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.15) – OCTOBER 2014

PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Date	Reference No.	Prepared By	Certified By
12 November 2014	TCS00670/13/600/R0266v2		
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Version	Date	Remarks
1	7 November 2014	First Submission
2	12 November 2014	Amended according to the IEC's comments on 11 Nov 2014

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By Email & Post

Attention: Mr Simon LEUNG

Dear Sirs

Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Monthly EM&A Report (No. 15) – October 2014

With reference to the Monthly EM&A Report No. 15 for October 2014 (Version 2) certified by the ET Leader provided to us on 13 November 2014, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-404/2011/A.

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

cc	CEDD/BCP	-	Mr Pui Sang LI / Mr Eric CHAN / Mr William CHEUNG / Mr CM OR	by fax: 3547 1659
	AECOM	-	Mr Pat LAM / Mr Perry YAM	by email
	SRJV	-	Mr Edwin AU	by email
	CW	-	Mr Daniel HO	by email
	DHK	-	Mr Raymond CHENG	by email
	AUES	-	Mr TW TAM	by email

EXECUTIVE SUMMARY

ES01 This is the **15th** monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 October 2014** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

ES03 Currently, the construction works has been undertaken for Contract 2, Contract 3 and Contract 5. Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Environmental Aspect	Environmental Monitoring Parameters / Inspection	Reporting Period	
		Number of Monitoring Locations to undertake	Total Occasions
Air Quality	1-hour TSP	**6**	**90**
	24-hour TSP	**6**	**30**
Construction Noise	$L_{eq(30min)}$ Daytime	**8**	**40**
Water Quality	Water sampling	**5**	**12(*)**
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	**Contract 2**	**5**
		Contract 3	**4**
		Contract 5	**4**

(*) Monitoring day

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES04 In the Reporting Period, no exceedance for noise and water quality monitoring was registered. However, two (2) Action Level exceedances for 24-hour TSP of air quality were recorded at AM2 and AM3 on 22 October 2014. 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	**2**	0	2	Investigation in progress	Investigation in progress
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	-	-
Water Qualit	DO	0	0	0	-	-
	Turbidity	0	0	0	-	-
	SS	0	0	0	-	-

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 **3, 10, 17, 24 and 31 October 2014**. No non-compliance was noted.

ES09 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 3*** has been carried out by the RE, IEC, ET and the Contractor on **6, 13, 22 and 27 October 2014**. No non-compliance was noted.

ES10 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 5*** has been carried out by the RE, IEC, ET and the Contractor on **9, 16, 23 and 30 October 2014**. No non-compliance was noted.

FUTURE KEY ISSUES

ES11 As dry season is approaching, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.

ES12 Muddy water or other water pollutants from sites surface flow to local stream such as Kong Yiu Channel and Ma Wat Channel or public area should properly avoided. Water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should be fully implemented.

ES13 Construction noise would be a key environmental issue during construction work of the Project. Noise mitigation measures such as using quiet plants should be implemented in accordance with the EM&A requirement.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department is the Project Proponent and the Permit Holder of *Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works*, which is a Designated Project to be implemented under Environmental Permit number EP-404/2011/A issued on 28 October 2013.

1.1.2 The Project consists of two main components: Construction of a Boundary Control Point (hereinafter referred as "BCP"); and Construction of a connecting road alignment. Layout plan of the Project is shown in ***Appendix A***.

1.1.3 The proposed BCP is located at the boundary with Shenzhen near the existing Chuk Yuen Village, comprising a main passenger building with passenger and cargo processing facilities and the associated customs, transport and ancillary facilities. The connecting road alignment consists of six main sections:

1) Lin Ma Hang to Frontier Closed Area (FCA) Boundary – this section comprises at-grade and viaducts and includes the improvement works at Lin Ma Hang Road;
2) Ping Yeung to Wo Keng Shan – this section stretches from the Frontier Closed Area Boundary to the tunnel portal at Cheung Shan and comprises at-grade and viaducts including an interchange at Ping Yeung;
3) North Tunnel – this section comprises the tunnel segment at Cheung Shan and includes a ventilation building at the portals on either end of the tunnel;
4) Sha Tau Kok Road – this section stretches from the tunnel portal at Wo Keng Shan to the tunnel portal south of Loi Tung and comprises at-grade and viaducts including an interchange at Sha Tau Kok and an administration building;
5) South Tunnel – this section comprises a tunnel segment that stretches from Loi Tung to Fanling and includes a ventilation building at the portals on either end of the tunnel as well as a ventilation building in the middle of the tunnel near Lau Shui Heung;
6) Fanling – this section comprises the at-grade, viaducts and interchange connection to the existing Fanling Highway.

1.1.4 Action-United Environmental Services & Consulting has been commissioned as an Independent ET to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. As part of the EM&A program, the baseline monitoring has carried out between **13 June 2013** and **12 July 2013** for all parameters including air quality, noise and water quality before construction work commencement. The Baseline Monitoring Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. Also, the Project baseline monitoring report which verified by the IEC has been submitted to EPD on **16 July 2013** for endorsement. The major construction works of the Project was commenced on **16 August 2013** in accordance with the EP Section 5.3 stipulation.

1.1.5 This is **15th** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **31 October 2014**.

1.2 REPORT STRUCTURE

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

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

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

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project would be divided by the following contracts:

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

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

Contract 2 (CV/2012/08)

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

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

Contract 3 (CV/2012/09)

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

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

Contract 4 (Contract number to be assigned)

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

Contract 5 (CV/2013/03)

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

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

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

Contract 6 (CV/2013/08)

2.1.7 Contract 6 is still yet awarded. Major Scope of Work of the Contract 6 would be included below:

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

2.2 PROJECT ORGANIZATION

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

Civil Engineering and Development Department (CEDD)

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

Environmental Protection Department (EPD)

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

Engineer or Engineers Representative (ER)

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

- Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
- Monitor Contractors's, ET's and IEC's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
- Facilitate ET's implementation of the EM&A programme
- Participate in joint site inspection by the ET and IEC
- Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
- Adhere to the procedures for carrying out complaint investigation
- Liaison with DSD, Engineer/Engineer's Representative, ET, IEC and the Contractor of the "Construction of the DSD's Regulaiton 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 lEC 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, lEC 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, lEC and the Contractor(s) of the concurrent projects as listed under Section 2.3 below regarding the cumulative impact issues.

2.3 CONCURRENT PROJECTS

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

(a) Regulation of Shenzhen River Stage IV (Environmental Permit EP-430/2011);

(b) Building works and road works by contractors of Architectural Services Department (ArchSD) (Environmental Permit EP-404/2011/A);

(c) Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange – Contract No. HY/2012/06;

(d) Construction of cross-boundary vehicular and pedestrian bridges (total 5 numbers) across the Shenzhen River; and

(e) Construction of BCP facilities in Shenzhen.

2.4 CONSTRUCTION PROGRESS

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

Contract 2 (CV/2012/08)

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

- Project wide – Site installation
- Project wide –Ground Investigation (GI) Field Works
- North Portal – Permanent Slope Formation for Tunnel Boring Machine (TBM) Site Installation
- North Portal – Sub-station Construction
- North Portal – Piles works
- North Portal – Excavation Stage 2
- North Portal – Top heading canopies
- North Portal – Site Clearance works for Contract 6
- Mid Vent Portal –Excavation for Site Installation (Tunneling Works)
- Mid Vent Portal –Top heading canopies
- Mid Vent Portal –Bench excavation
- South Portal –Temporary bridge: finishing and surfacing works
- South Portal –Slope works: temporary access road

- South Portal –Sub-station Construction + CLP Installation
- South Portal –Demolish existing building
- South Portal –Remaining tree felling work

Contract 3 (CV/2012/09)

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

- Abutment construction for Bridge E
- Cable detection and trial trenches
- Excavation by trenchless method
- Extension of Bored pile for bored pile wall
- Filling Works at Tong Hang East
- Lay storm drains
- Local diversion of DN1400
- Load test for installed Mini pile
- Noise barrier installation
- Pier Construction
- Pre-drilling works
- Road works at Fanling Highway
- Sewer works at Tai Wo Service Road West (TWSRW)
- Slope upgrading works
- Socket H-pile installation
- Tree Felling Works
- Utilities duct laying
- Water pipe works
- Reinforcement Concrete (RC) structure of new valve control & Telemetry House

Contract 4 (Contract number to be assigned)

- The contract has not yet been awarded.

