap	30	0	04-Feb-15 A	19-Mar-15 A		Pier AA4 - Pile Cap				
BA-17-1030	Pier AA17 - Pier Construction	24	24	05-Feb-15 A	21-Apr-15	140	Pier AA17 - Pier Co				
BA-15-1030	Pier AA15 - Pier Construction	31	28	14-Feb-15 A	25-Apr-15	32	Pier AA15 - Pier Construction, Pier AA15 - Pier Construction				
BA-16-1020	Pier AA16 - Pile Cap	30	20	03-Mar-15 A	16-Apr-15	58	Pier AA16 - Pile Cap, Pier AA16 - Pile Cap				
BA-01-1000	Abutment AA1 - Piling Works	24	20	14-Mar-15 A	16-Apr-15	186	Abutment AA1 - Piling Works, Abutment AA1 - Piling Works				
BA-02-1020A	Pier AA2E - Pile Cap	30	30	20-Mar-15	28-Apr-15	21	Pier AA2E - Pile Cap				
BA-10-1000	Pier AA10 - Piling Works	24	24	17-Apr-15	15-May-15	186	Pier AA10 - Piling Works				
BA-07-1000	Pier AA7 - Piling Works	24	24	20-Apr-15	18-May-15	37	Pier AA7 - Piling Works				
BA-16-1030	Pier AA16 - Pier Construction	31	31	27-Apr-15	03-Jun-15	50	Pier AA16 - Pier Construction				
BA-03-1020	Pier AA3 - Pile Cap	30	30	29-Apr-15	04-Jun-15	21	Pier AA3 - Pile Cap				
BA-01-1010	Abutment AA1 - Pile Test	7	7	05-May-15	12-May-15	484	Abutment AA1 - Pile Test				
BA-09-1000	Pier AA9 - Piling Works	24	24	16-May-15	13-Jun-15	186	Pier AA9 - Piling Works				
BA-11-1000	Pier AA11 - Piling Works	24	24	19-May-15	16-Jun-15	67	Pier AA11 - Piling Works				
BA-10-1010	Pier AA10 - Pile Test	7	7	03-Jun-15	10-Jun-15	199	Pier AA10 - Pile Test				
BA-18-1030	Pier AA18 - Pier Construction	24	24	04-Jun-15	03-Jul-15	50	Pier AA				
BA-07-1010	Pier AA7 - Pile Test	7	7	05-Jun-15	12-Jun-15	92	Pier AA7 - Pile Test				
BA-07-1020	Pier AA7 - Pile Cap	30	30	13-Jun-15	20-Jul-15	92					
BA-08-1000	Pier AA8 - Piling Works	24	24	15-Jun-15	14-Jul-15	192					
BA-02-1000	Pier AA2W - Piling Works	12	12	17-Jun-15	02-Jul-15	37	Pier AA2				
<b>Bridge B</b>											
BB-08-1040	Pier AB8E - Pier Construction	24	21	13-Dec-14 A	17-Apr-15	-133	Pier AB8E - Pier Construction, Pier AB8E - Pier Construction				
BB-08-1030	Pier AB8W - Pier Construction	24	21	15-Dec-14 A	17-Apr-15	-133	Pier AB8W - Pier Construction, Pier AB8W - Pier Construction				
BB-12-1000A	Abutment AB12/AD14 - Piling Works	70	45	06-Feb-15 A	16-May-15	56					
BB-06-1030	Pier AB6E - Pier Construction	24	24	20-Mar-15	21-Apr-15	174	Pier AB6E - Pier Construction				
BB-09-1020	Pier AB9 - Pile Cap	30	30	20-Mar-15*	28-Apr-15	-54	Pier AB9 - Pile Cap				
BB-10-1010	Pier AB10 - Pile Test	7	7	20-Mar-15	27-Mar-15	-34	Pier AB10 - Pile Test				



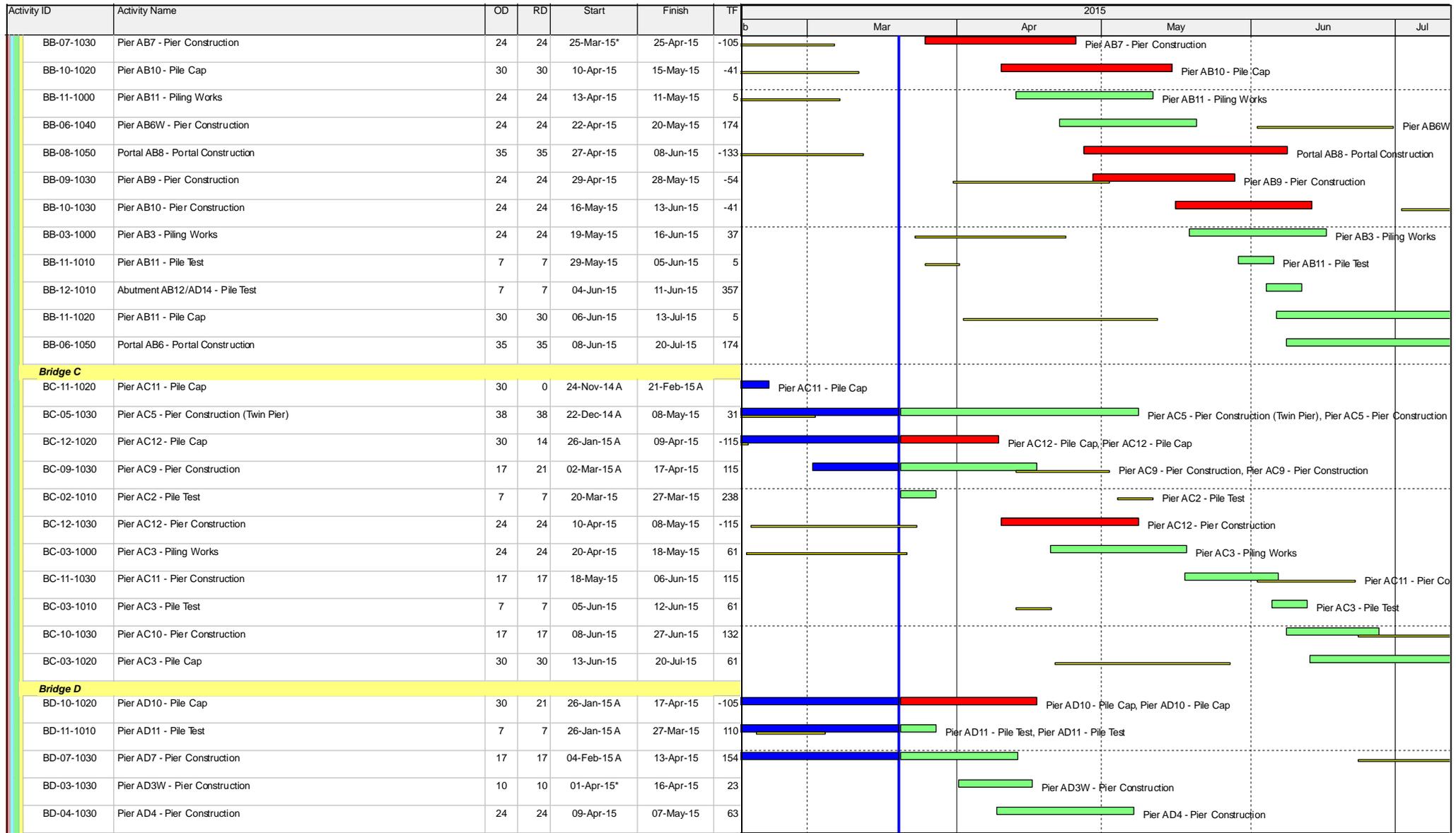
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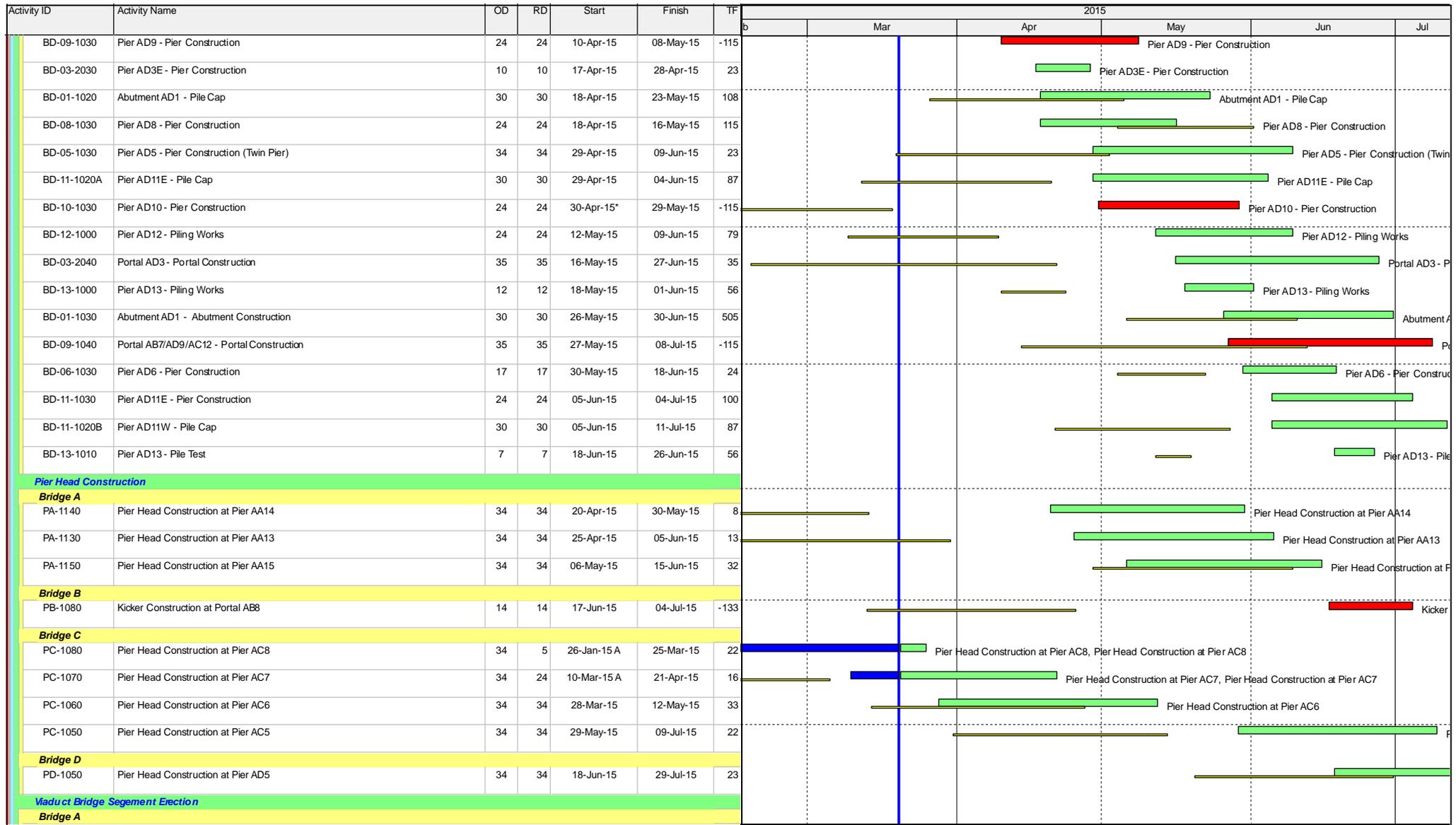
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EA-1140	Bridge Deck Construction at Pier AA14 by Typical Lifting Frame (21 nos)	10	10	01-Jun-15	11-Jun-15	8									
EA-1130	Bridge Deck Construction at Pier AA13 by Typical Lifting Frame (26 nos)	23	23	12-Jun-15	10-Jul-15	8									
<b>Bridge C</b>															
EC-1080	Bridge Deck Construction at Pier AC8 by Typical Lifting Frame (24 nos)	25	25	08-Apr-15	07-May-15	15									
EC-1070	Bridge Deck Construction at Pier AC7 by Typical Lifting Frame (27 nos)	12	12	08-May-15	21-May-15	15									
<b>Section VI - Works in Portion FH9 (KD-6A)</b>															
<b>Major Works</b>															
S6-2000	Construction of Abutment AB12/AD14 (including Piling, Pile Cap & Abutment construction)	276	216	06-Feb-15 A	09-Dec-15	272									



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## Contract 5

ID	WBSS	Task Name	Duration	Start	Finish
1	1	Key Dates	1110 days	Thu 28/3/13	Sun 10/4/16
47	2	Preliminaries and Statutory / Contractual Submissions	424 days	Thu 11/4/13	Mon 9/6/14
48	2.1	Site Establishment	399 days	Thu 11/4/13	Thu 15/5/14
53	2.2	Applications to Government Department	131 days	Fri 12/4/13	Tue 9/7/13
58	2.3	Temporary Traffic Arrangement (TTA) Scheme for temp. LMH Rd	363 days	Fri 12/4/13	Tue 20/8/13
63	2.4	Liaison with Utility Undertakers	132 days	Thu 11/4/13	Wed 9/4/14
66	2.5	Environmental Baseline & Impact Monitoring	424 days	Fri 12/4/13	Wed 21/8/13
77	2.6	General Site Clearance	180 days	Fri 12/4/13	Mon 9/6/14
78	3	Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road	179 days	Fri 12/4/13	Mon 7/10/13
79	3.1	Stage II of the Works - Temporary ArchSD Depot (LMH2)	78 days	Thu 11/4/13	Thu 27/6/13
90	3.2	Section I of the Works - Ground Investigation field works (Drg. 710(A)-711(A))	1386 days	Fri 12/4/13	Thu 26/1/17
94	4	Section II of the Works - All laboratory tests for Section I	251 days	Thu 30/5/13	Tue 4/2/14
95	4.1	Section III of the Works - Site formation works for Portions RS1, RS2 & RS3 (seek for certificate of completion in letter ref. SRIVN/47/SO/05/1308/00416 dated 23/8/2013)	188 days	Thu 31/8/13	Thu 6/3/14
100	4.2	Section IV of the Works - Village house within portion RS4 - EOT13 completion	89 days	Sun 12/5/13	Thu 8/8/13
105	4.3	Section V of the Works - All works within portion RS4 - EOT13 completion	399 days	Fri 12/4/13	Thu 15/5/14
111	4.4	Section VI of the Works - All works within Area BCPA - EOT6 completion 11/4/2015	747 days	Fri 12/4/13	Tue 28/4/15
123	4.5	ISSUED EOT7	241 days	Sun 5/1/14	Tue 29/1/4
124	4.5.1	ISSUED EOT4	221 days	Wed 3/9/14	Sat 11/4/15
125	4.5.2	ISSUED EOT8	17 days	Sun 12/4/15	Tue 28/4/15
126	4.5.3	Submissions and method statement	37 days	Fri 12/4/13	Sat 18/5/13
127	4.5.4	Approvals from ER	30 days	Fri 26/4/13	Sat 28/5/13
128	4.5.5	SITE POSSESSION FOR FOOTBRIDGE AREA	0 days	Fri 26/9/14	Fri 26/9/14
129	4.5.6	Construction of footbridge and staircase with mini-piles 8 nos. x 0273 and staircase (Drg. 2201A to 2207B, 6001B)	215 days	Fri 26/9/14	Tue 28/4/15
130	4.5.7	Section VII of the Works - All works within Area CRD	249 days	Mon 9/9/13	Thu 15/5/14
140	4.6	Section VIII of the Works - All works within Area BCPA - EOT6 completion 2/1/2015	571 days	Tue 11/6/13	Fri 2/1/15
177	4.7	Section IX of the Works - All works within Area BCPB - EOT10 completion 19 October 2015	669 days	Fri 20/12/13	Mon 19/10/15
211	4.8	Claim No. 009 - Delays due to Delayed Possession of Portion BCT4 of the Site - Original 7/3/2014 and possessed on 25/9/2014	0 days	Fri 26/9/14	Fri 26/9/14
212	4.8.1	Submission for demolition of existing building structures	37 days	Fri 20/12/13	Sat 25/1/14
213	4.8.2	Approval of demolition of existing building structures	41 days	Sun 26/1/14	Fri 7/3/14
214	4.8.3	Demolition of existing building structures (UPON instruction included)	76 days	Fri 3/10/14	Wed 17/12/14
215	4.8.4	Asbestos Investigation, Repair & Asbestos Abatement Plan	139 days	Fri 26/9/14	Wed 11/2/15
216	4.8.5	Tree felling/removal works and tree transplanting works at BCP4 (include tree survey etc)	0 days	Wed 14/1/15	Wed 14/1/15
217	4.8.6	Claim No. 007 - Delay due to Non-Possession of Parts of Portion BCP3 due to Resistant by Local Resident (NOT YET)	330 days	Sun 21/1/14	Sun 27/9/15
218	4.8.7	Site formation works	200 days	Sat 7/3/15	Tue 22/9/15
219	4.8.7.1	site formation works (surrounding area B1-3, B5-6, B9)	330 days	Sun 2/1/14	Tue 22/9/15
220	4.8.7.2	site formation works (area BCP4 - B4,7,8,10-B17)	200 days	Sat 7/3/15	Mon 19/10/15
221	4.8.7.3	chain link fence (Drg. 1002C, 1032B, 1033B)	125 days	Wed 23/9/15	Tue 7/10/14
222	4.8.8	Section X of the Works - All works within Area BCPB - EOT5 completion 7/10/2014	125 days	Thu 5/6/14	Tue 19/1/15
223	4.9	VO for Secondary Boundary Fencing extend to BCPB (not yet)	0 days	Thu 30/4/15	Thu 19/1/15
234	4.10	Handing over from CLP for the extended area	0 days	Thu 30/4/15	Thu 30/4/15
235	4.10.1	Construction of Retaining Wall 2A	41 days	Sat 2/5/15	Thu 11/6/15
236	4.10.2	Construction of soil cement / general fill slope adjacent to CLP Substation	90 days	Sat 2/5/15	Thu 30/7/15
237	4.10.3	Secondary Boundary Fencing CHA+125 to CHA+250 (Bay 17 to 32)	33 days	Fri 31/7/15	Tue 19/1/15
238	4.10.4	Section XI of the Works - All works within Area BCPD	543 days	Mon 14/7/14	Thu 7/1/16
239	4.11	South West Works for additional 132kV (at Areas D1 & D2) at BCPD fill platform for CLP (132kV) from +12.8 to +15.3	421 days	Fri 15/8/14	Fri 9/10/15
240	4.11.1	UU for erection of overhead post & termination of electricity by CLP(132kV)(Area D2)	47 days	Fri 15/8/14	Tue 30/9/14
241	4.11.1.1	Claim No. 007 - Delay due to Non-Possession of Parts of Portion BCP3 due to Resistant by Local Resident - confirmed to possess on 14/1/2015	28 days	Tue 14/10/14	Mon 10/1/14
242	4.11.1.2	assessment filling paths areas D1 & D2 to +11.5 for drain DN2100 to Box Culvert No. 3 (assess cut front +10)	1 day	Wed 14/1/15	Wed 14/1/15
244	4.11.1.4	lay sewer FHM513, 514, 515, SMH9937 (backfill with laying of irrigation pipe)	20 days	Thu 29/1/15	Tue 17/2/15
245	4.11.1.5	lay sewer FHM520-515	50 days	Wed 18/2/15	Wed 8/4/15
246	4.11.1.6	fill trench from laid sewer to drainage formation	25 days	Thu 9/4/15	Sun 5/5/15
247	4.11.1.7	lay drainage SMH9961 to 9966 & 9936 to 9937	40 days	Mon 4/5/15	Fri 12/6/15
248	4.11.1.8	filling of areas D1 & D2 to +15.3 with D2 soil cement slope	5 days	Sat 13/6/15	Wed 17/6/15
249	4.11.1.9		25 days	Thu 18/6/15	Sun 12/7/15
250	4.11.1.10		30 days	Thu 1/1/15	Fri 30/1/15