Contract 5 (CV/2013/03)

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

- Bituminous laying at proposed Lin Ma Hang (LMH) road
- Construction of Eastern pedestrian subway and pump room at LMH
- Construction of Western pedestrian subway and staircase at Lin Ma Hang
- Abutment construction works at Bridge J
- Construction of retaining wall No.1 & 2a
- Preparation works for soil cement slope along BCP Area.
- Pipe Jacking for CLP cable across Kong Yuen River (pit no. 2)
- Pipe laying/pulling for CLP cable ducting of 3 nos. of steel sleeve pipe across Kong Yuen River
- Drainage works at existing / proposed Lin Ma Hang Road
- Drainage works at BCP area
- Water works at existing / proposed Lin Ma Hang Road
- Formation Works at BCP Area
- Pruning/ felling/ transplanting of existing tree
- Environmental impact monitoring
- Installation of Underground utilities (CLP cables) at proposed LMH road.
- Diversion of Underground utilities (CLP cables) at existing LMH road.
- Road works (kerb laying) for proposed LMH Road
- Utility laying (132kV & 11kV) at existing LMH road

Contract 6 (CV/2013/08)

- The contract has not yet been awarded

2.5 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

- Project Layout Plans of Contracts 2, 3 and 5
- Landscape Plan
- Topsoil Management Plan
- Environmental Monitoring and Audit Programme
- Baseline Monitoring Report (*TCS00690/13/600/R0030v3*) for the Project
- Waste Management Plan of the Contracts 3 and 5
- Contamination Assessment Plan (CAP) for Po Kat Tsai, Loi Tung and the workshops in Fanling
- 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	
Contract 2			
1	Air pollution Control (Construction Dust) Regulation	Ref No.: 368864	31 Dec 2013
2	Chemical Waste Producer Registration	***North Portal*** Waste Producers Number: No. 5213-652-D2523-01	Valid from 25 Mar 2014
		Mid-Vent Portal Waste Producers Number: No. 5213-634-D2524-01	Valid from 25 Mar 2014
		South Portal 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-RN0566-14	Valid 17 Sep 2014 - 11 Mar 2015
		GW-RN0488-14	Valid 19 Aug 2014 - 7 Feb 2015

Item	Description	License/Permit Status	
		GW-RN0430-14	Valid 8 Jul 2014 - 29 Dec 2014
		GW-RN0669-14	Valid 31 Oct 2014 - 30 Nov 2014
Contract 3			
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 362101	Notification received by EPD on 17 Jul 2013
2	Chemical Waste Producer Registration	Waste Producers Number: No.:5113-634-C3817-01	Valid form 7 Oct 2013 till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	No.:WT00016832 – 2013	Valid from 28 Aug 13 to 31 Aug 2018
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017914	Valid form 2 Aug 13 till the end of Contract
5	Construction Noise Permit	GW-RN0397-14	Valid on 29 Jun 2014 till 28 Dec 2014
		GW-RN0445-14	Valid on 28 Jul 2014 till 25 Jan 2015
		GW-RN0485-14	Valid on 5 Aug 2014 till 5 Feb 2015
		GW-RN0557-14	Valid on 15 Sep 2014 till 28 Dec 2014
Contract 5			
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	• 1-hour TSP by Real-Time Portable Dust Meter; and • 24-hour TSP by High Volume Air Sampler.
Noise	• $L_{eq(30min)}$ in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; and • 3 sets of consecutive $L_{eq(5min)}$ on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.
Water Quality	**In-situ Measurements** • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Water depth (m); and • Temperature (℃).
	Laboratory Analysis • Suspended Solids (mg/L)

3.3 MONITORING LOCATIONS

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

Table 3-2 Impact Monitoring Stations - Air Quality

Station ID	Description	Works Area	Related to the Work Contract
AM1a*	Garden Farm, Tsung Yuen Ha Village	BCP	Contract 5
AM2	Village House near Lin Ma Hang Road	LMH to Frontier Closed Area	Contract 5, Contract 6
AM3	Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village.	LMH to Frontier Closed Area	Contract 5, Contract 6

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[@]	Loi Tung Village House	Sha Tau Kok Road	Contract 2
AM8	Po Kat Tsai Village No. 4	Po Kat Tsai	Contract 2
AM9b#	Nam Wa Po Village House No. 80	Fanling	Contract 3

 # Proposal for the change of air quality monitoring location from AM9a to AM9b was submitted to EPD on 4 Nov 2013 after verified by the IEC and it was approved by EPD (EPD's ref.: (15) in EP 2/N7/A/52 Pt.10 dated 8 Nov 2013).
** Proposal for the change of air quality monitoring location from AM1to 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).*
@ Proposal for the change of air quality monitoring location from AM7a to AM7b was submitted to EPD on 4 June 2014 after verified by the IEC. It was approved by EPD (EPD's ref.: (7) in EP 2/N7/A/52 Pt.12 dated 9 Jun 2014).

Table 3-3 Impact Monitoring Stations - Construction Noise

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

Table 3-4 Impact Monitoring Stations - Water Quality

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

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

3.4 MONITORING FREQUENCY AND PERIOD

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

Air Quality Monitoring

3.4.1 Frequency of impact air quality monitoring is as follows:

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

Noise Monitoring

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

Water Quality Monitoring

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

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

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

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

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

Table 3-5 Air Quality Monitoring Equipment

Equipment	Model
24-Hr TSP	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
Calibration Kit	TISCH Model TE-5025A
1-Hour TSP	
Portable Dust Meter	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 ºC without being frozen), and delivered to the laboratory in the same day as the samples were collected.

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

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

Table 3-7 Water Quality Monitoring Equipment

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

Equipment	Model
Thermometer & DO meter	YSI PRO20 Handheld Dissolved Oxygen Instrument / 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^{o} light scattering. The 1-hour TSP monitor consists of the following:

(a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;

(b.) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and

(c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

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

24-hour TSP Monitoring

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

(a.) An anodized aluminum shelter;

(b.) A 8"x10" stainless steel filter holder;

(c.) A blower motor assembly;

(d.) A continuous flow/pressure recorder;

(e.) A motor speed-voltage control/elapsed time indicator;

(f.) A 7-day mechanical timer, and

(g.) A power supply of 220v/50 Hz

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

3.6.5 24-hour TSP is collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keep all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% RH (Relative Humidity) and 25^{o}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}). $Leq_{(30min)}$ in six consecutive $Leq_{(5min)}$ measurements will use as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $Leq_{(15min)}$ in three consecutive $Leq_{(5min)}$ 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 4^0C 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 (μg /m^3)		Limit Level (μg/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)[Note 1 & Note 2]

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and65 dB(A) during examination period

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

Table 3-10 Action and Limit Levels for Water Quality

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*)4.23	(**)4.00	(*)4.74	(**)4.00	(*)4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
		AND 120% of upstream control station of the same day				
	Limit Level	67.6	33.8	12.3	14.0	38.4
		AND 130% of upstream control station of the same day				
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
		AND 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
		AND 130% of upstream control station of the same day				

Remarks:
(*) *The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data*
(**) *The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L*
(#) *The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data*

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

3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

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

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

4 AIR QUALITY MONITORING

4.1 GENERAL

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

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

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

4.2 AIR QUALITY MONITORING RESULTS IN REPORTING MONTH

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

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

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	73	3-Oct-14	10:27	167	149	142
10-Oct-14	83	9-Oct-14	13:26	106	91	85
16-Oct-14	130	15-Oct-14	13:51	231	207	233
22-Oct-14	104	21-Oct-14	11:04	228	206	120
28-Oct-14	90	27-Oct-14	10:52	148	154	159
Average (Range)	**96 (73-130)**	Average (Range)		**162 (85-233)**		

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

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	123	3-Oct-14	10:25	122	82	79
10-Oct-14	145	9-Oct-14	13:21	129	109	98
16-Oct-14	134	15-Oct-14	11:14	241	235	213
22-Oct-14	***216***	21-Oct-14	10:58	222	211	111
28-Oct-14	143	27-Oct-14	10:40	162	161	152
Average (Range)	**152 (123-216)**	Average (Range)		**155 (79-241)**		

Remark: bold and italic value indicated Action Level exceedance.

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

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	121	3-Oct-14	10:16	109	68	66
10-Oct-14	141	9-Oct-14	13:18	122	104	94
16-Oct-14	118	15-Oct-14	10:56	206	235	193
22-Oct-14	***202***	21-Oct-14	10:37	214	182	103

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
28-Oct-14	103	27-Oct-14	10:33	181	161	162
Average (Range)	**137 (103-202)**	Average (Range)		**147 (66-235)**		

Remark: bold and italic value indicated Action Level exceedance.

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

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	148	6-Oct-14	10:36	74	138	146
10-Oct-14	118	11-Oct-14	10:49	254	221	243
16-Oct-14	150	17-Oct-14	10:22	162	183	231
22-Oct-14	108	23-Oct-14	10:12	149	157	156
28-Oct-14	153	29-Oct-14	9:54	117	94	126
Average (Range)	**135 (108-153)**	Average (Range)		**163 (74 – 254)**		

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

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	76	6-Oct-14	11:00	65	63	71
10-Oct-14	75	11-Oct-14	11:01	58	62	62
16-Oct-14	93	17-Oct-14	10:43	138	129	133
22-Oct-14	88	23-Oct-14	10:28	107	99	99
28-Oct-14	92	29-Oct-14	10:08	75	70	67
Average (Range)	**85 (75-93)**	Average (Range)		**87 (58 – 138)**		

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

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
4-Oct-14	69	3-Oct-14	9:54	162	129	117
10-Oct-14	86	9-Oct-14	10:45	118	106	107
16-Oct-14	98	15-Oct-14	13:45	214	241	232
22-Oct-14	116	21-Oct-14	10:11	226	132	65
28-Oct-14	99	27-Oct-14	13:10	119	106	113
Average (Range)	**93 (69-116)**	Average (Range)		**146 (65-241)**		

4.2.2 As shown in ***Tables 4-1*** to ***4-6***, the 1-hour TSP monitoring results were below the Action/ Limit Level. However, two (2) Action Level exceedance of 24-hour TSP was recorded at AM2 and AM3 on 22 October 2014. NOE was issued to relevant parties upon confirmation of the monitoring result and investigation for the cause of exceedance is being carried out by the ET.