ID	WBIS	Task Name	Duration	Start	Finish
251	4.11.1.1	Confirmation of Alignment for Secondary Boundary Fencing (not yet)	35 days	Mon 29/12/14	Sun 12/1/15
252	4.10.12	Secondary Boundary Fencing Ch10 to Ch1709 (Bay 1 to 93)	250 days	Mon 22/1/15	Fri 9/10/15
253	4.11.1.13	Secondary Boundary Fencing Ch1709 to Ch1234 (Bay 94 to 158)	177 days	Mon 22/1/15	Tue 28/7/15
254	4.11.1.14	Secondary Boundary Fencing Ch1234 to Ch1436 (Bay 159 to 184)	70 days	Thu 26/2/15	Wed 6/5/15
255	4.11.1.15	Secondary Boundary Fencing Ch1436 to Ch1A125 (Bay 1 to 16)	45 days	Mon 27/4/15	Wed 10/6/15
256	4.11.1.16	Secondary Boundary Fencing Ch1436 to Ch1520 (Bay 185 to 197)	45 days	Sun 19/7/15	Tue 1/9/15
257	4.11.1.17	irrigation system at west D1 & D2	7 days	Sat 31/1/15	Fri 6/2/15
258	4.11.1.18	additional 132K (at Areas D1 & D2)	7 days	Sat 7/2/15	Fri 13/2/15
259	4.11.2	South West Works for Areas D1 & D2	364 days	Fri 31/0/14	Thu 1/10/15
260	4.11.2.1	site clearance, take initial survey	21 days	Thu 23/10/14	Thu 31/10/14
261	4.11.2.2	tree felling / transplant	45 days	Fri 24/10/14	Sun 7/12/14
262	4.11.2.3	fill trench to formation for Plug-FMH501-502-STP (approx. to +1.1)	5 days	Mon 8/12/14	Fri 12/12/14
263	4.11.2.4	fill sewer Plug-FMH501-502-STP	14 days	Sat 13/12/14	Fri 20/12/14
264	4.11.2.5	complete filling for Areas D1 & D2 to formation area	70 days	Sat 13/12/14	Fri 20/12/15
265	4.11.2.6	lay sewer STP-FMH511-512-513	10 days	Mon 13/1/15	Wed 22/7/15
266	4.11.2.7	lay drainage SMH9941 to 9943-9931	10 days	Thu 23/7/15	Sat 1/8/15
267	4.11.2.8	lay drainage SMH9952 to 9953-9942	10 days	Sun 2/8/15	Tue 11/8/15
268	4.11.2.9	lay drainage SMH9937 to 9930	20 days	Mon 31/8/15	Mon 31/8/15
269	4.11.2.10	lay drainage SMH9702A to 9925	10 days	Tue 1/9/15	Thu 10/9/15
270	4.11.2.11	lay drainage CP25-SMH9701A-9902-9702A	21 days	Fri 11/9/15	Thu 1/10/15
271	4.11.2.12	lay drainage SMH9922 to 9930	10 days	Fri 18/9/15	Sun 27/9/15
272	4.11.2.13	water pipe DN250 CHL 150 to 335.749	21 days	Wed 12/8/15	Tue 19/15
273	4.11.2.14	rising main CHC	21 days	Sat 22/8/15	Fri 11/9/15
274	4.11.3	Claim No. 007 - Delay due to Non-Possession of Parts of Portion BCP3 due to Resistant by Local Resident	0 days	Wed 14/1/15	Wed 14/1/15
275	4.11.4	South West Work for Construction of Depressed Road	187 days	Sun 19/7/15	Sun 19/7/15
276	4.11.4.1	rising main CHA underneath depressed road (Bay 16015-16008)	1 day	Mon 2/3/15	Mon 2/3/15
277	4.11.4.2	rising main CHA underneath depressed road (Bay 16007-16001)	1 day	Tue 3/3/15	Tue 3/3/15
278	4.11.4.3	UU for 11KV & LV lay ducts across & underneath underpass	1 day	Mon 2/3/15	Mon 2/3/15
279	4.11.4.4	structural work for Bay 16015-16012	45 days	Wed 14/1/15	Fri 27/2/15
280	4.11.4.5	structural work for Bay 16011-16008	45 days	Fri 13/2/15	Sun 29/5/15
281	4.11.4.6	structural work for Bay 16007-16004	48 days	Sun 15/3/15	Fri 1/5/15
282	4.11.4.7	structural work for Bay 16003-16001	48 days	Sat 25/3/15	Thu 18/6/15
283	4.11.4.8	drainage work inside depressed road (Bay 16015-16008)	21 days	Fri 29/5/15	Thu 18/6/15
284	4.11.4.9	drainage work inside depressed road (Bay 16007-16001)	21 days	Fri 19/6/15	Thu 9/7/15
285	4.11.4.10	backfill western side of depressed road	10 days	Fri 19/6/15	Sun 28/6/15
286	4.11.4.11	irrigation system next to depressed road	21 days	Mon 29/6/15	Sun 19/7/15
287	4.11.5	South West Work for Access Road	102 days	Thu 7/1/16	Thu 7/1/16
288	4.11.5.1	completion of drainage SMH9922 to 9930, water pipe & rising main & backfill western side of depressed road	0 days	Sun 27/9/15	Sun 27/9/15
289	4.11.5.2	UU for 132KV, 11KV & LV	7 days	Mon 28/9/15	Sun 4/10/15
290	4.11.5.3	UU for PCW	7 days	Mon 5/10/15	Sun 11/10/15
291	4.11.5.4	backfill to road formation with SPT798%	14 days	Mon 12/10/15	Sun 25/10/15
292	4.11.5.5	sub-base laying	7 days	Mon 26/10/15	Sun 11/11/15
293	4.11.5.6	kerb bedding, laying & backing before bituminous material	14 days	Mon 27/11/15	Sun 12/1/15
294	4.11.5.7	AC - lay DBM & base course	14 days	Mon 16/11/15	Sun 29/11/15
295	4.11.5.8	backfill footpath formation	12 days	Mon 16/11/15	Fri 27/11/15
296	4.11.5.9	street lighting ducts, downpipes & controller	14 days	Sat 28/11/15	Fri 11/12/15
297	4.11.5.10	UU for CLP (lighting)	12 days	Sat 12/12/15	Wed 23/12/15
298	4.11.5.11	footpath paving	15 days	Thu 24/12/15	Thu 7/1/16
299	4.11.5.12	AC - lay wearing course	7 days	Sat 26/12/15	Fri 1/1/16
300	4.11.6	Claim No. 013 - YO No. 028 - Site Possession from DC2011/06 (Portion B) (from Area D3 to D10)	0 days	Tue 12/8/14	Tue 12/8/14
301	4.11.7	Works at Areas D4 to D9 (shown in Section VIII)	487 days	Mon 14/7/14	Thu 12/11/15
302	4.11.7.1	Retaining Wall BCPRW2B	92 days	Mon 14/7/14	Mon 13/10/14
303	4.11.7.1.1	Confirm setting out details for BCPRW2B	0 days	Mon 14/7/14	Mon 14/7/14
304	4.11.7.1.2	utilities detection & setting out on site	3 days	Mon 14/7/14	Wed 16/7/14
305	4.11.7.1.3	excavation (Bay 2064 to Bay 2066)	5 days	Thu 17/7/14	Mon 21/7/14
306	4.11.7.1.4	excavation (Bay 2067 to Bay 2069)	5 days	Tue 22/7/14	Sat 26/7/14
307	4.11.7.1.5	place 500mm rock fill (Bay 2064 to Bay 2066)	3 days	Sun 27/7/14	Tue 29/7/14
308	4.11.7.1.6	place 500mm rock fill (Bay 2067 to Bay 2069)	3 days	Wed 30/7/14	Fri 1/8/14
309	4.11.7.1.7	Bays 2064, 2065, 2066	54 days	Mon 4/8/14	Fri 26/9/14
310	4.11.7.1.8	Bays 2067, 2068, 2069	54 days	Thu 21/8/14	Mon 13/10/14
311	4.11.7.2	install 150UPVC perforated pipe behind retaining wall	4 days	Fri 17/10/14	Mon 20/10/14
312	4.11.7.3	site formation work for Areas D4, B6 & A4 to F15.0	28 days	Tue 21/10/14	Mon 17/11/14
313	4.11.7.4	soil cement slopes for Areas D4 to D6	45 days	Tue 4/11/14	Thu 18/12/14
314	4.11.7.5	site formation work for Areas D7 to D9	21 days	Fri 5/12/14	Thu 25/12/14
321	4.11.7.6	site formation work for Areas D7 to D9	60 days	Fri 19/12/14	Mon 16/2/15

ID	WBS	Task Name	Duration	Start	Finish
322	4.11.7.7	Secondary Boundary Fencing (Ch1234 to Ch702) (Adjacent to Patrol Road by Others)	190 days	Thu 7/5/15	Thu 12/11/15
323	4.11.7.8	Secondary Boundary Fencing (Ch702 to Ch10 Adjacent to RW1)	250 days	Mon 22/2/15	Fri 9/10/15
324	4.12.1	Submissions for method statement of subway & staircase	600 days	Thu 22/8/13	Mon 13/4/15
325	4.12.2	Approval of Submissions for method statement of subway & staircase	70 days	Thu 22/8/13	Wed 30/10/13
326	4.12.2	Construction of retaining wall RW1 - CH10 to 561.053m	68 days	Fri 30/8/13	Tue 5/11/13
327	4.12.3	Construction of retaining wall RW1A	499 days	Sat 14/9/13	Sun 25/4/15
344	4.12.4	filling & slope drainage behind RW1A - (D17)	253 days	Fri 13/9/13	Fri 23/5/14
348	4.12.5	Works from chainage 970 to chainage 1120 (150m)	35 days	Thu 26/9/14	Thu 30/10/14
349	4.12.6	Works from chainage 920 to chainage 970 (150m)	198 days	Sat 31/5/14	Sun 14/12/14
362	4.12.7	UU for CLP (lighting) - chainage 826-1120	202 days	Sat 31/5/14	Fri 2/1/15
375	4.12.8	footpath paving for chainage 820-1120	7 days	Sat 31/5/14	Fri 9/1/15
376	4.12.9	Works from chainage 675 to chainage 820 (145m)	106 days	Mon 5/1/15	Fri 16/1/15
377	4.12.10	Works from chainage 675 to chainage 820 (except Bridge J) - after RWS	106 days	Fri 12/12/14	Fri 27/3/15
390	4.12.11	UU for CLP (lighting) - chainage 475-820	77 days	Sat 4/1/15	Sat 21/3/15
404	4.12.12	footpath paving for chainage 475-820	5 days	Sat 28/3/15	Wed 1/4/15
405	4.12.13	Construction of Bridge J (ch. 597-630)	5 days	Thu 9/4/15	Mon 13/4/15
406	4.12.14	Construction of retaining wall RWS - Revised (Drg: SK0036A, 0309, 0310, 0115A, 0123A, 0123A)	323 days	Tue 1/4/14	Tue 17/2/15
419	4.12.15	Subways, lift shafts, pump room, staircases	96 days	Tue 25/11/14	Sun 13/15
426	4.12.16	Works from chainage 1120 to chainage 1270	423 days	Mon 23/12/13	Wed 18/2/15
450	4.12.17	AC-lay wearing course - chainage 475-1270	188 days	Sun 21/9/14	Fri 27/9/15
467	4.12.18	1 no. DN160 pipe jacking LV009 including jacking & receiving pits	7 days	Sat 28/3/15	Fri 3/4/15
468	4.12.19	Works for Revised DSD Maintenance Access & Slope (SK0301 & SK0319)	114 days	Thu 26/6/14	Fri 17/10/14
482	4.12.20		50 days	Mon 23/2/15	Mon 13/4/15
493	4.13	Section XIII of the Works - Works not covered in any other Sections (Revised)	852 days	Thu 22/8/13	Mon 21/12/15
494	4.13.1	Submissions	70 days	Thu 22/8/13	Wed 30/10/13
495	4.13.2	Approval of Submissions	68 days	Mon 16/9/13	Fri 22/11/13
496	4.13.3	Temporary Traffic Arrangement (TTA) Scheme for Works at existing LMH Rd	92 days	Fri 23/8/13	Fri 22/11/13
500	4.13.4	Re-aligned Lin Ma Hang Road	789 days	Thu 24/10/13	Mon 21/12/15
501	4.13.4.1	VO FOR RENEWAL OF RISING MAIN (Order confirmed via Email on 31/12/2014)	0 days	Wed 31/12/14	Wed 31/12/14
502	4.13.4.2	place order for HDPE pipes	0 days	Tue 6/1/15	Tue 6/1/15
503	4.13.4.3	arrival of HDPE pipes	59 days	Tue 6/1/15	Thu 5/5/15
504	4.13.4.4	IRRI GATION PIPES	0 days	Tue 7/10/14	Tue 7/10/14
505	4.13.4.5	RECEIVE VO 062 CABLE DUCTS LAYING FOR PUBLIC LIGHTING SYSTEM AT LIN MA HANG ROAD	0 days	Tue 14/10/14	Tue 14/10/14
506	4.13.4.6	TTA for ch. 310-380 (west)	210 days	Sun 24/8/14	Sat 21/3/15
507	4.13.4.6.1	earthwork to lay drainage & waterwork	0 days	Sun 24/8/14	Sun 24/8/14
508	4.13.4.6.2	drainage & waterwork + backfill for CLP	21 days	Sat 13/9/14	Sat 13/9/14
509	4.13.4.6.3	VO063 - crossing no. 1 (polehole, 2 (west))	45 days	Tue 28/10/14	Tue 28/10/14
510	4.13.4.6.4	UU for ch. 190-380 (13284; 1184; LV)	18 days	Wed 29/10/14	Sat 15/1/15
511	4.13.4.6.5	filling works to formation of road (include SR798%)	19 days	Sun 16/11/14	Thu 4/12/14
512	4.13.4.6.6	street lighting manholes & crossroads	7 days	Fri 5/12/14	Thu 11/12/14
513	4.13.4.6.7	kerb bedding, laying & backing before bituminous material	7 days	Fri 12/12/14	Thu 18/12/14
514	4.13.4.6.8	filling works to formation of footpath	9 days	Fri 19/12/14	Thu 27/12/14
515	4.13.4.6.9	UU for CLP (lighting)	4 days	Sun 28/12/14	Wed 31/12/14
516	4.13.4.6.10	irrigation system	5 days	Thu 1/1/15	Mon 5/1/15
517	4.13.4.6.11	preparation works to formation of footpath	7 days	Tue 6/1/15	Mon 12/1/15
518	4.13.4.6.12	footpath paving	7 days	Tue 13/1/15	Mon 19/1/15
519	4.13.4.6.13	VO for renewal of rising main	3 days	Mon 19/1/15	Wed 21/1/15
520	4.13.4.6.14	sub-base laying for road	9 days	Thu 22/1/15	Fri 30/1/15
521	4.13.4.6.15	AC-lay DBM & base course	6 days	Fri 6/3/15	Wed 11/3/15
522	4.13.4.6.16		5 days	Thu 12/3/15	Mon 16/3/15
523	4.13.4.6.17		5 days	Tue 17/3/15	Mon 16/3/15
534	4.13.4.7	TTA for ch. 380-580 (west)	402 days	Fri 22/11/13	Mon 29/12/14
535	4.13.4.7.1	watermain (include issue of alignment and laying)	0 days	Fri 22/11/13	Fri 22/11/13
536	4.13.4.7.2	drainage (pipe, manholes & gullies)	120 days	Sat 23/11/13	Sat 23/11/13
537	4.13.4.7.3	Received Variation Order Nos. 040 & 442	0 days	Sun 23/3/14	Sun 23/3/14
538	4.13.4.7.4	construct DN450mm pipe with concrete surround	0 days	Mon 28/4/14	Mon 28/4/14
539	4.13.4.7.5	low stream pipe & catchpit at western side	28 days	Mon 12/5/14	Sun 8/6/14
530	4.13.4.7.5.1	construct 1900x950 box culvert with manholes SMH8052A & B	28 days	Mon 12/5/14	Sun 8/6/14
531	4.13.4.7.6	support existing DN150mm sewer pipe & watermain	49 days	Mon 9/6/14	Sun 27/7/14
532	4.13.4.7.6.1	construct box culvert	7 days	Mon 9/6/14	Sun 15/6/14
533	4.13.4.7.6.2	construct manholes	14 days	Mon 16/6/14	Sun 29/6/14
534	4.13.4.7.6.3		28 days	Mon 30/6/14	Sun 27/7/14

ID	WBS	Task Name	Duration	Start	Finish
535	4.13.4.7.7	found existing cables affected construction of gullies & discuss with CLP	18 days	Sat 26/7/14	Tue 12/8/14
536	4.13.4.7.8	complete preparation work & fill footpath for 132KV, 11KV & LV	8 days	Wed 13/8/14	Wed 20/8/14
537	4.13.4.7.9	LU - 132KV-11KV & LV	35 days	Thu 21/8/14	Wed 24/9/14
538	4.13.4.7.10	temporary connection of cables	3 days	Thu 28/9/14	Sat 4/10/14
539	4.13.4.7.11	966x650 box culvert (low stream & west catchpit)	7 days	Sun 25/9/14	Sat 4/10/14
541	4.13.4.7.12	construct outstanding drainage & gullies	7 days	Wed 1/10/14	Tue 7/10/14
542	4.13.4.7.13	filling work to formation of road (include SRTW8%)	5 days	Wed 8/10/14	Sun 12/10/14
543	4.13.4.7.14	V0053 - crossing no. 3, 4 (west)	10 days	Mon 13/10/14	Wed 22/10/14
544	4.13.4.7.15	complete filling work to formation of road (include SRTW8%)	5 days	Thu 23/10/14	Mon 27/10/14
545	4.13.4.7.16	street lighting, drainage & crossing at ch 523	4 days	Mon 27/10/14	Thu 30/10/14
546	4.20.4.2.19	LU for CLP (lighting)	5 days	Fri 31/10/14	Tue 4/11/14
547	4.13.4.7.18	sub-base laying for road	4 days	Wed 5/11/14	Sat 8/11/14
548	4.13.4.7.19	kerb bedding, laying & backing before bituminous material	12 days	Sat 8/11/14	Wed 19/11/14
549	4.13.4.7.20	filling works to formation of footpath	5 days	Thu 20/11/14	Mon 24/11/14
550	4.13.4.7.21	LU for ch 380-580 (PCCW)	14 days	Tue 25/11/14	Mon 8/12/14
551	4.13.4.7.22	irrigation system	4 days	Tue 9/12/14	Fri 12/12/14
552	4.13.4.7.23	preparation works to formation of footpath	3 days	Sat 13/12/14	Mon 15/12/14
553	4.13.4.7.24	footpath paving	14 days	Tue 16/12/14	Mon 29/12/14
554	4.13.4.7.25	AC - lay DBM & base course	5 days	Thu 20/11/14	Mon 29/12/14
555	4.13.4.8	TTA for ch 380-580 (east)	134 days	Wed 26/11/14	Thu 9/4/15
556	4.13.4.8.1	remove existing pavement	0 days	Thu 27/11/14	Wed 26/11/14
557	4.13.4.8.2	middle stream box culvert 960x650	4 days	Thu 27/11/14	Sun 30/11/14
558	4.13.4.8.3	middle stream DN450mm pipe	14 days	Mon 1/12/14	Mon 1/12/14
559	4.13.4.8.4	V0053 - crossing no. 2, 3, 4, 5 (east)	12 days	Mon 8/12/14	Fri 19/12/14
560	4.13.4.8.5	street light crossing at ch 523	20 days	Sat 20/12/14	Thu 8/1/15
561	4.13.4.8.6	VO for renewal of rising main	4 days	Fri 9/1/15	Mon 12/1/15
562	4.13.4.8.7	sub-base & east kerbing	20 days	Fri 9/1/15	Wed 25/3/15
563	4.13.4.8.8	AC - lay DBM & base course	10 days	Thu 26/3/15	Sat 4/4/15
564	4.13.4.8.9	TTA for ch 190-380 (east)	5 days	Sun 5/4/15	Wed 29/4/15
565	4.13.4.9	remove existing pavement	37 days	Mon 23/3/15	Mon 23/3/15
566	4.13.4.9.1	VO for renewal of rising main	0 days	Tue 24/3/15	Fri 27/3/15
567	4.13.4.9.2	PCCW crossings at ch 287, 350	4 days	Sat 28/3/15	Fri 10/4/15
568	4.13.4.9.3	sub-base & east kerbing	14 days	Sat 11/4/15	Tue 14/4/15
569	4.13.4.9.4	AC - lay DBM & base course	4 days	Mon 13/4/15	Tue 14/4/15
570	4.13.4.9.5	sub-base & east kerbing	2 days	Wed 15/4/15	Fri 24/4/15
571	4.13.4.9.6	AC - lay DBM & base course	10 days	Wed 15/4/15	Fri 24/4/15
572	4.13.4.9.7	TTA for ch 580-785 (132KV, 11KV, LV)	5 days	Sat 25/4/15	Sat 25/4/15
573	4.13.4.10	remove existing pavement	220 days	Sun 5/10/14	Tue 12/5/15
574	4.13.4.10.1	TTA for ch 580-785 (west)	21 days	Sun 5/10/14	Sat 25/10/14
575	4.13.4.10.2	earthwork to lay drainage & waterwork	0 days	Wed 26/11/14	Wed 26/11/14
576	4.13.4.10.3	drainage & waterwork	10 days	Thu 27/11/14	Sat 0/12/14
577	4.13.4.10.4	V0053 - crossing no. 5, 6, 7&8 & Ducts along ch613-700 (west)	70 days	Sun 7/12/14	Mon 30/2/15
578	4.13.4.10.5	filling works to formation of footpath	14 days	Tue 24/2/15	Mon 9/3/15
579	4.13.4.10.6	street lighting, drainage & crossings ch760, 785	7 days	Tue 10/3/15	Mon 16/3/15
580	4.13.4.10.7	sub-base laying for road	5 days	Tue 17/3/15	Sat 21/3/15
581	4.13.4.10.8	kerb bedding, laying & backing before bituminous material	5 days	Sun 22/3/15	Thu 26/3/15
582	4.13.4.10.9	filling works to formation of footpath	9 days	Fri 27/3/15	Sat 4/4/15
583	4.13.4.10.10	LU for CLP (lighting)	4 days	Sun 5/4/15	Wed 8/4/15
584	4.20.4.5.17	LU for ch 580-785 (PCCW)	5 days	Thu 9/4/15	Mon 13/4/15
585	4.13.4.10.12	irrigation system	14 days	Thu 14/4/15	Mon 27/4/15
586	4.13.4.10.13	preparation works to formation of footpath	5 days	Tue 28/4/15	Sat 2/5/15
587	4.13.4.10.14	footpath paving	3 days	Sun 3/5/15	Tue 5/5/15
588	4.13.4.10.15	AC - lay DBM & base course	7 days	Wed 6/5/15	Tue 12/5/15
589	4.13.4.10.16	TTA for ch 580-785 (east)	5 days	Sun 5/4/15	Sun 5/4/15
590	4.13.4.11	remove existing pavement	58 days	Sat 11/4/15	Mon 8/6/15
591	4.13.4.11.1	VO for renewal of rising main	0 days	Sat 11/4/15	Sat 11/4/15
592	4.13.4.11.2	V0053 - crossing no. 5, 6, 7&8 (east)	5 days	Sun 12/4/15	Thu 16/4/15
593	4.13.4.11.3	street lighting crossings at ch 760, 785	20 days	Fri 17/4/15	Wed 6/5/15
594	4.13.4.11.4	sub-base & east kerbing	14 days	Sat 25/15	Fri 15/5/15
595	4.13.4.11.5	AC - lay DBM & base course	7 days	Thu 14/5/15	Wed 20/5/15
596	4.13.4.11.6	TTA for ch 580-785 (west)	14 days	Thu 21/5/15	Wed 3/6/15
597	4.13.4.11.7	remove existing pavement	5 days	Thu 4/6/15	Thu 2/7/15
598	4.13.4.12	AC - lay DBM & base course	62 days	Fri 1/5/15	Thu 2/7/15

ID	WBS	Task Name	Duration	Start	Finish
599	4.13.4.12.1	TTA for ch 125-190 (west)	0 days		Fri 1/5/15
600	4.13.4.12.2	earthwork to lay drainage & waterwork	3 days	Sat 2/5/15	Mon 4/5/15
601	4.13.4.12.3	drainage & waterwork + backfill for CLP	18 days	Mon 4/5/15	Thu 21/5/15
602	4.13.4.12.4	UU for ch 125-190 (132M/118V/LV)	8 days	Fri 2/5/15	Fri 2/5/15
603	4.13.4.12.5	filling works to formation of road (include SRT98%)	7 days	Wed 3/6/15	Wed 3/6/15
604	4.13.4.12.6	street lighting, drains & crossing at ch 154	3 days	Thu 4/6/15	Sat 6/6/15
605	4.13.4.12.7	irrigation system	4 days	Fri 5/6/15	Mon 8/6/15
606	4.13.4.12.8	UU for CLP (lighting)	3 days	Tue 9/6/15	Thu 11/6/15
607	4.13.4.12.9	sub-base laying	3 days	Fri 12/6/15	Sun 14/6/15
608	4.13.4.12.10	kerb bedding, laying & backing before bituminous material	5 days	Mon 15/6/15	Fri 19/6/15
609	4.13.4.12.11	filling works to formation of footpath	3 days	Fri 19/6/15	Sun 21/6/15
610	4.13.4.12.12	UU for ch 125-190 (PCCW)	5 days	Mon 22/6/15	Fri 26/6/15
611	4.13.4.12.13	footpath paving	7 days	Fri 26/6/15	Thu 27/15
612	4.13.4.12.14	AC - lay DBM & base course	4 days	Sat 20/6/15	
613	4.13.4.13		68 days	Wed 24/6/15	Mon 31/8/15
614	4.13.4.13.1	TTA for ch 80-125 (west)	0 days		Wed 24/6/15
615	4.13.4.13.2	earthwork to lay drainage & waterwork	3 days	Thu 25/6/15	Sat 27/6/15
616	4.13.4.13.3	drainage & waterwork + backfill for CLP	18 days	Sun 28/6/15	Wed 15/7/15
617	4.13.4.13.4	UU for ch 80-190 (132M/118V/LV)	6 days	Thu 16/7/15	Tue 21/7/15
618	4.13.4.13.5	filling works to formation of road (include SRT98%)	7 days	Wed 22/7/15	Tue 28/7/15
619	4.13.4.13.6	street lighting, drains & crossing at ch 98	3 days	Wed 29/7/15	Fri 31/7/15
620	4.13.4.13.7	irrigation system	3 days	Sat 1/8/15	Mon 3/8/15
621	4.13.4.13.8	UU for CLP (lighting)	3 days	Tue 4/8/15	Thu 6/8/15
622	4.13.4.13.9	sub-base laying	3 days	Fri 7/8/15	Sun 9/8/15
623	4.13.4.13.10	kerb bedding, laying & backing before bituminous material	5 days	Mon 10/8/15	Fri 14/8/15
624	4.13.4.13.11	filling works to formation of footpath	4 days	Sat 15/8/15	Tue 18/8/15
625	4.13.4.13.12	UU for ch 80-190 (PCCW)	4 days	Wed 19/8/15	Sat 22/8/15
626	4.13.4.13.13	footpath paving	9 days	Sun 23/8/15	Mon 31/8/15
627	4.13.4.13.14	AC - lay DBM & base course	4 days	Sat 15/8/15	
628	4.13.4.14		43 days	Wed 19/8/15	Thu 11/10/15
629	4.13.4.14.1	TTA for ch 125-190 (east)	0 days		Wed 19/8/15
630	4.13.4.14.2	VO for renewal of rising main	7 days	Thu 20/8/15	Wed 26/8/15
631	4.13.4.14.3	filling works to formation of road (include SRT98%)	4 days	Wed 26/8/15	Sat 29/8/15
632	4.13.4.14.4	street lighting, drains & crossing at ch 154	3 days	Sun 30/8/15	Tue 1/9/15
633	4.13.4.14.5	irrigation system	3 days	Wed 2/9/15	Fri 4/9/15
634	4.13.4.14.6	UU for CLP (lighting)	3 days	Sat 5/9/15	Mon 7/9/15
635	4.13.4.14.7	sub-base laying	2 days	Tue 8/9/15	Wed 9/9/15
636	4.13.4.14.8	kerb bedding, laying & backing before bituminous material	5 days	Thu 10/9/15	Mon 14/9/15
637	4.13.4.14.9	filling works to formation of footpath	3 days	Tue 15/9/15	Thu 17/9/15
638	4.13.4.14.10	UU for ch 125-200 (PCCW/HGC)	5 days	Fri 18/9/15	Tue 22/9/15
639	4.13.4.14.11	footpath paving	9 days	Wed 23/9/15	Thu 1/10/15
640	4.13.4.14.12	AC - lay DBM & base course	4 days	Tue 15/9/15	
641	4.13.4.15		42 days	Sat 19/9/15	Sat 31/10/15
642	4.13.4.15.1	TTA for ch 80-125 (east)	0 days		Sat 19/9/15
643	4.13.4.15.2	VO for renewal of rising main	7 days	Sun 20/9/15	Sat 26/9/15
644	4.13.4.15.3	filling works to formation of road (include SRT98%)	5 days	Fri 25/9/15	Tue 29/9/15
645	4.13.4.15.4	street lighting, drains & crossing at ch 98	3 days	Thu 1/10/15	Thu 1/10/15
646	4.13.4.15.5	irrigation system	3 days	Fri 2/10/15	Sun 4/10/15
647	4.13.4.15.6	UU for CLP (lighting)	3 days	Mon 5/10/15	Wed 7/10/15
648	4.13.4.15.7	sub-base laying	3 days	Thu 8/10/15	Thu 8/10/15
649	4.13.4.15.8	kerb bedding, laying & backing before bituminous material	5 days	Sun 11/10/15	Thu 15/10/15
650	4.13.4.15.9	filling works to formation of footpath	3 days	Fri 16/10/15	Sun 18/10/15
651	4.13.4.15.10	UU for ch 80-125 (PCCW/HGC)	4 days	Mon 19/10/15	Thu 22/10/15
652	4.13.4.15.11	footpath paving	9 days	Fri 23/10/15	Sat 31/10/15
653	4.13.4.15.12	AC - lay DBM & base course	4 days	Fri 16/10/15	
654	4.13.4.16		62 days	Wed 21/10/15	Mon 21/12/15
659	4.13.4.17	Eastern Footpath from ch 380-580)	98 days	Fri 10/4/15	Thu 16/7/15
681	4.13.4.18	Eastern Footpath from ch 190-380)	71 days	Thu 30/4/15	Thu 9/7/15
691	4.13.4.19	Eastern Footpath from ch 580-785)	71 days	Tue 9/6/15	Tue 18/8/15
701	4.13.4.20	Construction of retaining wall RW8 - CH10 to 22 (3 bays)	70 days	Tue 30/12/14	Mon 9/3/15