4.2.3 The meteorological data during the impact monitoring days are summarized in ***Appendix K***

Investigation Result for the exceedance on 30 September 2014 (last Reporting Period)

4.2.4 An Action Level exceedance at AM7b was recorded on 30 September 2014 and the investigation has completed in this Reporting Period. The summary of investigation result is shown below.

4.2.5 The air quality monitoring station AM7b is located adjacent to the haul road (TA01). It is considered that the construction dust collected at AM7b is mainly come from the transportation work in the haul road (TA01). According to the information provided by the Contractor of C2 (DHK) and site inspections by ET, site hoarding has been erected between the sensitive receiver where AM7b located and the construction site.

4.2.6 During site inspections, it is noted that specific mitigation measures for construction dust control has been implemented for the unpaved haul road (TA01) and our observations include:-

- Sprinkler system was in placed and activated at sensitive area along unpaved haul road;
- Watering of haul road by water wagon was to keep road surface wet
- km/hr speed control warning sign was provided to inform all vehicle drivers using haul road.
- Part of the exposed slopes have been compacted and covered with tarpaulin

4.2.7 According to the Air Quality Health Index from the EPD on 30 September 2014 between 12:00 and 24:00., the index collected in Yuen Long and Tai Po Stations are ranged from 5 to 10+ which categorized as moderated to serious short-term health risk of air pollution.

4.2.8 In view of 24-hour TSP monitoring results at AM7b before and after this exceedance incident 30 September 2014, it is considered that the exceedance should be a single event and may not relate to works under the Project.

4.2.9 To enhance the dust suppressive measures during dry season, DHK is recently paving the haul road with concrete to minimize fugitive dust due to vehicular movement.

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5 CONSTRUCTION NOISE MONITORING

5.1 GENERAL

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

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

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

5.2 NOISE MONITORING RESULTS IN REPORTING MONTH

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

Table 5-1 Summary of Construction Noise Monitoring Results

Construction Noise Level ($L_{eq30min}$), dB(A)									
Date	**NM1**	**NM2**	**NM8**	**NM9**	**(*)NM10**	**Date**	**NM5**	**NM6**	**NM7**
3-Oct-14	54	63	59	59	61	6-Oct-14	57	62	62
9-Oct-14	48	59	59	71	64	11-Oct-14	56	62	62
15-Oct-14	61	62	56	54	69	17-Oct-14	65	63	72
21-Oct-14	55	62	62	72	62	23-Oct-14	54	62	71
27-Oct-14	49	62	58	59	68	29-Oct-14	55	62	64
Limit Level	**75 dB(A)**								

Remarks

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

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

6 WATER QUALITY MONITORING

6.1 GENERAL

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

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

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

6.2 RESULTS OF WATER QUALITY MONITORING

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

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

Date	Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB
3-Oct-14	7.75	8.79	6.69	12.5	3.9	11.2	13.5	3.5	12.0
7-Oct-14	7.94	7.84	7.32	17.3	4.7	449.0	15.5	4.5	266.0
9-Oct-14	6.74	7.63	6.18	18.4	3.5	28.0	10.0	3.0	20.0
11-Oct-14	5.29	6.75	3.39	9.8	4.8	7.7	7.0	3.0	5.5
13-Oct-14	7.86	8.18	8.54	17.6	7.5	11.0	13.5	2.0	13.5
15-Oct-14	6.39	7.13	5.20	18.7	6.4	14.4	14.0	4.0	15.5
17-Oct-14	6.93	7.45	4.81	10.0	2.9	6.4	14.0	4.5	8.0
21-Oct-14	4.65	6.21	3.08	34.7	4.7	7.1	36.0	5.5	11.5
23-Oct-14	6.06	7.50	4.31	27.6	3.8	9.2	20.0	5.0	8.0
25-Oct-14	5.06	6.57	3.83	17.6	4.6	8.5	16.5	3.0	10.5
27-Oct-14	6.16	6.66	5.49	11.8	5.4	9.2	15.0	3.0	13.5
30-Oct-14	6.64	7.93	6.08	11.2	4.5	9.8	14.0	3.0	14.0

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
3-Oct-14	7.76	5.91	22.4	7.3	21.5	3.0
7-Oct-14	7.64	7.90	26.7	11.8	23.5	4.5
9-Oct-14	8.10	7.23	35.9	7.8	35.0	3.0
11-Oct-14	8.18	8.71	19.8	8.4	23.0	2.5
13-Oct-14	9.87	10.10	24.0	25.0	23.0	8.0
15-Oct-14	9.64	8.95	20.9	11.4	20.5	4.0
17-Oct-14	8.59	9.60	27.1	9.5	26.0	6.5
21-Oct-14	7.39	7.44	13.2	8.4	14.5	4.5
23-Oct-14	6.90	6.62	20.1	9.3	19.5	6.5
25-Oct-14	7.31	8.48	20.8	8.5	16.5	3.0
27-Oct-14	8.65	7.37	15.7	7.7	19.0	4.0
30-Oct-14	4.72	7.68	11.2	7.4	7.0	3.0

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

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

6.2.2 In view of the monitoring results of Dissolved Oxygen, turbidity and Suspended Solids at WM1 and WM4, all the measured results were all complied with performance criteria.

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^3)	**82.0549**	--	**6.404**	--	0	--	**88.4589**
Reused in this Project (Inert) (in '000 m^3)	**0.0896**	--	**2.160**	--	0	--	**2.2496**
Reused in other Projects (Inert) (in '000 m^3)	**68.2828**	C5	0	--	0	--	**68.2828**
Disposal as Public Fill (Inert) (in '000 m^3)	**13.6825**	Tuen Mun 38	**4.244**	Tuen Mun 38	0	--	**17.9265**

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

Type of Waste	Contract 2		Contract 3		Contract 5		Total Quantity
	Quantity	Disposal Location	Quantity	Disposal Location	Quantity	Disposal Location	
Recycled Metal (in '000m^3)	0	-	0	-	**0..274**	Licensed collector	**0.274**
Recycled Paper / Cardboard Packing (in '000m^3)	0	-	0	-	0	--	**0**
Recycled Plastic (in '000m^3)	0	-	**0.005**	Licensed collector	0	--	**0.005**
Chemical Wastes (in '000m^3)	0	-	0	--	0	--	**0**
General Refuses (in '000m^3)	**0.0645**	NENT	**0.085**	NENT	**0.490**	NENT	**0.6395**

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 **3, 10, 17, 24 and 31 October 2014**. No non-compliance was noted.

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

Table 8-1 Site Observations for Contract 2

Date	Findings / Deficiencies	Follow-Up Status
3 October 2014	• Sand and mud cumulated in the earth bund near the manhole. The Contractor was reminded to clean. (Mid-Vent) • Stagnant water cumulated inside the drip tray after the rainstorm. The Contractor was reminded to clean to maintain the drip tary is functional. (South Portal) • During the dry season, the Contractor should pay attention for dust control mitigation measures such as excavation, breaking activities and the haul road to minimize dust generation.	• The mentioned area has been cleaned, sand and mud have been removed. • Stagnant water has been removed to avoid mosquito breeding. • The Contractor was noted.
10 October 2014	• Sand bags for the earth bund was broken. The Contractor was reminded to replace the broken sand bags to maintain the earth bund is functional. (North Portal)	• All broken sand bags have been replaced.
17 October 2014	• Exposed slope near the de-silting pond without cover was observed. The Contractor was reminded to provide tarpaulin sheets for the slope to reduce dust generation. . (North Portal) • Free standing chemical container without drip tray was observed. The Contractor was reminded to provide the drip tray for all chemical containers on site to prevent leakage. . (North Portal) • More than 20 bags of cement without cover was observed. The Contractor was reminded to provide tarpaulin sheets for the cement storage that over 20 bags to reduce dust generation. (North Portal)	• The Contractor advised that the excavation works are ongoing to the described area, covering would be provided once the works complete. • The described chemical container has been removed from site. • The cement bags has been removed from site.

Date	Findings / Deficiencies	Follow-Up Status
24 October 2014	• Free standing chemical container without drip tray was observed at workshop area. The contractor was reminded to provide drip tray to prevent leakage. (North Portal) • Muddy water cumulated at the site exit was observed. The contractor was reminded to clean to maintain the site exit clean and tidy. (North Portal)	• Drip tray has been provided for all chemical containers. • Site exit has been cleaned and is kept free of mud.
31 October 2014	• Oil leakage cumulated inside the pit was observed. The contractor was requested to clean and dispose the waste / waste water properly. • During the dry season, the contractor should provide more afford for dust mitigation measure to minimize dust generation.	• To be followed in next reporting period. • The Contractor was noted.

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 **6, 13, 22 and 27 October 2014**. No non-compliance was noted.

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

Table 8-2 Site Observations for Contract 3

Date	Findings / Deficiencies	Follow-Up Status
6 October 2014	• The Contractor should provide rubbish bins and recycling bins with proper labels. • Opened stockpiles was observed, the Contractor should cover it with impervious sheets.	• Proper labels have been provided for the rubbish bins. • Opened stockpiles has been covered with impervious sheets.
13 October 2014	• The Contractor should provide dust mitigation measures such as water spraying at the site area of SA11. • Over 20 bags of cement bags was observed, the Contractor should provide proper cover.	• Water sprayed has been provided for SA11. • The cement bags have all been removed by the subcontractor
22 October 2014	• No specific findings were observed.	• NA
27 October 2014	• The Contractor was reminded to cover the stockpile with tarpaulin properly. (SA4)	• The stockpile has been covered.