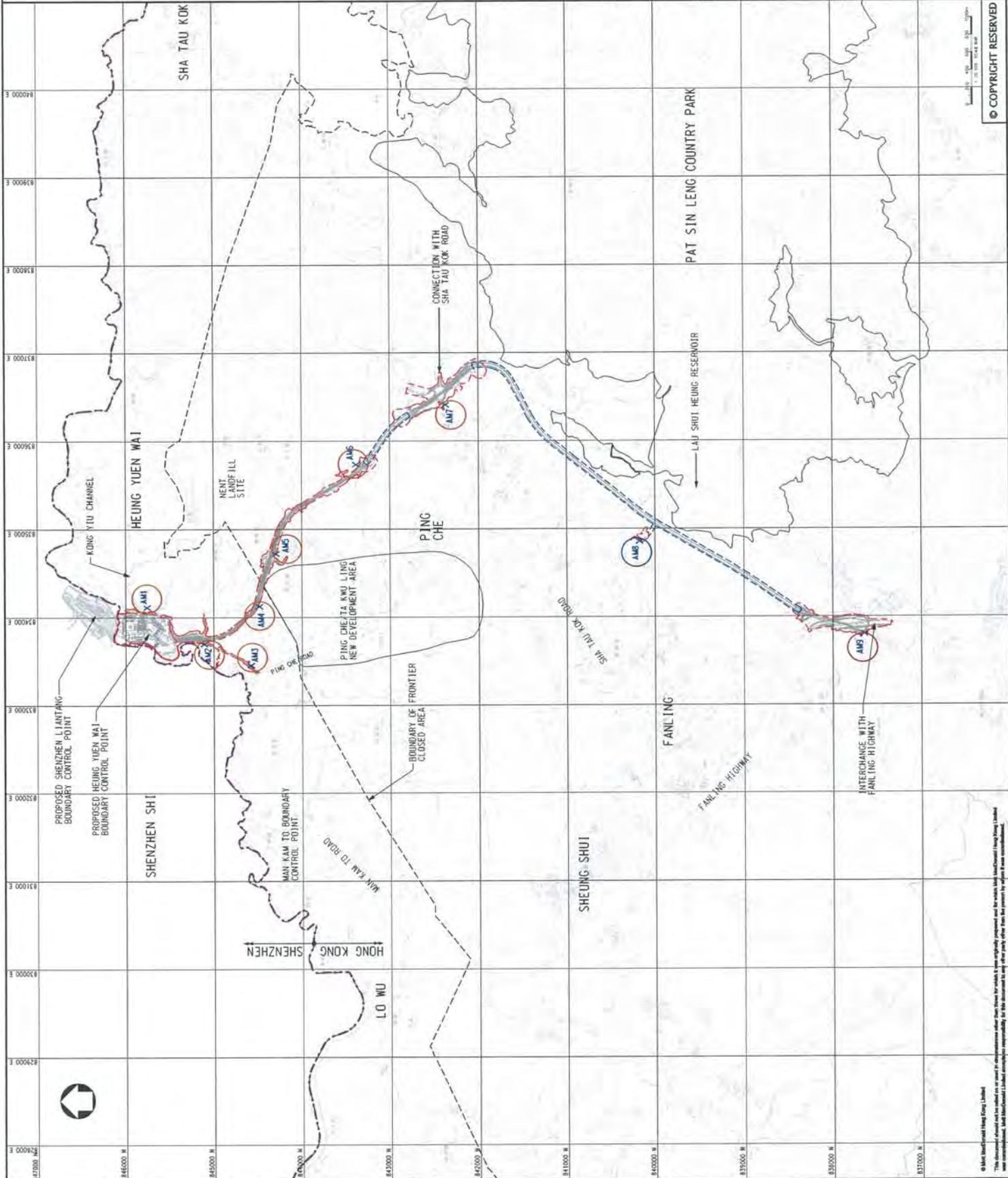
ID	WBS	Task Name	Duration	Start	Finish
703	4.13.4.21	Site Formation works for ArchSD Depot (Drg. 1001B)	48 days	Thu 1/03/15	Sat 26/4/15
704	4.13.4.22	Archaeological survey (Sections T1 to T3)(Org. 6403A)	147 days	Thu 24/10/13	Wed 19/3/14
710	4.14	Section XIV of the Works - Trees preservation and protection.	290 days	Fri 12/4/13	Sat 11/4/15
718	4.15	Section XV of the Works - Landscape soft works (including transplant trees to permanent locations)	149 days	Tue 1/9/15	Wed 27/1/16
722	4.16	Section XVI of the Works - Establishment works for landscape soft works	365 days	Thu 28/1/16	Thu 26/1/17



## **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



PI	REV TO	REVISION	DATE	BY	CHKD BY	DATE
		FIRST ISSUE				

100% Project Completion Date  
 2024 (Year 144)  
 Mott MacDonald  
 15th Floor, One Island Plaza  
 100 The Island, Hong Kong  
 Tel: +852 2552 2288  
 Fax: +852 2552 2299  
 Email: hkd@mottmac.com



Client  
**CEDD**  
 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

Title  
 PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

Discipline	DC	EC	EC
Design			
Check			
Drawn			
Scale	1:20000	25/2/28	PRE
Drawn by			
Checked by			
Drawn by	F. YUEN		P.1

Scale 1:20000  
 1:20,000 1:25,000 1:30,000  
 1:10,000 1:15,000 1:20,000  
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LEGEND:

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

PI	ADD TO	DATE	NO.	DESCRIPTION	DC	RT



100 Yee Hong Street  
 100 Yee Hong Street  
 Hong Kong  
 Tel: +852 2552 2228  
 Fax: +852 2552 2229  
 www.mottmacdonald.com.hk

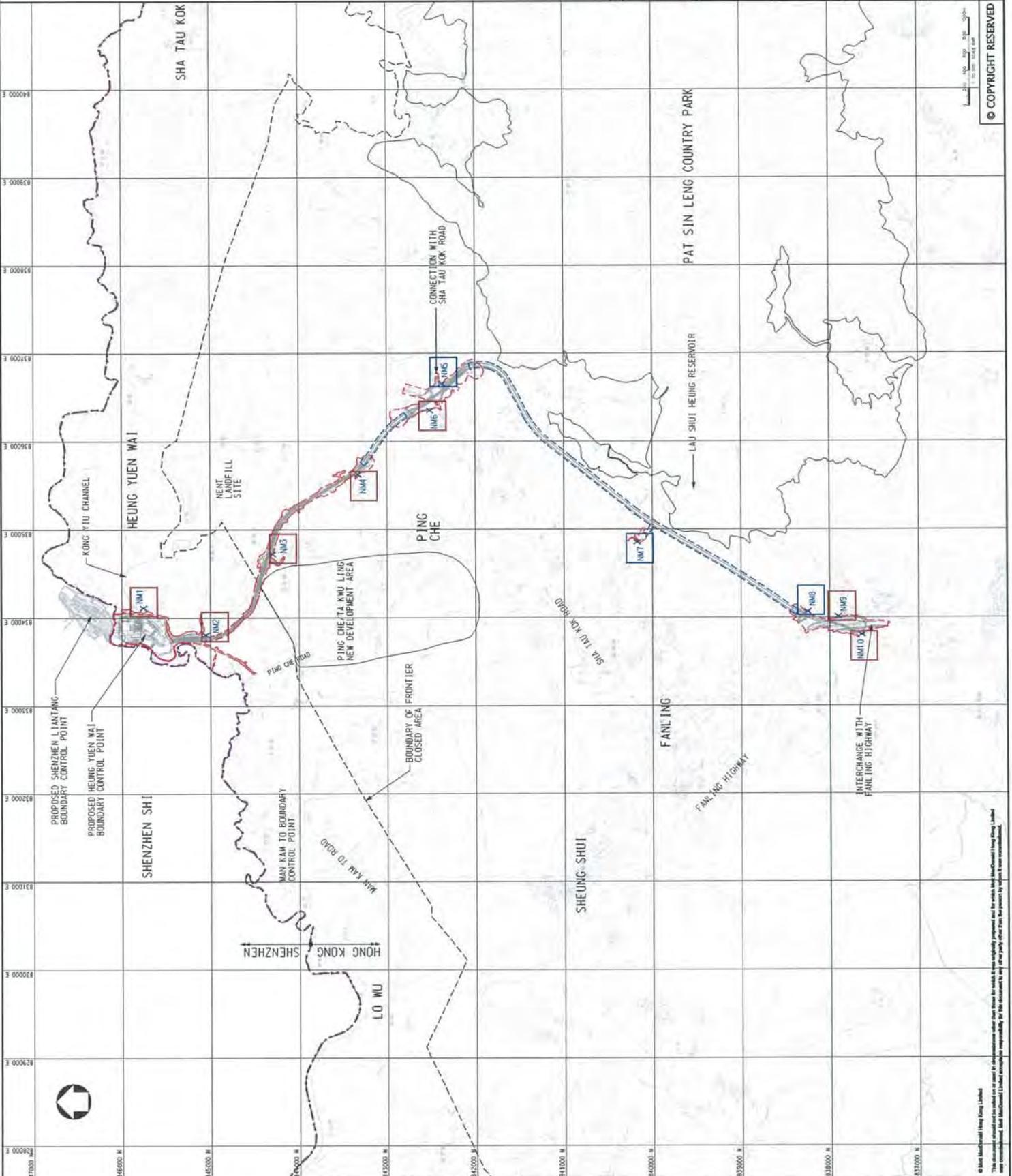


CIVIL ENGINEERING  
 AND DEVELOPMENT  
 DEPARTMENT

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

PROPOSED LOCATION OF CONSTRUCTION  
 NOISE MONITORING STATIONS

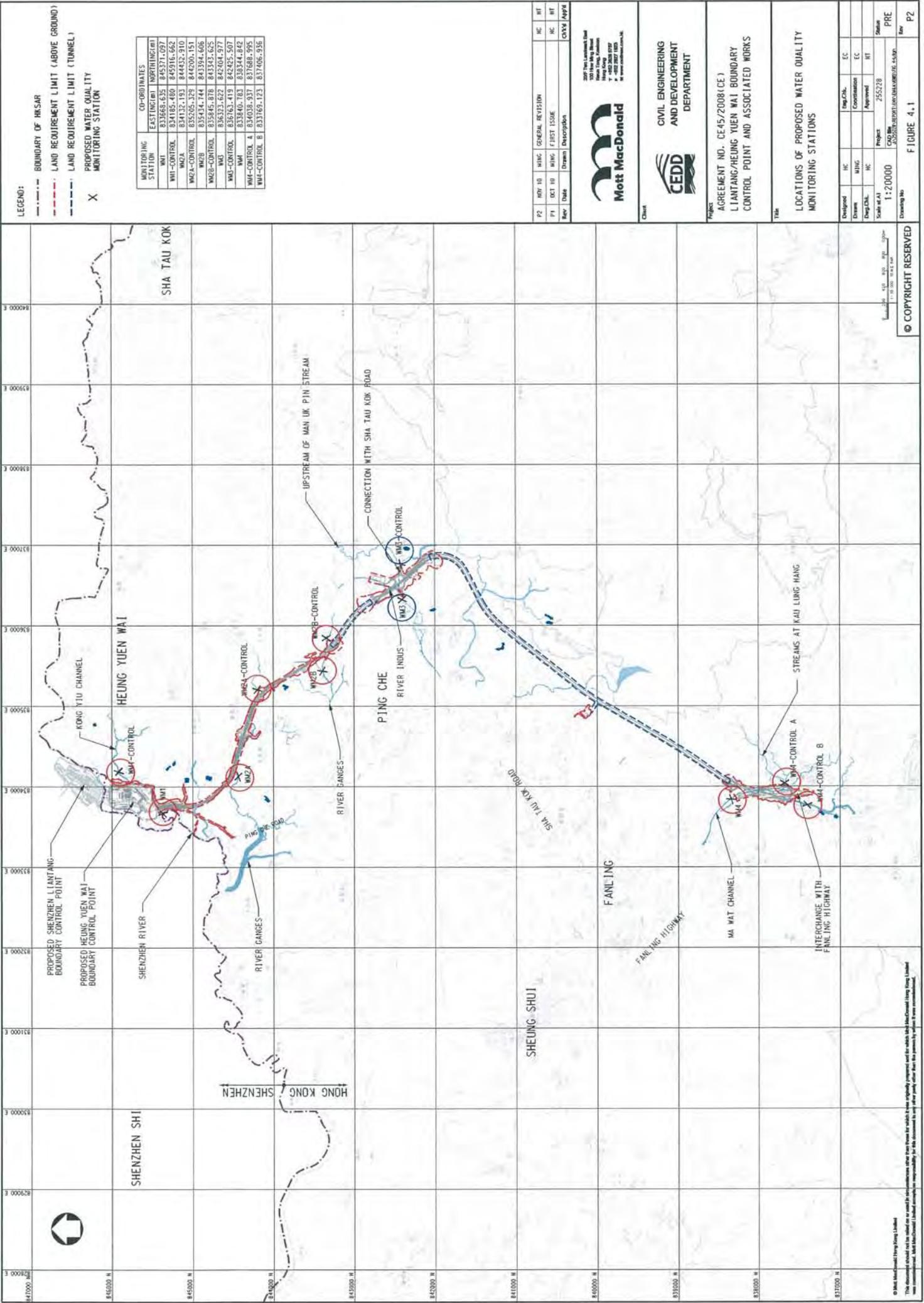
Designated	DC	DC	DC	DC	DC	DC	DC



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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)
WM1	837683.635	845371.097
WM-CONTROL 1	834185.460	845916.662
WM2	834132.193	844432.910
WM3	835205.329	844200.151
WM4	835334.744	843394.606
WM5	835945.878	843343.625
WM6	836323.622	842404.977
WM7	836763.419	842425.507
WM8	833940.783	838344.842
WM-CONTROL 4	834038.937	837688.995
WM9	833769.123	837406.936

REV	DATE	BY	CHKD	DESCRIPTION
P2	NOV 10	MHC	GENERAL REVISION	HC
P1	OCT 10	MHC	FIRST ISSUE	HC
				CCNY/Agpt



**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

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

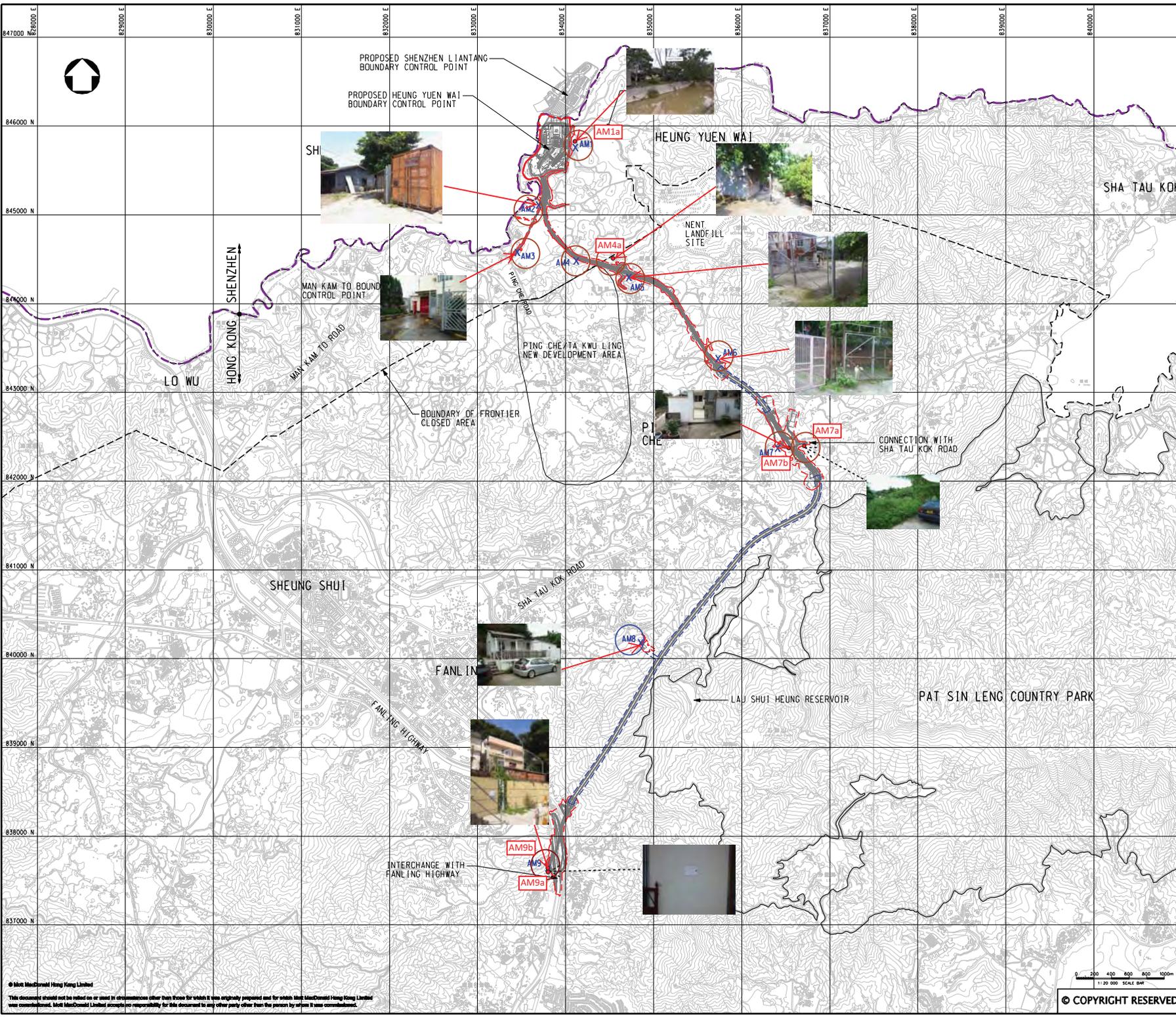
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Drawn	W/HG	Coordination	EC
Eng. Chk.	HC	Approved	HT
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Scale at A100	1:20000	Project	255228

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## **Appendix E**

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



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

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



20F Two Landmark East  
100 Hoo Ming Street  
Kowloon, Kowloon  
Hong Kong  
T +852 2518 5757  
F +852 2827 1823  
W www.mottmac.com.hk

Client



**CIVIL ENGINEERING  
AND DEVELOPMENT  
DEPARTMENT**

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

Title  
 PROPOSED LOCATION OF CONSTRUCTION  
 AIR QUALITY MONITORING STATIONS

Designed	DC	Eng.Chk.	EC	
Drawn	MING	Coordination	EC	
Disp.Chk.	DC	Approved	HT	
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		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	NO	DATE	DESCRIPTION	DC	RT



100 Yee Hong Street  
 100 Yee Hong Street  
 Hong Kong  
 Tel: +852 2552 2228  
 Fax: +852 2552 2229  
 www.mottmacdonald.com.hk