The Contract 5

8.2.5 In the Reporting Period, joint site inspection for Contract 5 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **9, 16, 23 and 30 October 2014**. No non-compliance was noted.

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

Table 8-3 Site Observations for Contract 5

Date	Findings / Deficiencies	Follow-Up Status
9 October 2014	• No specific findings were observed.	• NA
16 October 2014	• No specific findings were observed.	• NA
23 October 2014	• The Contractor was reminded to provide water spraying during dusty construction process (Rock Breaking Works). • At the works area KLV, the Contractor was reminded to provide and maintain tree fencing for the protected tree when the construction work closed to the trees area.	• The Contractor was noted. • The Contractor was noted.
30 October 2014	• Dry haul road was observed at BCP3, the Contractor should provide water spraying on a frequent basis, especially during the dry and windy season. • Open stockpile at BCP3 was observed, the Contractor was reminded to cover dusty stockpile with tarpaulin to minimize dust emission.	• Water truck has been provided for the dry haul road. • The dusty stockpile has been covered.

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

Other Contracts

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

9 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

9.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

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 – 31 Sep 2014	Contract 2	0	**3**	**(2) Water Quality**
06 Nov 2013 – 31 Sep 2014	Contract 3	0	**2**	**(1) Construction Dust** **(1) Water Quality**
16 Aug 2013 – 31 Sep 2014	Contract 5	0	**1**	**(1) Construction Dust**
1 – 31 Oct 2014	Contract 2	0	**3**	**(2) Water Quality** **(1) Construction Dust**
	Contract 3	0	**2**	**(1) Construction Dust** **(1) Water quality**
	Contract 5	0	**1**	**(1) Construction Dust**

Table 9-2 Statistical Summary of Environmental Summons

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

Table 9-3 Statistical Summary of Environmental Prosecution

Reporting Period	Contract No	Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 31 Sep 2014	Contract 2	0	0	NA
06 Nov 2013 – 31 Sep 2014	Contract 3	0	0	NA
16 Aug 2013 – 31 Sep 2014	Contract 5	0	0	NA
1 – 31 Oct 2014	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	• Wastewater to be treated by the filtration systems i.e. sedimentation tank or AquaSed before to discharge.
Air Quality	• Maintain damp / wet surface on access road • Keep slow speed in the sites • All vehicles must use wheel washing facility before off site • Sprayed water during breaking works • A cleaning truck was regularly performed on the public road to prevent fugitive dust emission
Noise	• Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants • Place noisy plants away from residence or school • Provide noise barriers or hoarding to enclose the noisy plants or works • Shut down the plants when not in used.
Waste and Chemical Management	• On-site sorting prior to disposal • Follow requirements and procedures of the “Trip-ticket System” • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	• The site was generally kept tidy and clean.

10.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

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

Contract 2

- Project wide – Asbestos removal, minor structure demolition and removal of boulders
- Project wide – Ground Investigation (GI) Field Works
- Mid Vent Portal –Bench excavation
- Mid Vent Portal –Excavation for Site Installation (Tunneling Works)
- Mid Vent Portal – Top heading canopies
- North Portal –Permanent Slope Formation for Tunnel Boring Machine (TBM) Site Installation
- North Portal –Top heading canopies
- North Portal –Excavation works Stage 2
- North Portal –Sub-station Construction
- North Portal –Site Installation and Logistics for TBM Works
- North Portal –Cut Slope works stage 3
- North Portal –Instrument Installation for Strengthening Works for WSD Tunnel
- South Portal –Remaining tree felling work
- South Portal –Sub-station Construction + CLP Installation
- South Portal –Slope works: permanent cut slope

Contract 3

- Automatic Deformation Monitoring System (ADMS) installation
- Lagging wall and capping beam for bored pile wall
- Cable detection and trial trenches
- Catch fence installation
- Diversion of DN600
- Demolition of central barrier at Fanling Highway
- E & M work for new valve control & Telemetry House
- Laying storm drains
- Noise barrier works
- Pier Construction
- Pile cap works
- Piling works for Bridge E
- Pre-drilling works and piling works for viaduct
- Retaining Structure
- Road works at Fanling highway
- Sewer works at TWSRW
- Socket H-pile installation
- Traffic diversion for Fanling Highway
- Tree felling works
- Water pipe installation

Contract 5

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

10.3 KEY ISSUES FOR THE COMING MONTH

10.3.1 Key issues to be considered in the coming month for Contracts 2, 3 and 5 include:

- Implementation of control measures for rainstorm;
- Regular clearance of stagnant water during wet season;
- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;

- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent to the nearby wetland, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

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

11 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

11.1.1 This is **15th** monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **1** to **31 October 2014**.

11.1.2 No 1-hour TSP monitoring results that triggered the Action or Limit Levels were recorded. However, two (2) Action Level exceedance of 24-hour TSP was recorded at AM2 and AM3 on 22 October 2014. NOE was issued to relevant parties upon confirmation of the monitoring result and investigation for the cause of exceedance is being carried out by the ET.

11.1.3 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in the Reporting Period. No NOEs or the associated corrective actions were therefore issued.

11.1.4 For water quality monitoring, no exceedance was triggered in this Reporting Period.

11.1.5 No notification of summons or successful prosecution under the EM&A Programme of the Project was received in the reporting period for Contract 2, 3 and 5.

11.1.6 No environmental complaint under the EM&A Programme of the Project was received in the reporting period for Contract 2, 3 and 5.

11.1.7 During the Reporting Period, five (5), four (4) and four (4) events of joint site inspection by the RE, IEC, ET and Main-contractor were carried out for Contracts 2, 3 and 5 respectively in accordance with the EM&A Manual stipulation. No non-compliance observed during the site inspection. The environmental performance of the Project of Contracts 2, 3 and 5 was therefore considered as satisfactory.

11.2 RECOMMENDATIONS

11.2.1 As dry season is approaching, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.

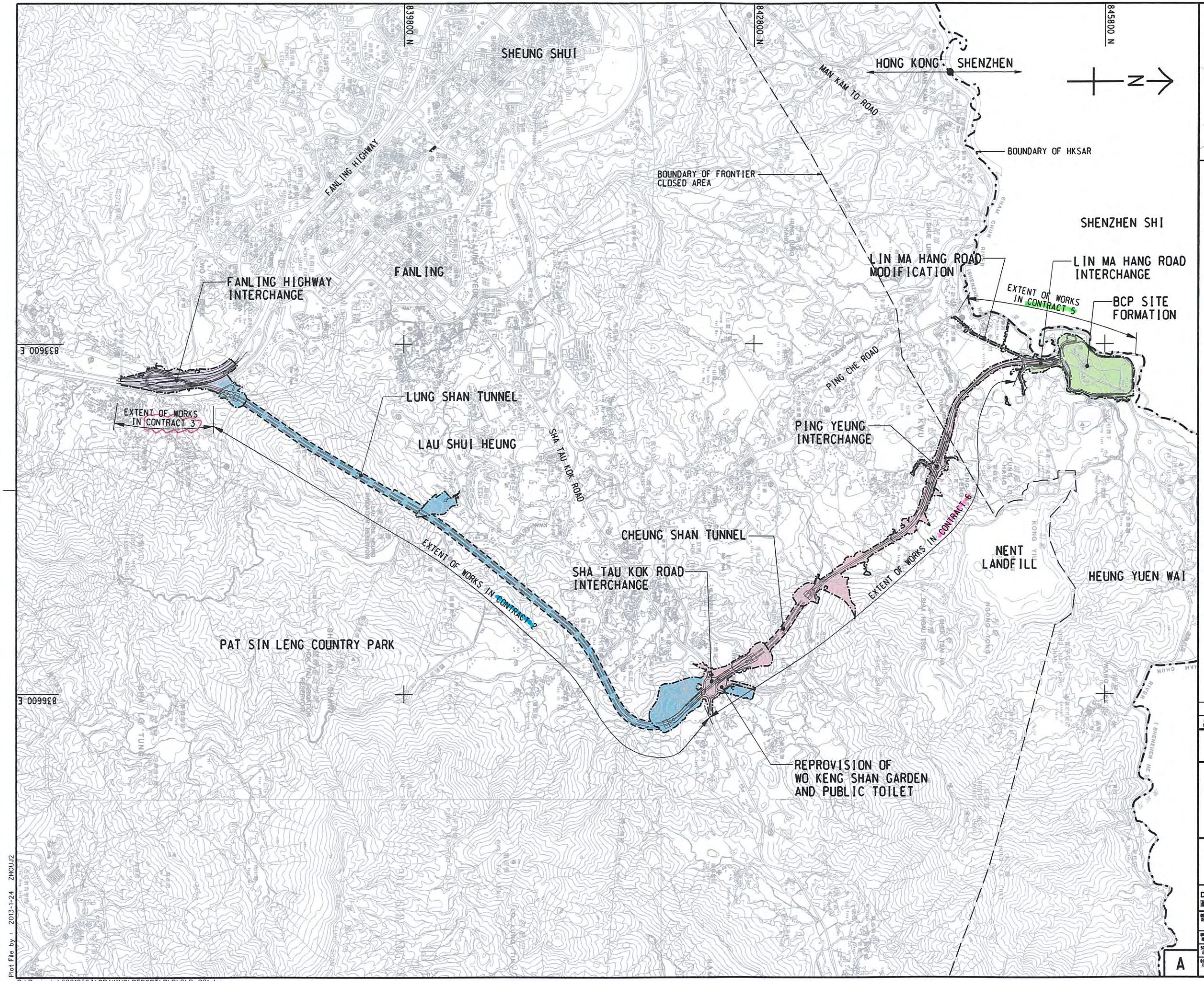
11.2.2 Muddy water or other water pollutants from site surface runoff into Kong Yiu Channel and Ma Wat Channel should be also be alerted. Water quality mitigation measures to prevent surface runoff into nearby water bodies should be fully implemented.

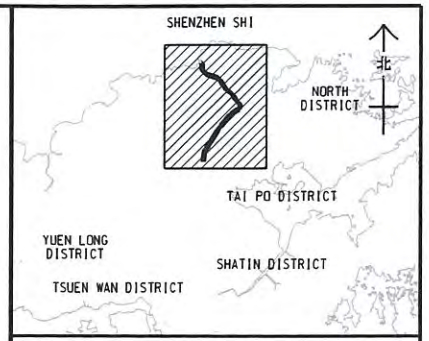
11.2.3 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EM&A requirement.

11.2.4 Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be kept to prevent mosquito breeding on site.

Appendix A

Layout plan of the Project





LOCATION PLAN
SCALE 1 : 30000

LEGEND:

- SITE BOUNDARY
- UNDERGROUND WORKS SITE BOUNDARY

REV. 修訂	DESCRIPTION 內容摘要	BY 由	CHECKED 審核	DATE 日期

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

LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS (SITE FORMATION AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION

PROJECT LAYOUT PLAN

AECOM

DRG.NO. 圖紙編號 60212563/PLP/001

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
-	-	-
DRAWN BY 繪圖 ZJ	STATUS 階段	
SCALE 比例 A1 1 : 15000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版權所有	

A

Plot File by : 2013-1-24 ZHOUJ2

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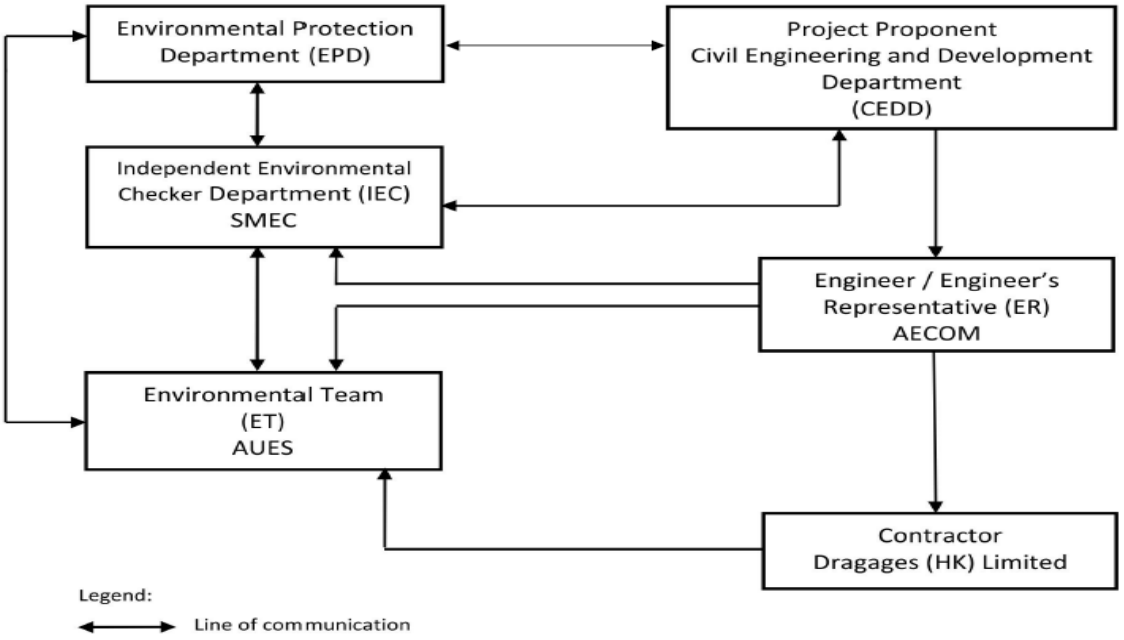
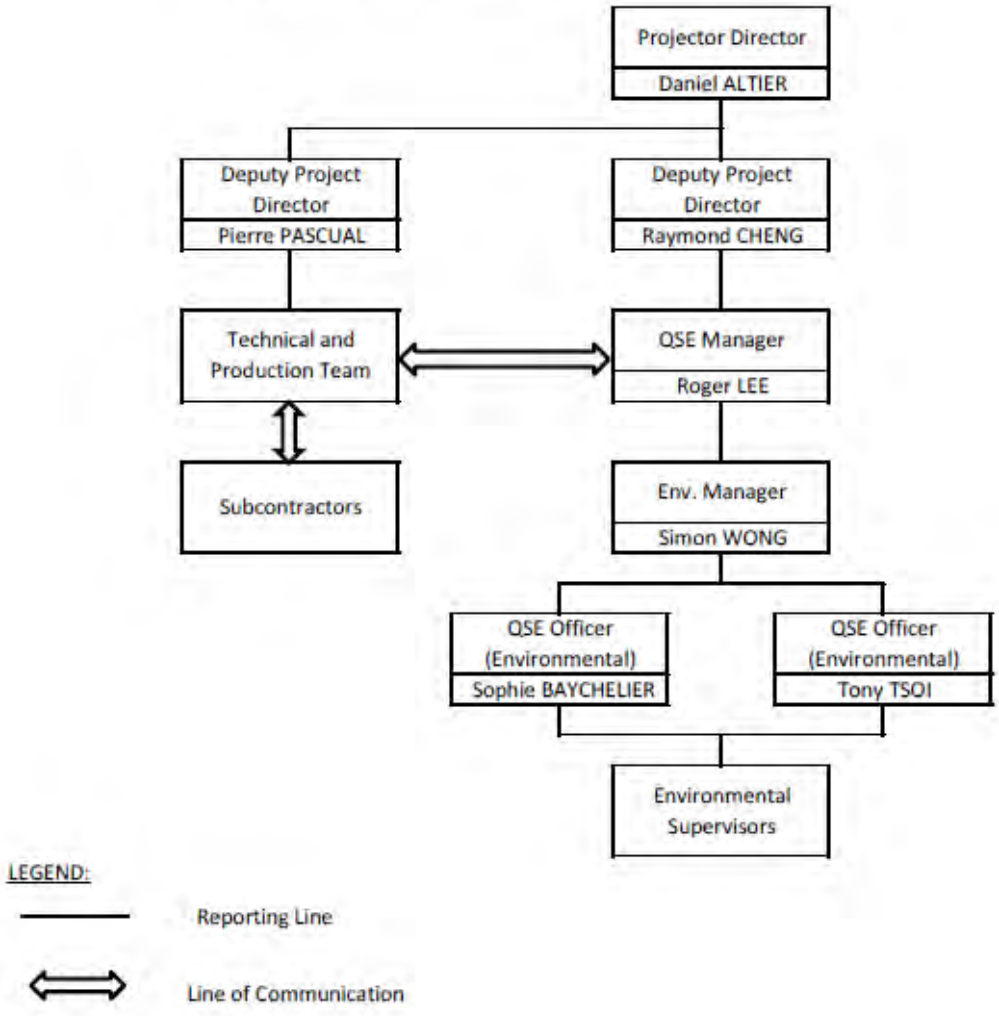
Appendix B

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

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
AECOM	Engineer's Representative	Gregory Lo	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
DHK	Project Director	Daniel Altier	2171 3004	2171 3299
DHK	Deputy Project Manager	Raymond Cheng / Pierre Pascual	2171 3004	2171 3299
DHK	QSE Manager	Roger Lee	6293 8726	2171 3299
DHK	Environmental Manager (Environmental Officer)	Simon Wong	9281 4346	2171 3299
DHK	QSE Officer (Environmental)	Sophie Baycheuer	6321 5001	2171 3299
DHK	QSE Officer (Environmental)	Tony Tsoi	6028 5623	2171 3299
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