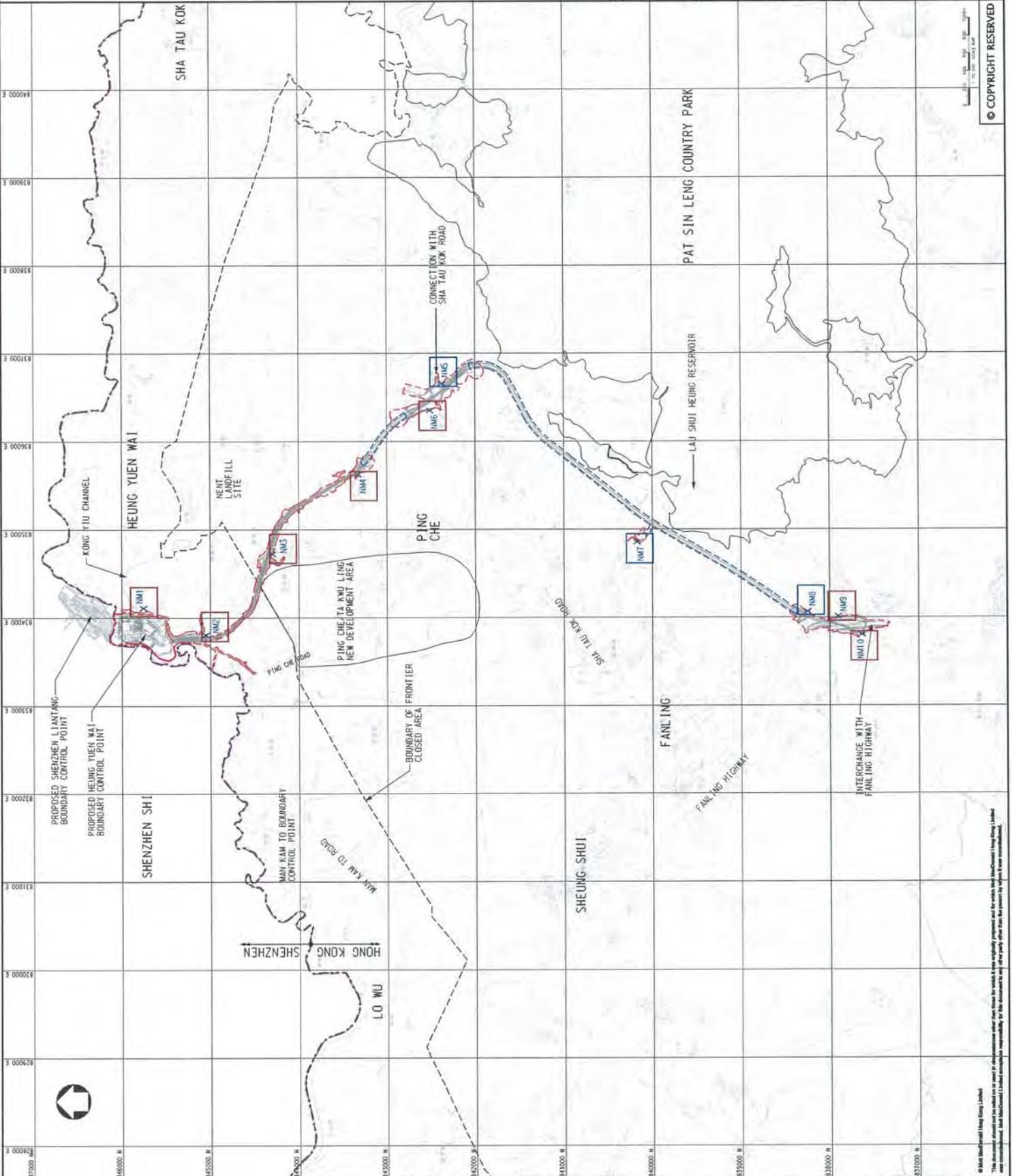


CIVIL ENGINEERING  
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 CONTROL POINT AND ASSOCIATED WORKS

PROPOSED LOCATION OF CONSTRUCTION  
 NOISE MONITORING STATIONS

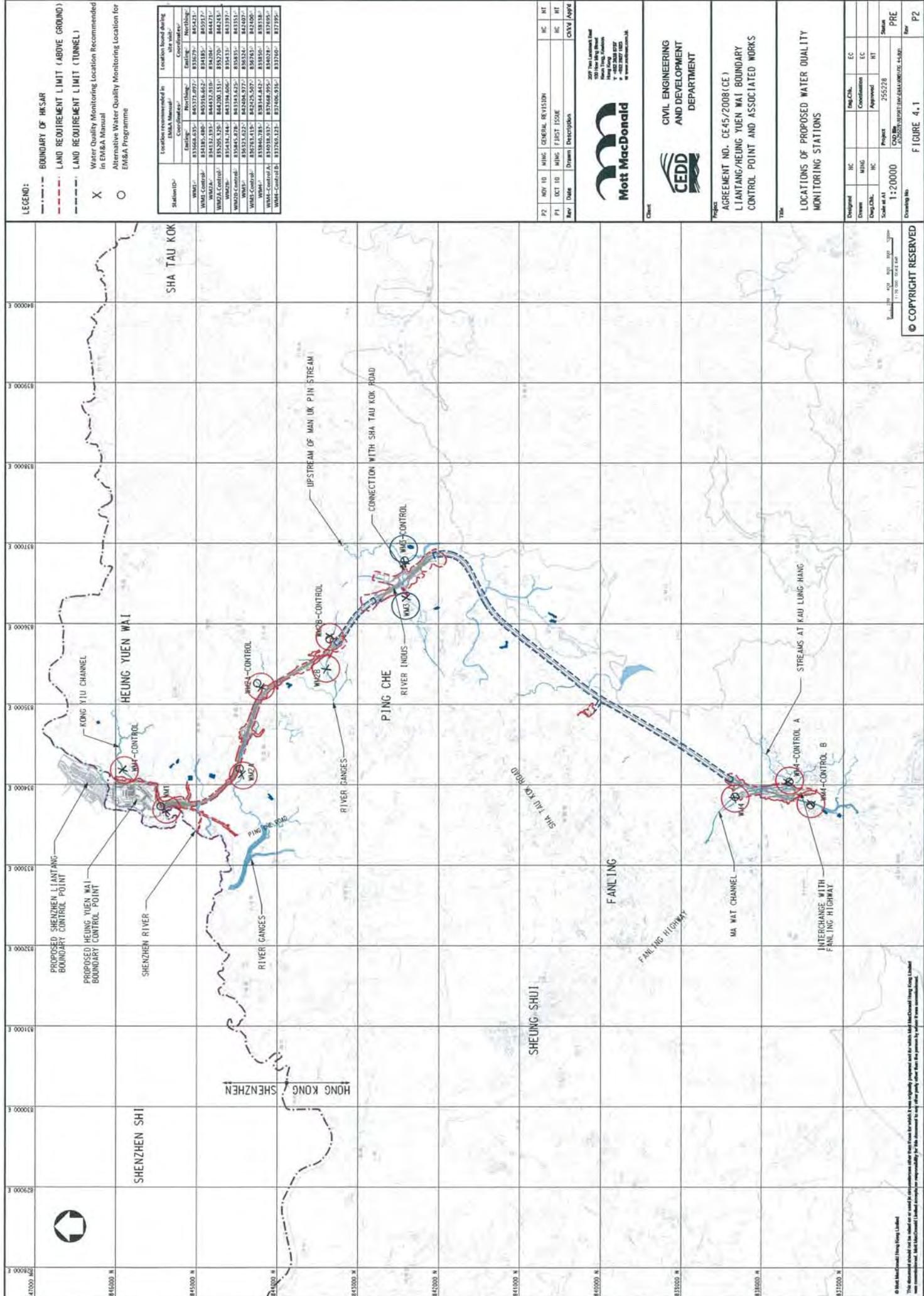
Designated	DC	DC	DC	DC	DC	DC
Designated	DC	DC	DC	DC	DC	DC



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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 the site visit	
	Easting	Northing	Easting	Northing
WMA-1	83366.433	845372.097	83367	845473
WMA-2	84412.183	844452.816	84414	844471
WMA-3	85205.326	844200.331	85207	844215
WMA-4	83484.744	843384.606	83486	843397
WMA-5	83485.878	843348.625	83488	843361
WMA-6	83765.415	842528.507	83768	84260
WMA-7	83846.283	838144.842	83850	838158
WMA-8	834038.937	837668.995	834042	837682
WMA-9	83765.427	837606.916	83769	837620

P2	REV 10	HWG	GENERAL REVISION	HC	HT
P1	101	HWG	FIRST ISSUE	HC	HT
Rev	Date	Drawn	Description	CHKD	Appd



Civil Engineering and Development Department

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

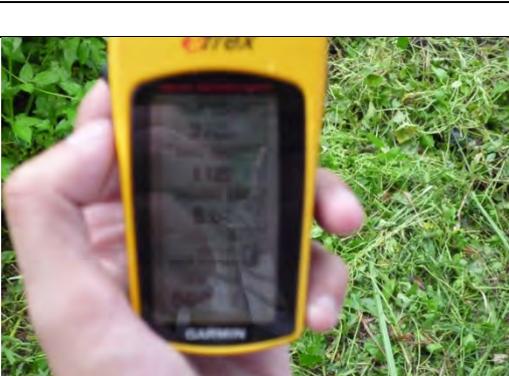
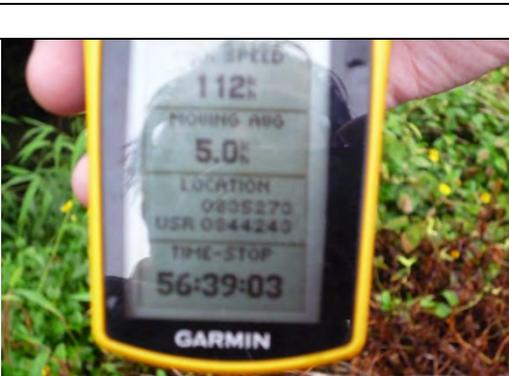
Locations of Proposed Water Quality Monitoring Stations

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

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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: 23/2/2015  
 Next Calibration Date: 23/4/2015  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa) 1015.5  
 Temperature (°C) 18.6

Corrected Pressure (mm Hg) 761.625  
 Temperature (K) 292

### 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	6.2	6.2	12.4	1.783	52	52.62	Slope =	30.1415	
13	4.5	4.5	9.0	1.520	42	42.50	Intercept =	-2.4355	
10	3.4	3.4	6.8	1.323	36	36.43	Corr. coeff. =	0.9962	
7	2.2	2.2	4.4	1.065	29	29.35			
5	1.1	1.1	2.2	0.756	21	21.25			

**Calculations :**

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

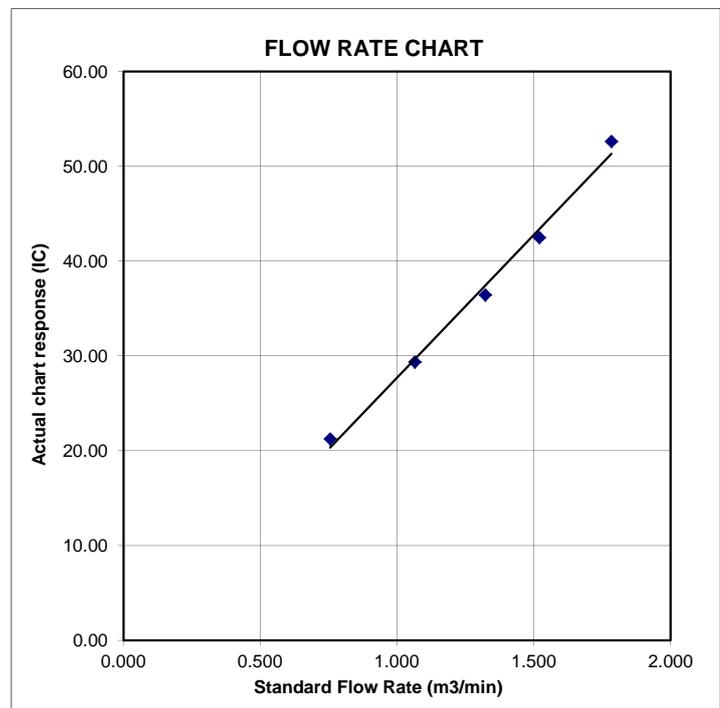
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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: 23/2/2015  
 Next Calibration Date: 23/4/2015  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1015.5	Corrected Pressure (mm Hg)	761.625
Temperature (°C)	18.6	Temperature (K)	292

### 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	1.783	55	55.66	Slope = 33.4114 Intercept = -4.0686 Corr. coeff. = 0.9977
13	4.9	4.9	9.8	1.586	49	49.59	
10	4	4	8.0	1.434	42	42.50	
7	2.5	2.5	5.0	1.135	34	34.41	
5	1.6	1.6	3.2	0.910	26	26.31	

**Calculations :**

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

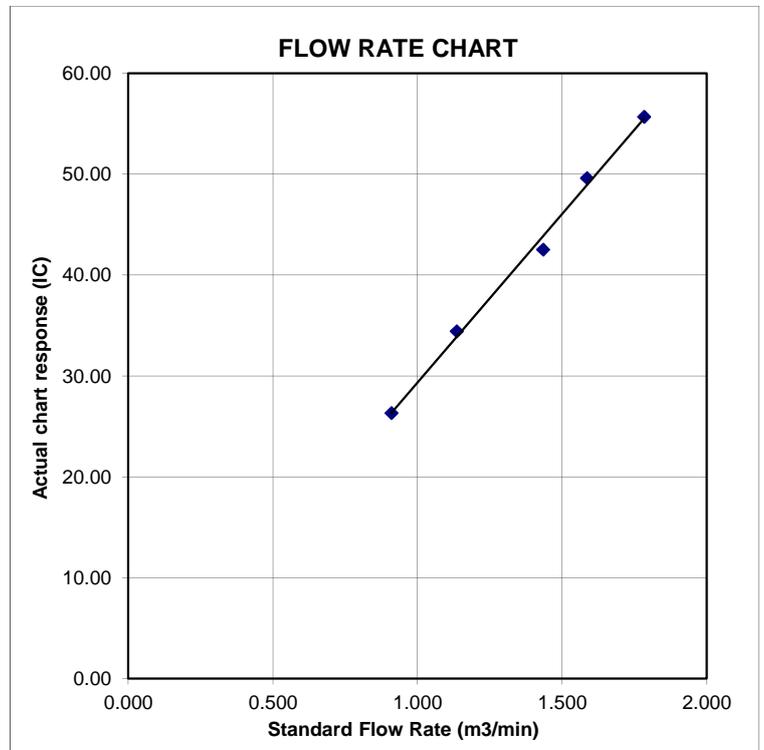
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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

**For subsequent calculation of sampler flow:**

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

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



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 23/2/2015  
 Next Calibration Date: 23/4/2015  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1015.5	Corrected Pressure (mm Hg)	761.625
Temperature (°C)	18.6	Temperature (K)	292

### CALIBRATION ORIFICE

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

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.769	55	55.66	Slope = 32.1530 Intercept = -1.2603 Corr. coeff. = 0.9983
13	4.8	4.8	9.6	1.570	48	48.58	
10	3.5	3.5	7.0	1.342	42	42.50	
7	2.3	2.3	4.6	1.089	34	34.41	
5	1.6	1.6	3.2	0.910	27	27.32	

**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:**

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

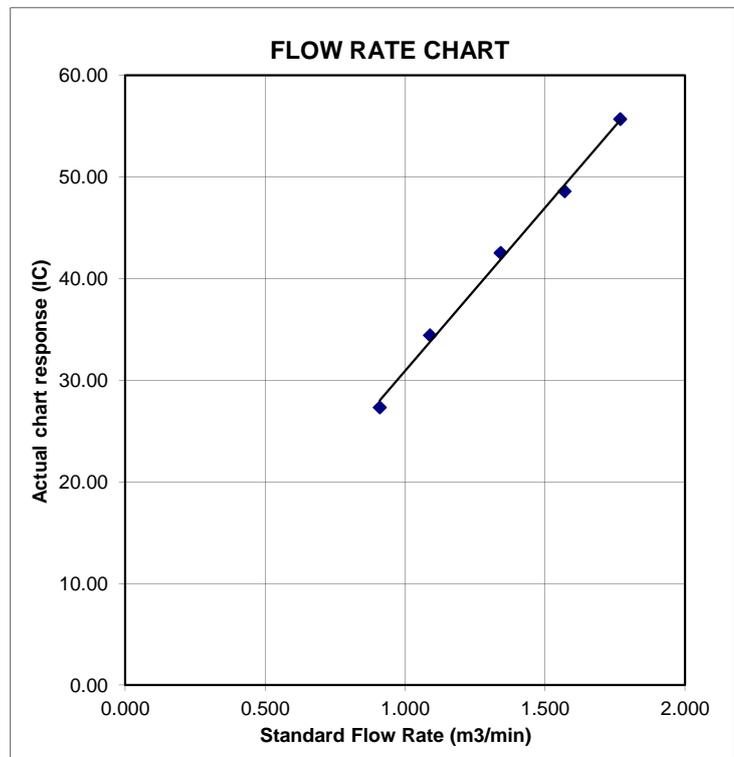
m = sampler slope

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: 23/2/2015

Location ID : AM7b

Next Calibration Date: 23/4/2015

Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa) 1015.5  
 Temperature (°C) 18.6

Corrected Pressure (mm Hg) 761.625  
 Temperature (K) 292

### 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	4.1	4.1	8.2	1.452	55	55.66	Slope = 34.8533 Intercept = 4.1942 Corr. coeff. = 0.9973
13	3.6	3.6	7.2	1.361	50	50.60	
10	2.5	2.5	5.0	1.135	43	43.52	
7	1.7	1.7	3.4	0.938	37	37.44	
5	1.1	1.1	2.2	0.756	30	30.36	

**Calculations :**

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

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

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

**For subsequent calculation of sampler flow:**

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

m = sampler slope

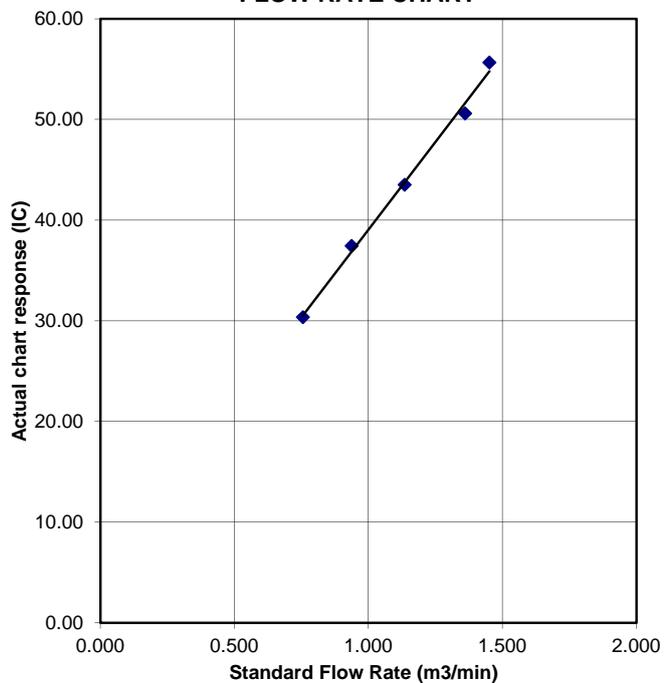
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**



## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 23/2/2015  
 Next Calibration Date: 23/4/2015  
 Technician: C Y Keung

### CONDITIONS

Sea Level Pressure (hPa)	1015.5	Corrected Pressure (mm Hg)	761.625
Temperature (°C)	18.6	Temperature (K)	292

### 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 = 31.6008 Intercept = 6.1977 Corr. coeff. = 0.9990
18	6.1	6.1	12.2	1.769	61	61.73	
13	4.8	4.8	9.6	1.570	56	56.67	
10	3.9	3.9	7.8	1.416	50	50.60	
7	2.2	2.2	4.4	1.065	39	39.47	
5	1.3	1.3	2.6	0.821	32	32.38	

**Calculations :**

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

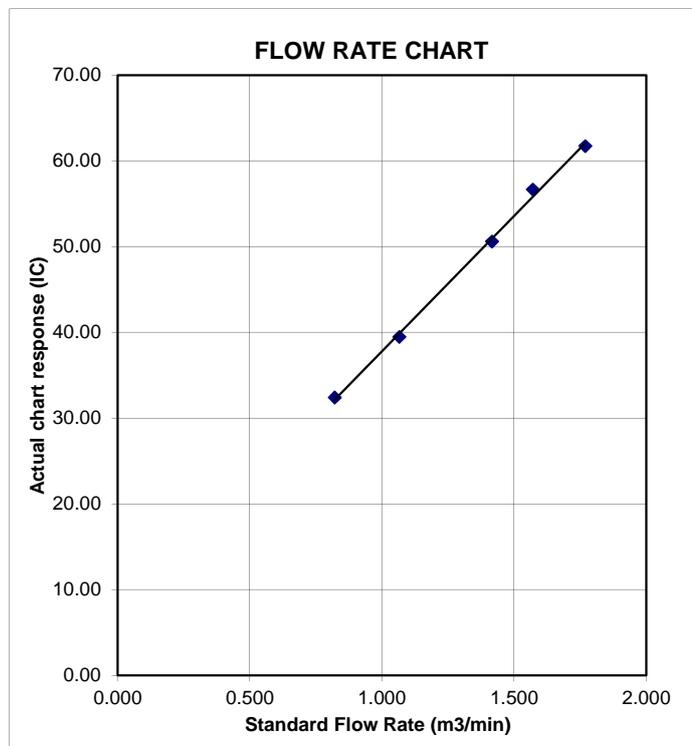
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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: 23/2/2015  
 Next Calibration Date: 23/4/2015  
 Technician: Keung Chi Young

### CONDITIONS

Sea Level Pressure (hPa)	1015.5	Corrected Pressure (mm Hg)	761.625
Temperature (°C)	18.6	Temperature (K)	292

### 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	6.6	13.2	1.840	57	57.68	Slope = 32.0674 Intercept = -2.0301 Corr. coeff. = 0.9976
13	5.1	5.1	10.2	1.618	49	49.59	
10	3.8	3.8	7.6	1.398	41	41.49	
7	2.4	2.4	4.8	1.113	34	34.41	
5	1.5	1.5	3.0	0.881	26	26.31	

**Calculations :**

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

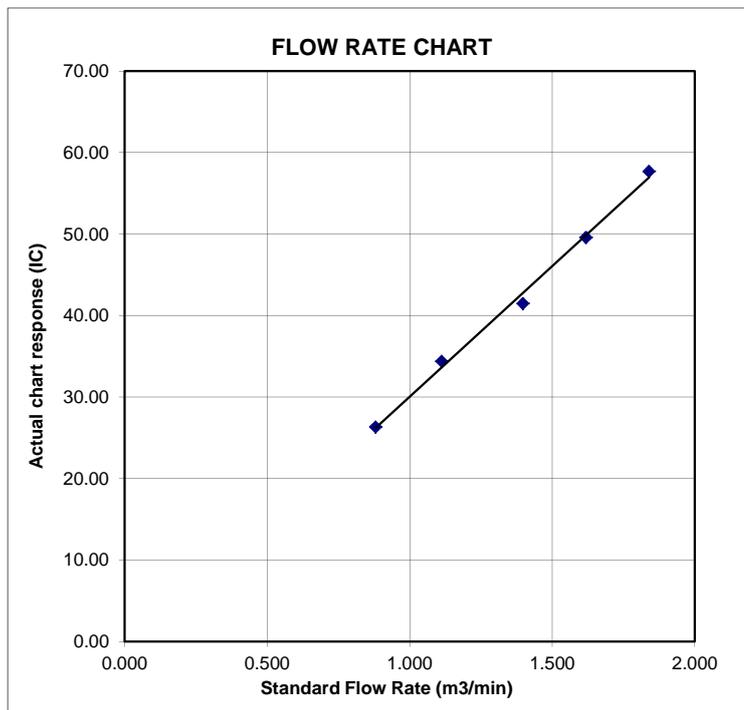
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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

**For subsequent calculation of sampler flow:**

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

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





TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE  
 VILLAGE OF CLEVELAND, OH  
 45002  
 513.467.9000  
 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

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

$$\text{Qstd} = \text{Vstd} / \text{Time}$$

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

$$\text{Qa} = \text{Va} / \text{Time}$$

For subsequent flow rate calculations:

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

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

## CALIBRATION CERTIFICATE

Date: May 30, 2014

Equipment Name	: Laser Dust Monitor, Model LD-3B	(EQ113)
Code No.	: 080000-42	
Quantity	: 1 unit	
Serial No.	: 456658	
Sensitivity	: 0.001 mg/m <sup>3</sup>	
Sensitivity Adjustment	: 702 CPM	
Scale Setting	: May 24, 2014	

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

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**



Kentaro Togo

Overseas Sales Division

## CALIBRATION CERTIFICATE

Date: May 30, 2014

Equipment Name	:	Laser Dust Monitor, Model LD-3B (EQ116)
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	456659
Sensitivity	:	0.001 mg/m <sup>3</sup>
Sensitivity Adjustment	:	727 CPM
Scale Setting	:	May 24, 2014

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

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**



Kentaro Togo  
Overseas Sales Division

## CALIBRATION CERTIFICATE

Date: May 30, 2014

Equipment Name	: Laser Dust Monitor, Model LD-3B	(EQU117)
Code No.	: 080000-42	
Quantity	: 1 unit	
Serial No.	: 456660	
Sensitivity	: 0.001 mg/m <sup>3</sup>	
Sensitivity Adjustment	: 598 CPM	
Scale Setting	: May 24, 2014	

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

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**



Kentaro Togo  
Overseas Sales Division

# Equipment Calibration Record

## Equipment Calibrated:

Type: Laser Dust monitor  
 Manufacturer: Sibata LD-3B  
 Serial No. 366409  
 Equipment Ref: EQ 109  
 Job Order HK1500973

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 10 Nov 2014

## Equipment Calibration Results:

Calibration Date: 4 January 2015

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)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2615	33.0
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6854	50.8
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2319	18.4

Sensitivity Adjustment Scale Setting (Before Calibration) 538 (CPM)

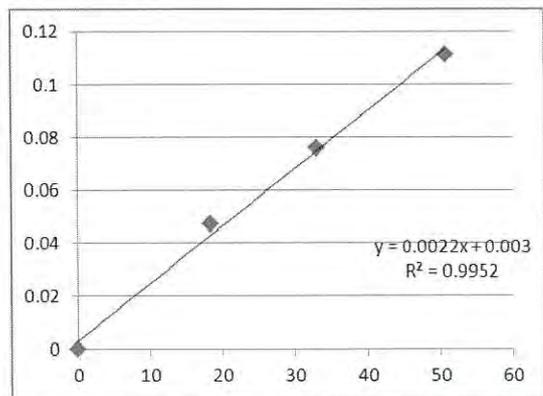
Sensitivity Adjustment Scale Setting (After Calibration) 533 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9952

Date of Issue 6 January 2015



Operator: Donald Kwok Signature: [Signature] Date: 6 January 2015

QC Reviewer: Ben Tam Signature: [Signature] Date: 6 January 2015

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung Date of Calibration: 10-Nov-14  
 Location ID : Calibration Room Next Calibration Date: 10-Feb-15

### CONDITIONS

Sea Level Pressure (hPa)	1017.3	Corrected Pressure (mm Hg)	762.975
Temperature (°C)	23.3	Temperature (K)	296

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Calibration Date->	7-Apr-14	Expiry Date->	7-Apr-15

### 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	3.6	3.6	7.2	1.351	58	58.28	33.8083	12.9642	0.9976
13	2.8	2.8	5.6	1.193	54	54.26			
10	2.2	2.2	4.4	1.058	48	48.23			
8	1.5	1.5	3.0	0.875	42	42.20			
5	0.9	0.9	1.8	0.680	36	36.17			

**Calculations :**

$$Q_{std} = 1/m[\text{Sqrt}(H_2O(P_a/P_{std})(T_{std}/T_a)) - b]$$

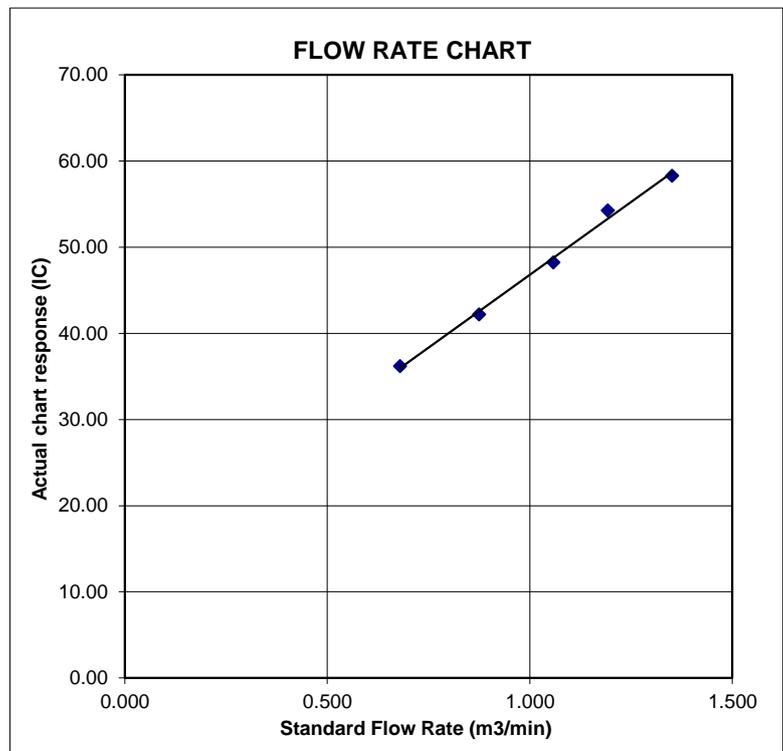
$$IC = I[\text{Sqrt}(P_a/P_{std})(T_{std}/T_a)]$$

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

**For subsequent calculation of sampler flow:**

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

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





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 ± 2)°C

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 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.

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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

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



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

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. : 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

- 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	93.9	± 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

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# 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.

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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. : 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.

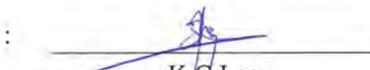
The results are detailed in the subsequent page(s).

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.

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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 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

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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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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

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

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	138.0
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 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

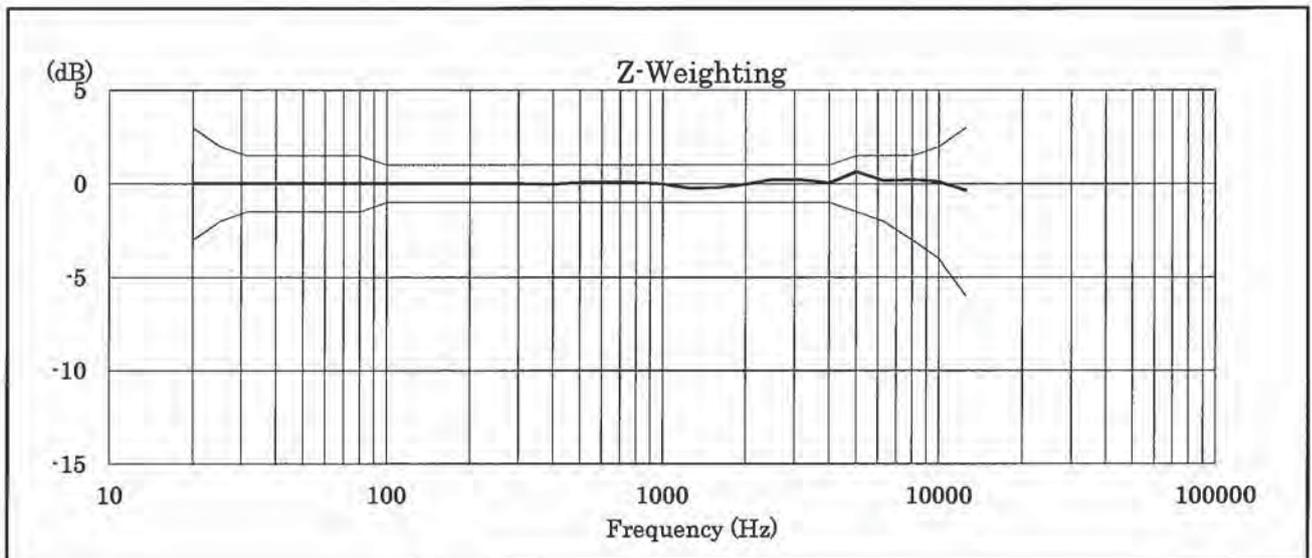
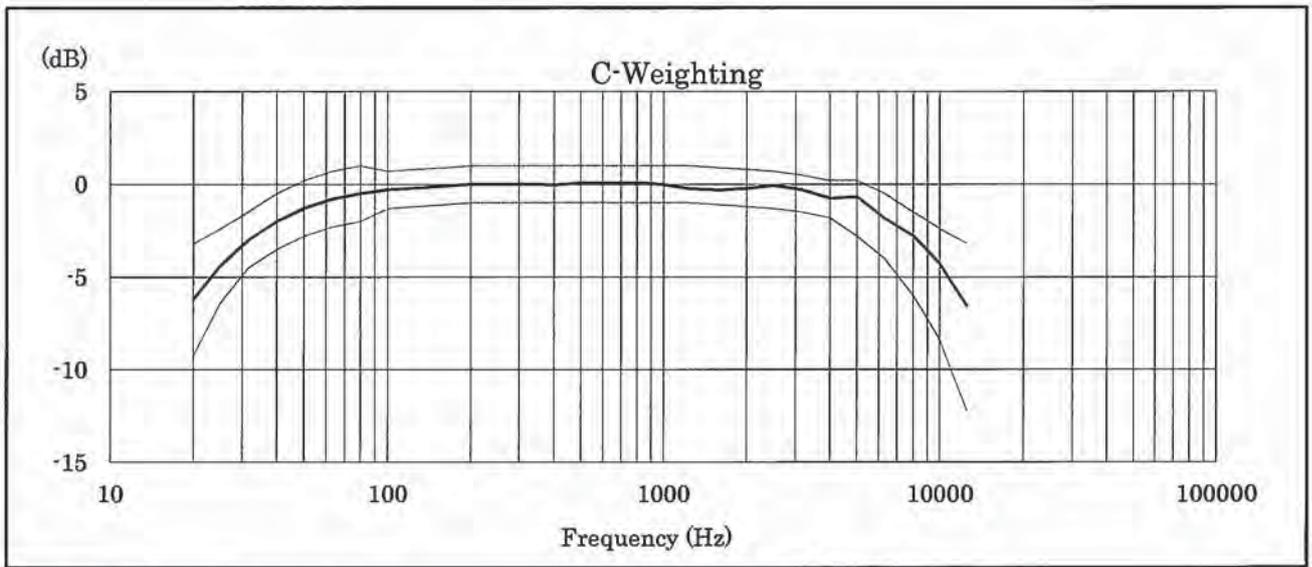
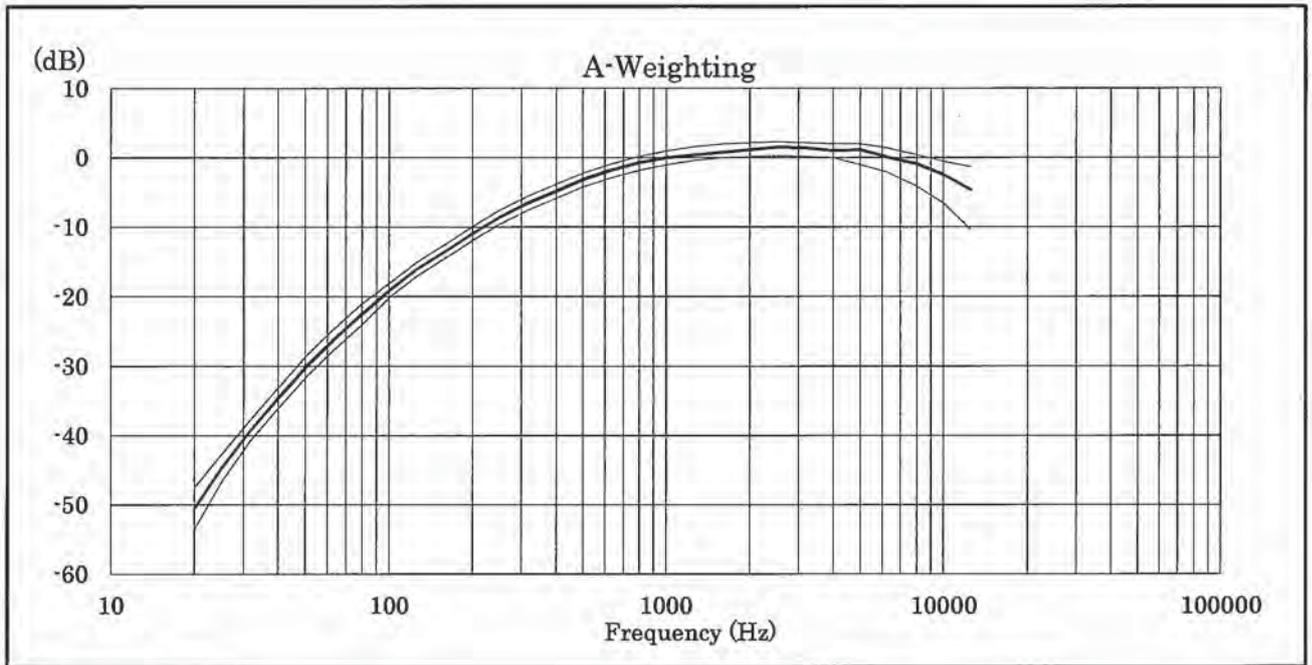
CE marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC)