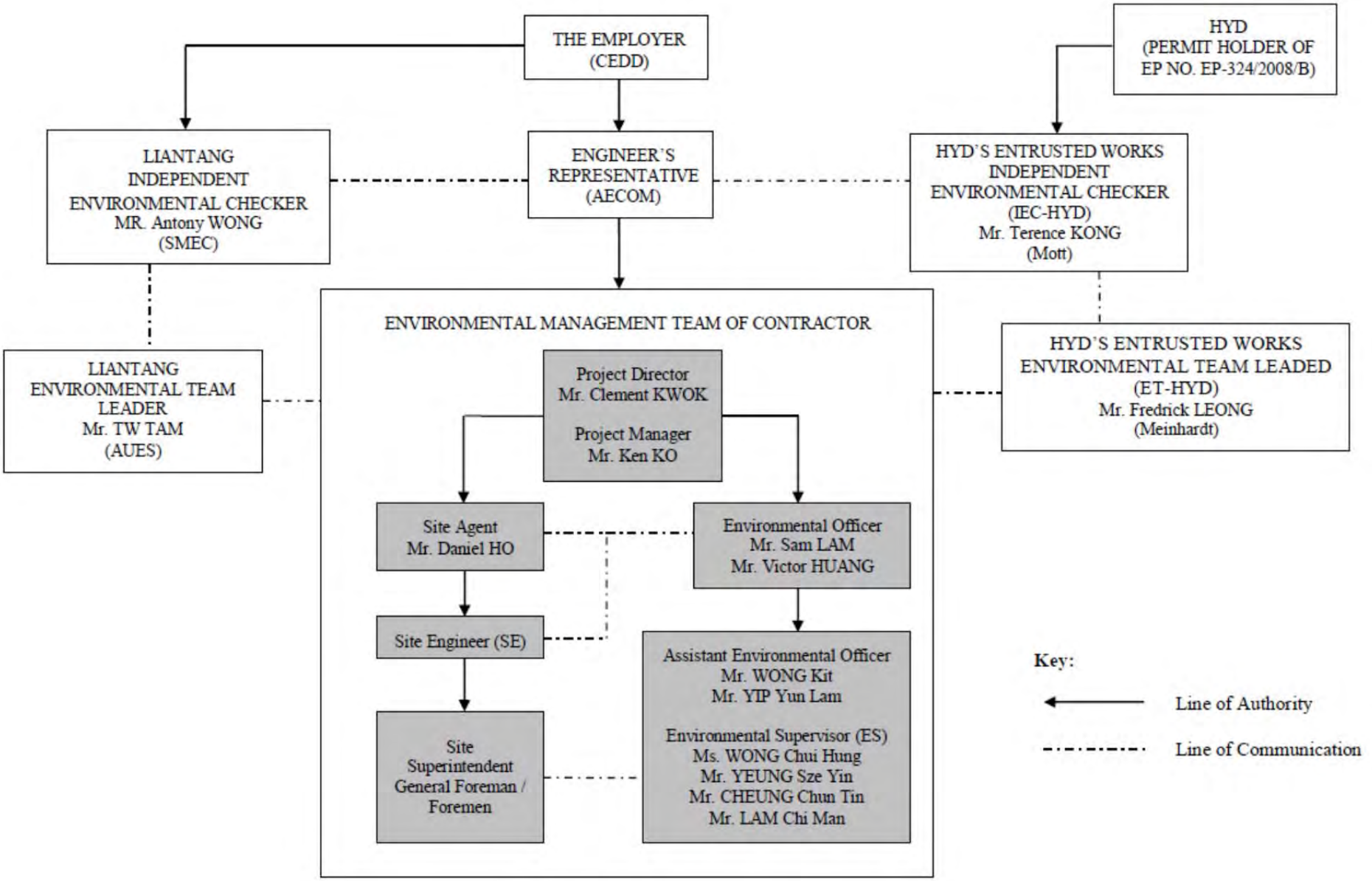
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

DHK(Main Contractor) –Dragages Hong Kong Ltd.

SMEC (IEC) – SMEC Asia Limited

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



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

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

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
AECOM	Engineer's Representative	Alan Lee	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
Chun Wo	Project Director	Clement Kwok	3758 8735	2638 7077
Chun Wo	Project Manager	Ken Ko	2638 6136	2638 7077
Chun Wo	Site Agent	Daniel Ho	2638 6144	2638 7077
Chun Wo	Environmental Officer	Sam Lam/ Victor Huang	2638 6115	2638 7077
Chun Wo	Assistant Environmental Officer	Wong Kit	2638 6125	2638 7077
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

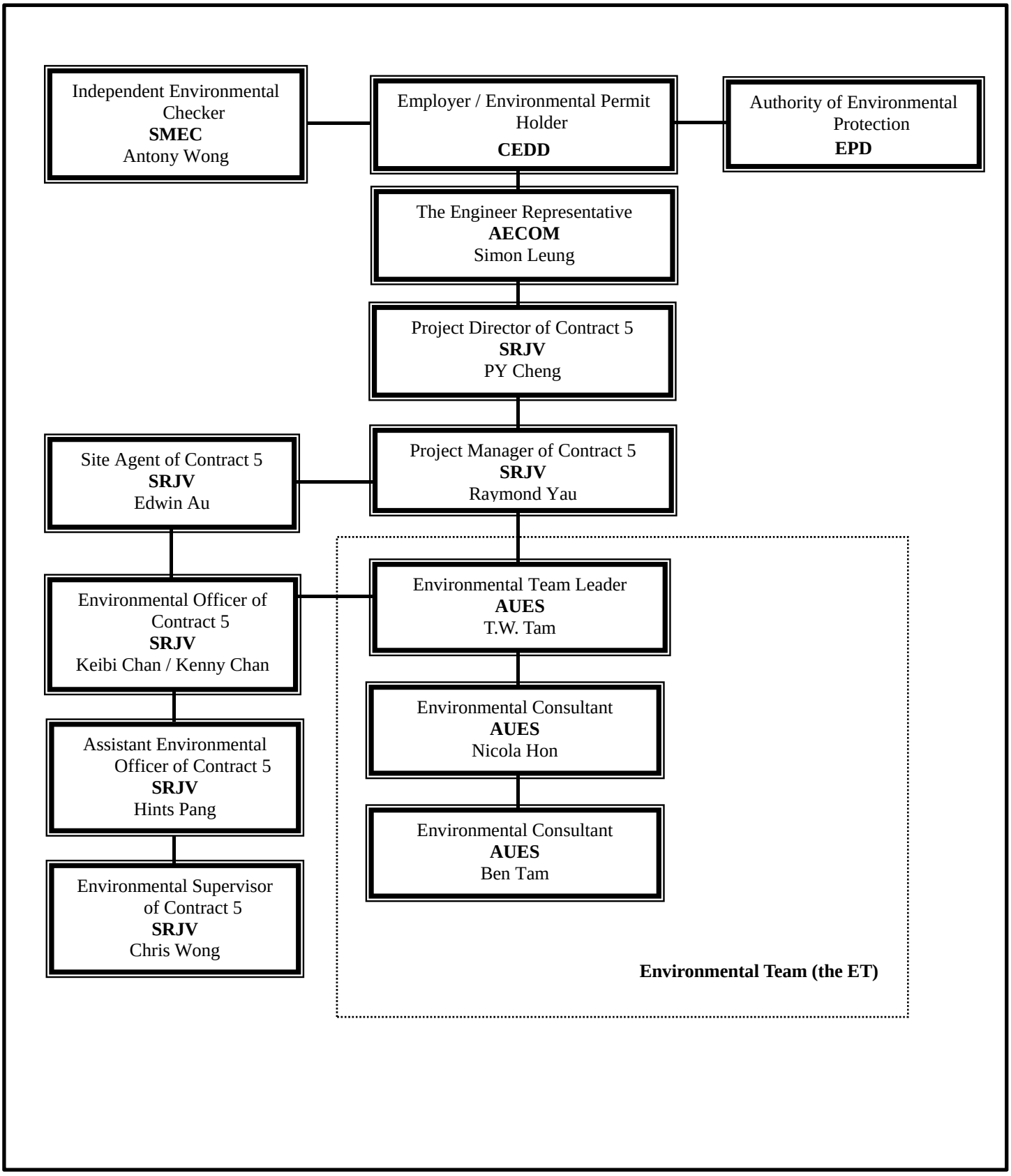
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

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

SMEC (IEC) – SMEC Asia Limited

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



Environmental Management Organization – CV/2013/03

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

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
AECOM	Engineer's Representative	Simon Leung	2674 2273	2674 7732
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
SRJV	Project Director	PY Cheng	9023 4821	2403 1162
SRJV	Contract Manager	Raymond Yu	9041 1620	2403 1162
SRJV	Project Manager	Aaron Mak	9464 7095	2403 1162
SRJV	Site Agent	Edwin Au	9208 7329	2403 1162
SRJV	Environmental Officer	Chan Ng jhon-keibi / Kenny Chan	6090 0183	2403 1162
SRJV	Environmental Supervisor	Chris Wong	6387 4683	2403 1162
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