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 ± 2)°C      Relative Humidity / 相對濕度 : (55 ± 20)%  
Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

**DATE OF TEST / 測試日期** : 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/a 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

u/a 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

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	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	IEC 61672 Class 1
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
30 - 120	L <sub>A</sub>	A	Fast	94.00	1	93.8	± 1.1

#### 6.1.2 Linearity

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

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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. : 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)

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而批准。

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. : 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.

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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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 & Kjør  
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

Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 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).

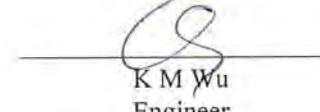
The test equipment used for calibration are traceable to National Standards via :

- 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

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。









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

## REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

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

**WORK ORDER:** HK1500371  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 06/01/2015  
**DATE OF ISSUE:** 14/01/2015

### 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: Multifunctional Meter  
Brand Name: YSI  
Model No.: Pro 20  
Serial No.: 12C100570  
Equipment No.: --  
Date of Calibration: 06 January, 2015

### 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











## **Appendix G**

### **Event and Action Plan**







## **Appendix H**

### **Impact Monitoring Schedule**





## **Appendix I**

### **Database of Monitoring Result**





















Date	30-Mar-15													
Location	Time	Depth (m)	Temp (°C)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	13:00	0.07	26.1	26.1	6.39	6.4	78.9	78.9	32.6	32.7	8.2	8.2	11	11.5
			26.0		6.40		78.9		32.7		8.2		12	
WM4-CB	13:25	0.17	26.5	26.5	3.45	3.5	42.9	43.7	24.8	24.7	7.2	7.2	6	6.5
			26.5		3.57		44.4		24.5		7.2		7	
WM4	12:34	0.22	25.2	25.2	3.59	<b>3.6</b>	43.6	43.7	28.8	28.5	7.1	7.1	10	10.0
			25.2		3.60		43.7		28.2		7.1		10	

## **Appendix J**

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

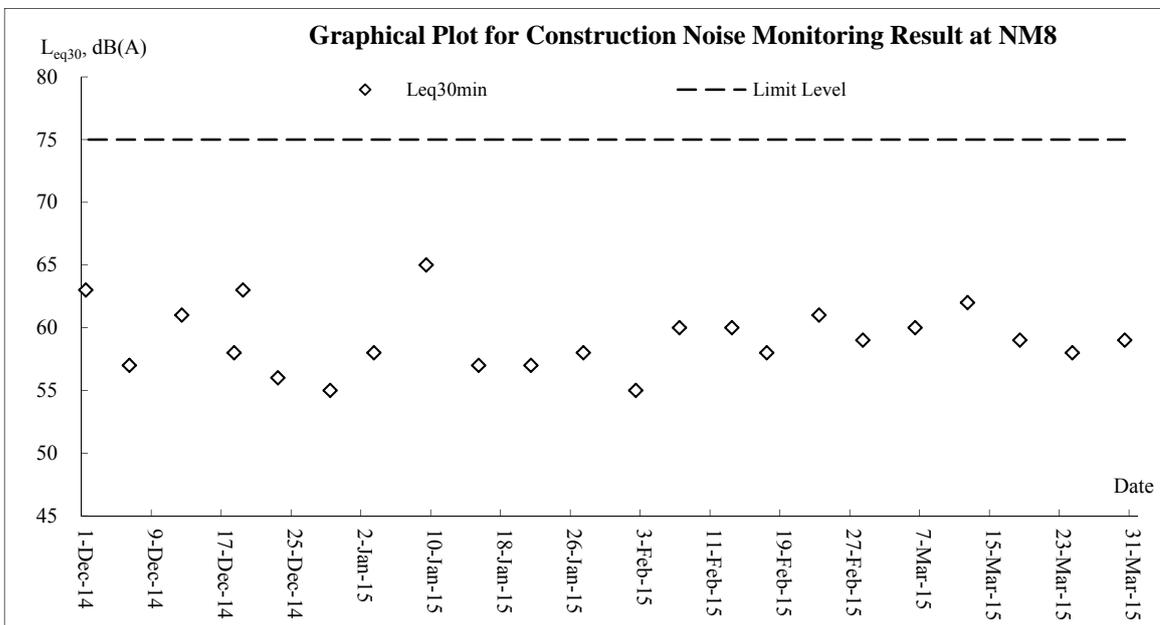
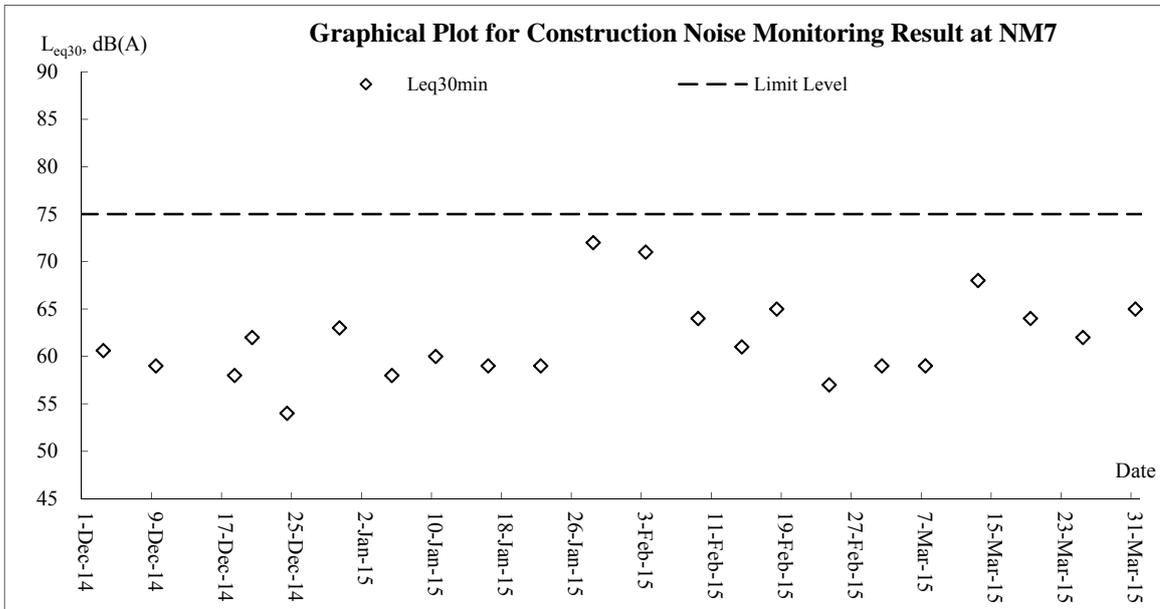
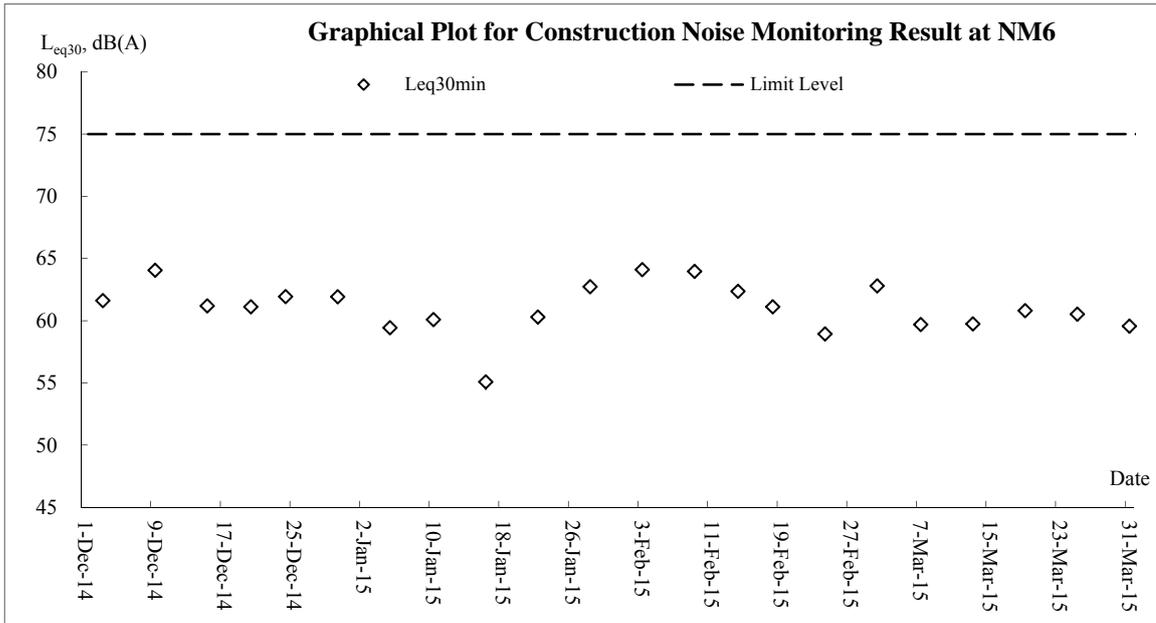


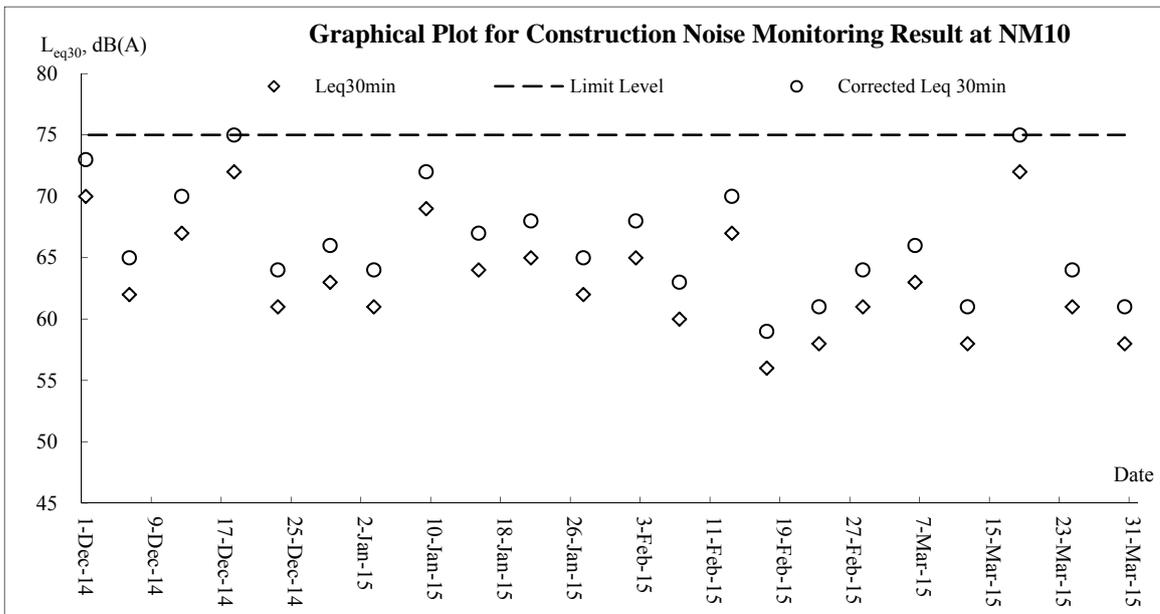
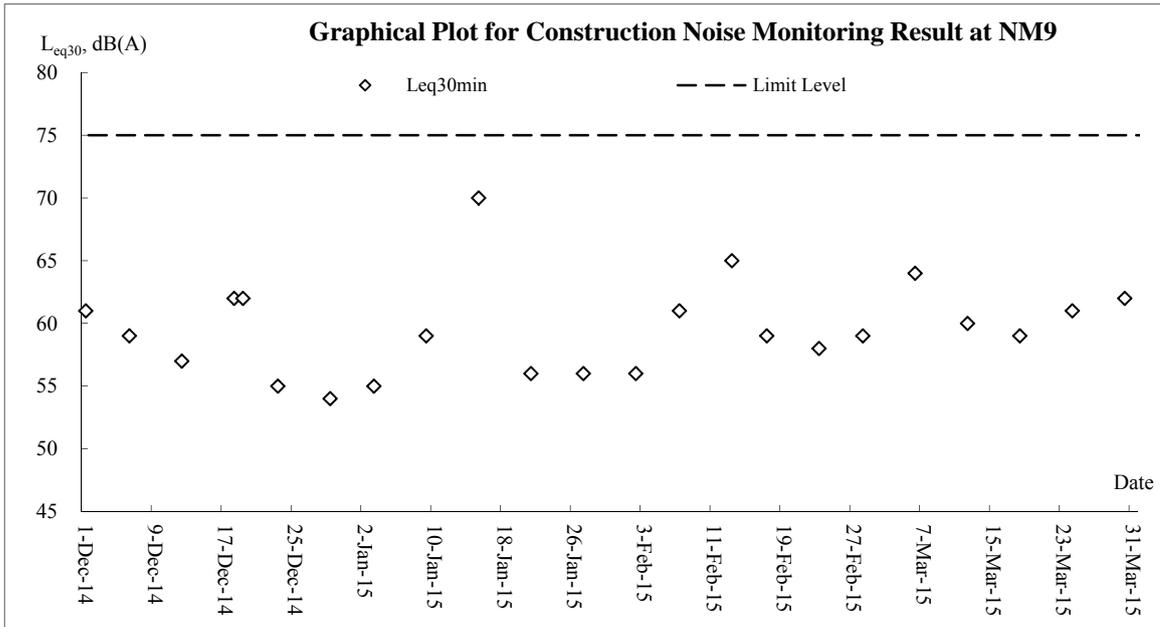




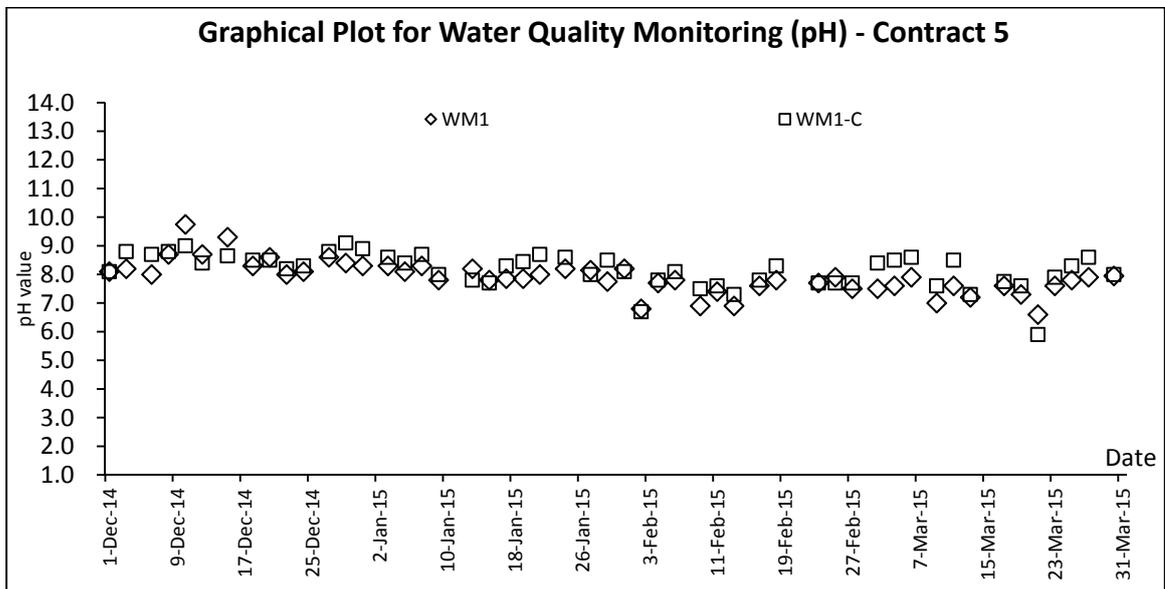
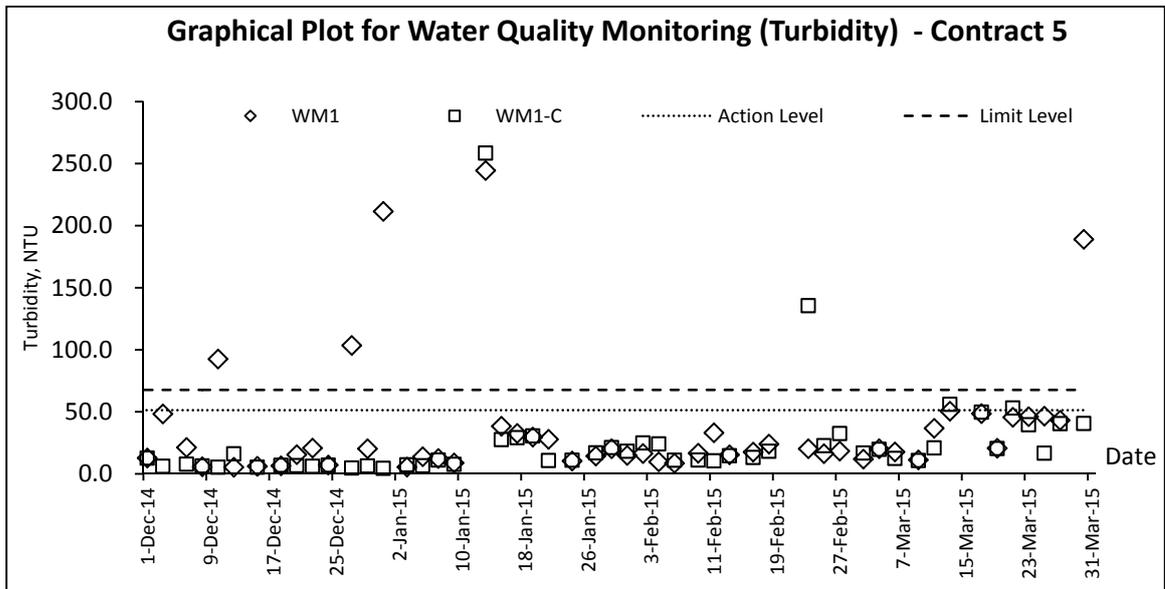
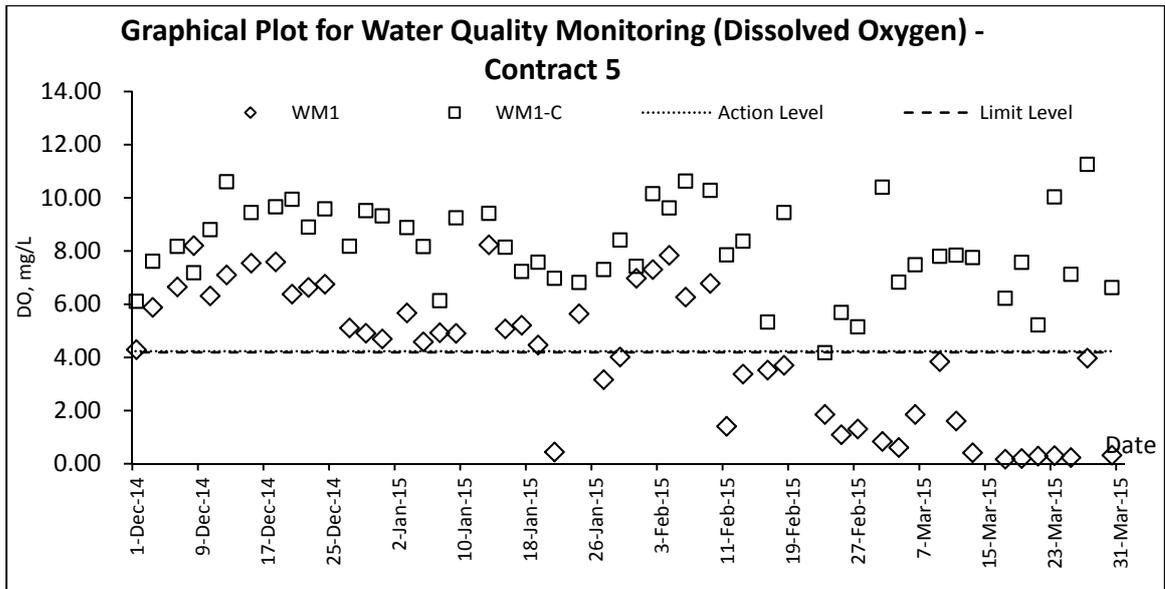


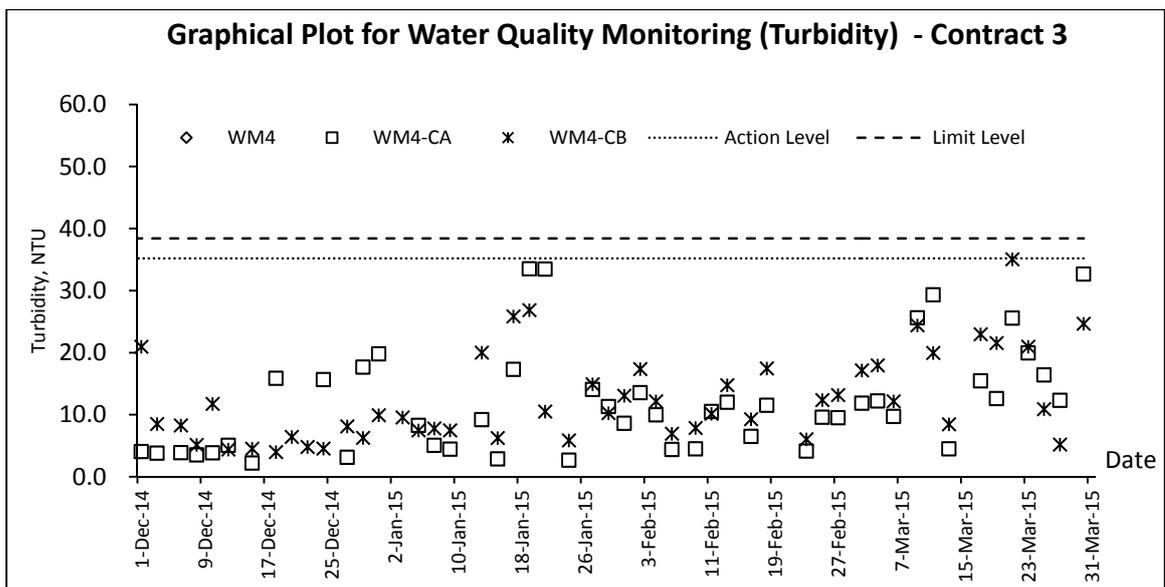
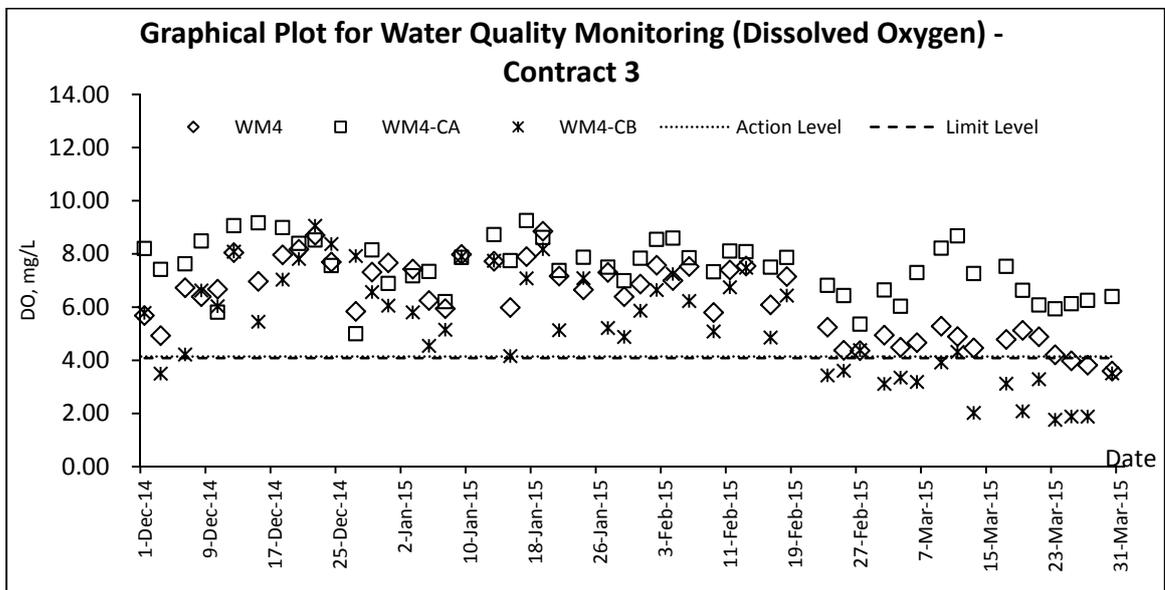
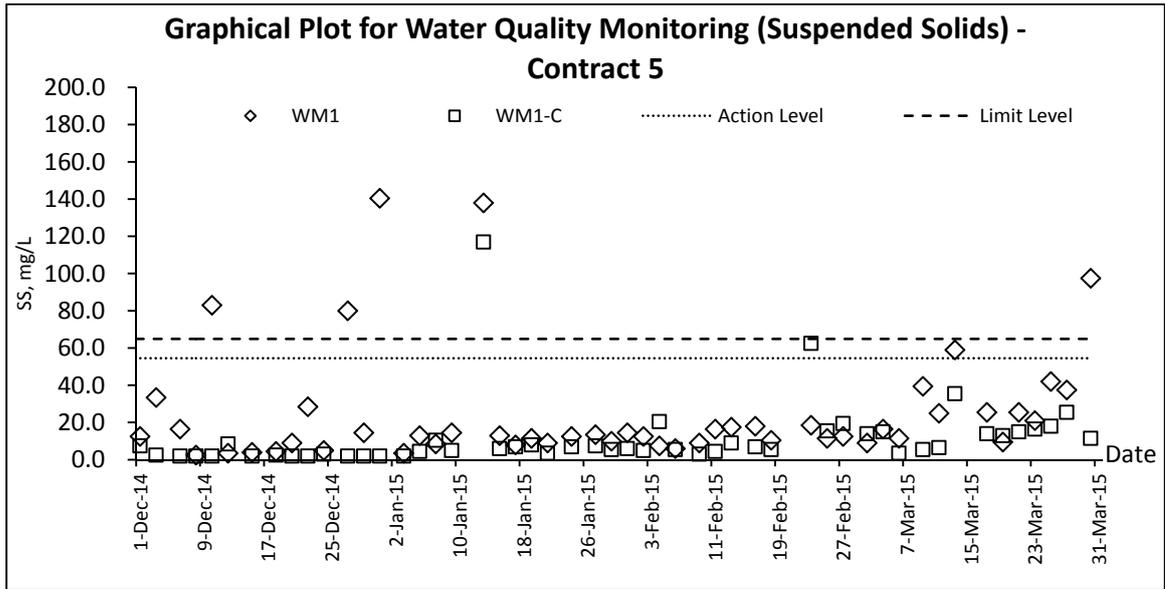


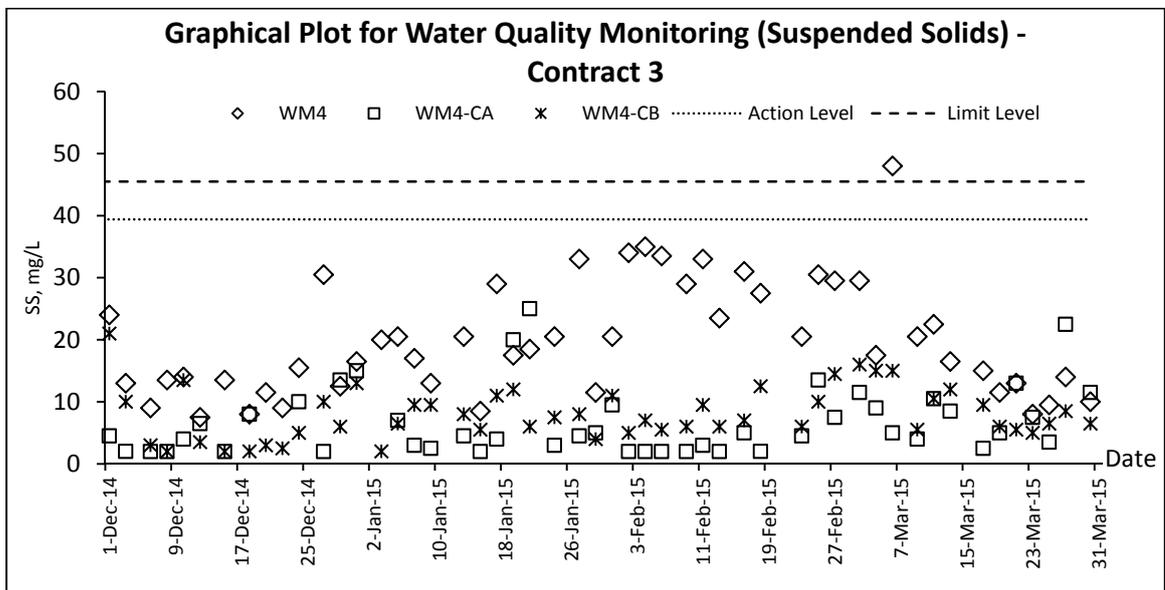
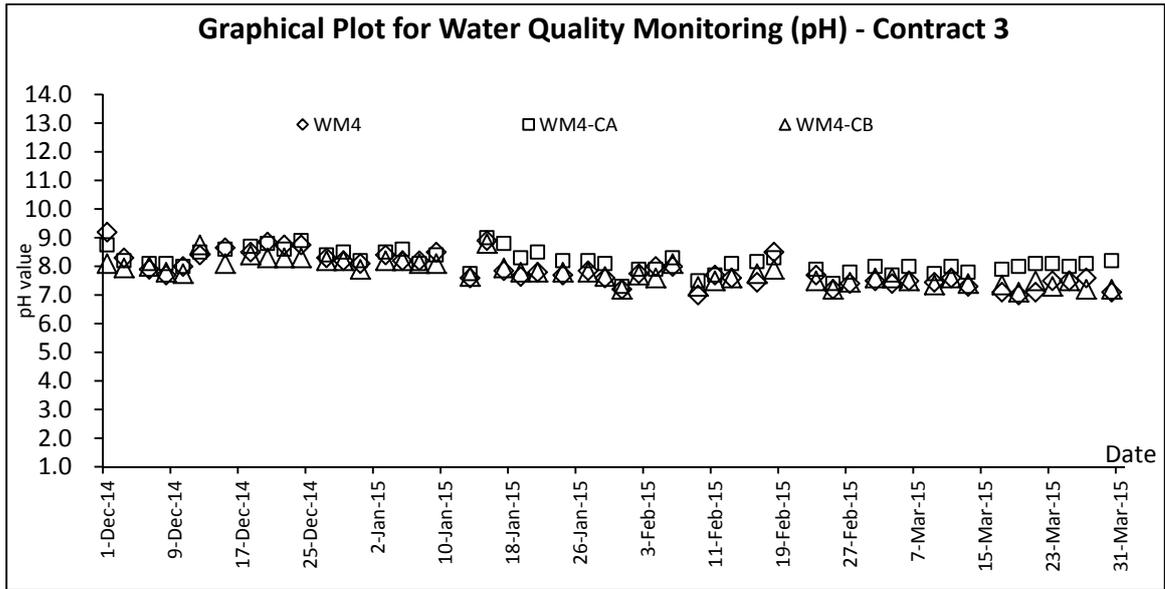




**Water Quality**







## **Appendix K**

### **Meteorological Data**



## **Appendix L**

### **Waste Flow Table**



### Monthly Summary Waste Flow Table for 2015 (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	3.864	0.105	0.648	0.000	3.216	0.118	0.000	0.000	0.000	0.040	0.080
Feb	2.429	0.049	1.518	0.000	0.911	0.100	0.000	0.000	0.009	0.900	0.070
Mar	3.713	0.029	0.270	0.000	3.443	0.100	0.000	0.000	1.030	0.000	0.080
Apr											
May											
Jun											
<b>Sub-total</b>	10.006	0.182	2.436	0.000	7.570	0.318	0.000	0.000	1.039	0.940	0.230
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	10.006	0.182	2.436	0.000	7.570	0.318	0.000	0.000	1.039	0.940	0.230

- 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 2015

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	33.3285	4.16	0.24	0	0	0.42
FEB	0	0	0	0	0	11.82	<b>0.99</b>	0	0	0	0.18
<b>MAR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8.592</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.375</b>
APRIL											
MAY											
JUN											
Sub Total	0	0	0	0	0	53.7405	5.15	0.24	0	0	0.975
JUL											
AUG											
SEP											
OCT											
NOV											
DEC											
Total	0	0	0	0	0	53.74	5.15	0.24	0	0	0.975

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><u>Noise Impact (Operation)</u></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