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

SMEC (IEC) – SMEC Asia Limited

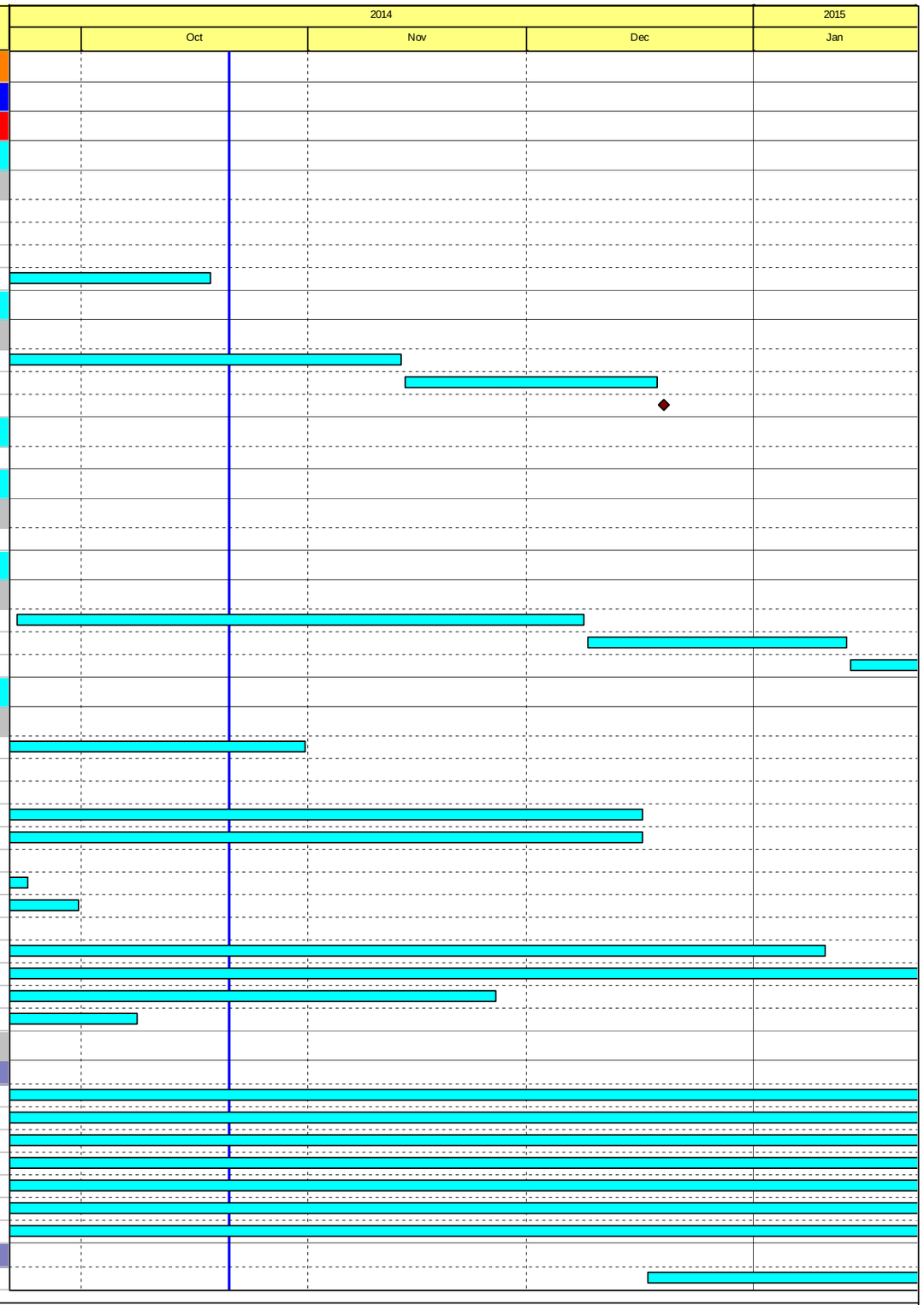
AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

3-month rolling construction program

Contract 2

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
Total		974	20-Dec-13	30-Mar-17
HKLTH Works Programme update 20-Oct-2014		974	20-Dec-13	30-Mar-17
2 General		549	04-Feb-14	14-Dec-15
Programme		182	31-May-14	18-Oct-14
Works Programme		182	31-May-14	18-Oct-14
A24050	Works Programme	60	31-May-14	29-Jul-14
A24065	Engineer's Comment for Works Programme	30	30-Jul-14	28-Aug-14
A24066	Further Information for Works Programme (if necessary)	21	29-Aug-14	18-Sep-14
A24067	Engineer's Approval of Works Programme	30	19-Sep-14	18-Oct-14
Ground Investigation		231	13-Mar-14	19-Dec-14
GI Works		231	13-Mar-14	19-Dec-14
DSN018605	GI: Field Works [including pre-drilling works]	200	13-Mar-14	13-Nov-14
DSN018606	GI: Tests & Reports (Contract Boreholes)	30	14-Nov-14	18-Dec-14
DSN018607	KD2: Sect. II (Completion of Geotechnical investigation fieldworks + laboratory tests) (Contract Boreholes)	0		19-Dec-14
Project Wide Procurement		66	14-Jun-14	30-Aug-14
A01001a34	Explosives, Accessories, and Services	66	14-Jun-14	30-Aug-14
Geotechnical Interpretative Report 1st Revision		28	10-May-14	12-Jun-14
DDA Submission		28	10-May-14	12-Jun-14
GIR2022060	ER/IP's Approval	28	10-May-14	12-Jun-14
Geotechnical Interpretative Report 2nd Revision		74	22-Sep-14	28-Jan-15
DDA Submission		74	22-Sep-14	28-Jan-15
GIR21021890	Preparation of DDA for formal submission to ER/ICE/IP	65	22-Sep-14	08-Dec-14
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
Project Wide E&M		549	04-Feb-14	14-Dec-15
E&M Design Works for Civil Design Interface		340	04-Feb-14	18-Feb-15
PD..AE.1050	Establish E&M Procurement Matrix & Pre-Qualification Process	195	06-Mar-14	31-Oct-14
PD.AE.1020	Review Civil Programme & Develop E&M Programme	88	16-Apr-14	04-Aug-14
PD.AE.1030	Establish Civil/E&M Interface Matrix	50	09-Apr-14	12-Jun-14
PD.AE.1060	Overall Technical Review of E&M System	260	04-Feb-14	16-Dec-14
PD.AE.1070	Review Civil Design Submission on Tunnel Space Proofing & Vent Buildings	260	04-Feb-14	16-Dec-14
PD.AE.1080	Civil Provisions Check for Utility Cable Trough in Tunnels	112	09-Apr-14	25-Aug-14
PD.AE.1090	Civil Provisions Check for E&M Installations in Tunnels	118	05-May-14	23-Sep-14
PD.AE.1110	Spatial Study and Installation Coordination for Tunnel Cable Brackets	92	13-Jun-14	30-Sep-14
PD.AE.1120	E&M Structural Openings Check in Tunnel and Cross Passage	90	05-Jun-14	19-Sep-14
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	99	20-Sep-14	18-Feb-15
PD.AE.1150	Design Verification and Development for Tunnel Ventilation System	170	07-May-14	26-Nov-14
PD.AE.1160	Design Verification and Development for Tunnel Lighting System	128	07-May-14	08-Oct-14
E&M Design & Engineering Works		386	17-Apr-14	27-Jul-15
Engineering Design Submission		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
Shop Drawing & Builder's Drawing Submission		176	17-Dec-14	27-Jul-15
PD.DW.1000	Shop Drawings & Builder's Drawings Preparation	176	17-Dec-14	27-Jul-15



REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.10	20/10/2014	RAN	RBS/SJO	DAL

MAIN CONTRACTOR
香寶嘉 Dragages HongKong
A member of the Bouygues Construction group

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

THE ENGINEER
AECOM

CONTRACTOR'S DESIGNER
ATKINS

PROJECT
Contract No. CV/2012/08
Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE
3-Months Rolling Programme

DOCUMENT NO.
LTH/DHK/PGR/PW/PLP/00016/A

DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20/10/2014	A

PAPER SIZE	SCALE	PAGE
A3	N/A	1 of 10

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
Equipment Selection & Submission		387	01-Aug-14	14-Dec-15
PD.PQ.1080	Electrical Services System Submission and Approval by the Engineer	338	27-Oct-14	14-Dec-15
PD.PQ.1150	Tunnel Ventilation System Submission and Approval by the Engineer	228	07-Nov-14	15-Aug-15
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.2010	FS System Submission and Approval by the Engineer	278	01-Nov-14	09-Oct-15
3 South Portal Area		496	20-Dec-13	28-Apr-15
3.0 South Portal Site Possession Contract Dates		184	20-Apr-14	20-Apr-14
A2450	LS12 (near South Portal)	0	20-Apr-14	
A2470	LS2 (near South Vent. Demolition & Noise Barrier)	0	20-Apr-14	
3.1 South Portal Subcontract & Procurement		86	31-Jul-14	06-Nov-14
SPS&P0030	Subcontract : Earthworks	60	31-Jul-14	11-Oct-14
SPS&P0040	Subcontract : Soil Nailing Works	60	31-Jul-14	11-Oct-14
SPS&P0050	Subcontract : Tunnel Spoil Disposal	60	26-Aug-14	06-Nov-14
3.2 South Portal Design Submission		313	17-Feb-14	28-Jan-15
South Portal: Temp. Bridge at LS1		28	19-Mar-14	15-Apr-14
DDA Submission		28	19-Mar-14	15-Apr-14
DSN01500	ER/IP's Approval	28	19-Mar-14	15-Apr-14
South Portal: South Portal Site Formation		243	17-Feb-14	18-Nov-14
DDA Submission		243	17-Feb-14	18-Nov-14
DSN019800	Preparation for formal submission to ER/ICE/IP	147	17-Feb-14	15-Aug-14
DSN019850	IPs'/ ER's Review	28	16-Aug-14	18-Sep-14
DSN019870	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	19-Sep-14	21-Oct-14
DSN019970	ER/IP's Approval	28	22-Oct-14	18-Nov-14
South Portal: Temp Support For Retaining Wall		242	01-Mar-14	11-Nov-14
DDA Submission		242	01-Mar-14	11-Nov-14
DSN03140	Preparation for formal submission to ER/ICE/IP	130	01-Mar-14	08-Aug-14
DSN03190	IPs'/ ER's Review	28	09-Aug-14	11-Sep-14
DSN03210	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	12-Sep-14	14-Oct-14
DSN03310	ER/IP's Approval	28	15-Oct-14	11-Nov-14
South Portal: Permanent Retaining Wall		154	30-Jun-14	26-Nov-14
DDA Submission		154	30-Jun-14	26-Nov-14
DSN019440	Preparation for formal submission to ER/ICE/IP	47	30-Jun-14	23-Aug-14
DSN019490	IPs'/ ER's Review	28	25-Aug-14	26-Sep-14
DSN019510	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	27-Sep-14	29-Oct-14
DSN019610	ER/IP's Approval	28	30-Oct-14	26-Nov-14
South Portal: Ventilation Buildings - Foundation Design		269	10-Apr-14	28-Jan-15
AIP Submission		190	10-Apr-14	25-Oct-14
DSN07620	Preparation for formal submission to ER/ICE/IP	88	10-Apr-14	29-Jul-14
DSN07690	IPs'/ ER's Review	28	30-Jul-14	30-Aug-14
DSN07710	Preparation for resubmission to ER/ICE/IP with ICE Certification	23	01-Sep-14	27-Sep-14
DSN07810	ER/IP's Approval	28	28-Sep-14	25-Oct-14
DDA Submission		162	29-Jul-14	28-Jan-15
DSN07820	Preparation for formal submission to ER/ICE/IP	74	29-Jul-14	25-Oct-14
DSN07870	IPs'/ ER's Review	28	27-Oct-14	27-Nov-14
DSN07890	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	28-Nov-14	31-Dec-14
DSN07990	ER/IP's Approval	28	01-Jan-15	28-Jan-15
South Portal: Temp Works For Mined Tunnelling		211	29-Mar-14	26-Nov-14
DDA Submission		211	29-Mar-14	26-Nov-14
DSN010510	Preparation for formal submission to ER/ICE/IP	118	29-Mar-14	22-Aug-14
DSN010560	IPs'/ ER's Review	28	23-Aug-14	25-Sep-14

REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
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MAIN CONTRACTOR: 香寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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

THE ENGINEER: AECOM

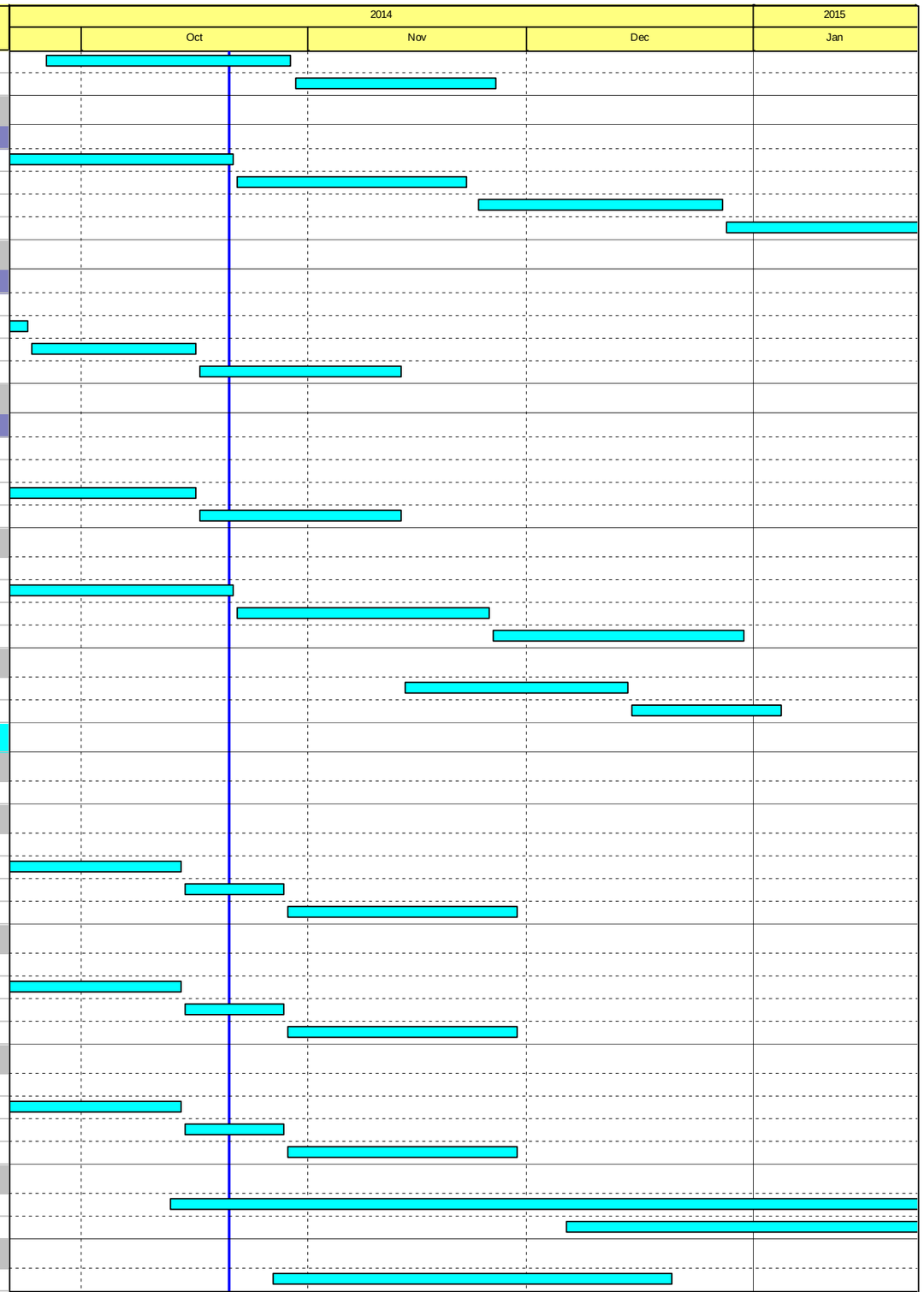
CONTRACTOR'S DESIGNER: ATKINS

PROJECT: Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE: 3-Months Rolling Programme

DOCUMENT NO.		
LTH/DHK/PGR/PW/PLP/00016/A		
DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20/10/2014	A
PAPER SIZE	SCALE	PAGE
A3	N/A	2 of 10

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
DSN010580	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	26-Sep-14	29-Oct-14
DSN010680	ER/IP's Approval	28	30-Oct-14	26-Nov-14
South Portal: Temp Works For D&B Tunnelling		144	23-Jul-14	24-Jan-15
DDA Submission		144	23-Jul-14	24-Jan-15
DSN010150	Preparation for formal submission to ER/ICE/IP	75	23-Jul-14	21-Oct-14
DSN010200	IPs'/ ER's Review	28	22-Oct-14	22-Nov-14
DSN010220	Preparation for resubmission to ER/ICE/IP with ICE Certification	28	24-Nov-14	27-Dec-14
DSN010320	ER/IP's Approval	28	28-Dec-14	24-Jan-15
South Tunnel Permanent Lining		212	14-Apr-14	13-Nov-14
AIP Submission		212	14-Apr-14	13-Nov-14
STPL1023340	Preparation for formal submission to ER/ICE/IP	108	14-Apr-14	25-Aug-14
STPL1023390	IPs'/ ER's Review	24	26-Aug-14	23-Sep-14
STPL1023410	Preparation for resubmission to ER/ICE/IP with ICE Certification	18	24-Sep-14	16-Oct-14
STPL1023510	ER/IP's Approval	28	17-Oct-14	13-Nov-14
South Tunnel Internal Structures		186	16-May-14	13-Nov-14
AIP Submission		186	16-May-14	13-Nov-14
STIS1L1023340	Preparation for formal submission to ER/ICE/IP	77	16-May-14	15-Aug-14
STIS1L1023390	IPs'/ ER's Review	24	16-Aug-14	13-Sep-14
STIS1L1023410	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	15-Sep-14	16-Oct-14
STIS1L1023510	ER/IP's Approval	28	17-Oct-14	13-Nov-14
CBAR South Tunnels		131	15-Jul-14	30-Dec-14
A26040a	Preparation and Submission of CBAR - 1st Submission	54	15-Jul-14	16-Sep-14
A26040b	ER/IP's Review	28	17-Sep-14	21-Oct-14
A26040c	Preparation and Submission of CBAR - 2nd Submission	30	22-Oct-14	25-Nov-14
A26040d	ER/IP's Review&Approval of CBAR	28	26-Nov-14	30-Dec-14
CIA- South Portal & South D&B Tunnels inc Mid Vent Junction & CP		31	14-Nov-14	04-Jan-15
SC01140	Draft Report	31	14-Nov-14	14-Dec-14
SC01175	*Final CIA Report (14d)	21	15-Dec-14	04-Jan-15
3.3 South Portal Method Statement Submission		309	28-Apr-14	28-Apr-15
South Portal: Temporary Bridge		28	28-Apr-14	31-May-14
FL560	Engineer's Approval	28	28-Apr-14	31-May-14
South Portal: Temporary Slopeworks		131	16-Aug-14	29-Nov-14
FL2022081	Prepare Method Statement	20	16-Aug-14	08-Sep-14
FL2022082	Engineer's Comment	28	10-Sep-14	14-Oct-14
FL2022083	Re-submission Method Statement	12	15-Oct-14	28-Oct-14
FL2022084	Engineer's Approval	28	29-Oct-14	29-Nov-14
South Portal: Earthworks & Bulk Excavation Works		131	16-Aug-14	29-Nov-14
FL2022089	Prepare Method Statement	20	16-Aug-14	08-Sep-14
FL2022090	Engineer's Comment	28	10-Sep-14	14-Oct-14
FL2022091	Re-submission Method Statement	12	15-Oct-14	28-Oct-14
FL2022092	Engineer's Approval	28	29-Oct-14	29-Nov-14
South Portal: Site Drainage Management		131	16-Aug-14	29-Nov-14
FL2022085	Prepare Method Statement	20	16-Aug-14	08-Sep-14
FL2022086	Engineer's Comment	28	10-Sep-14	14-Oct-14
FL2022087	Re-submission Method Statement	12	15-Oct-14	28-Oct-14
FL2022088	Engineer's Approval	28	29-Oct-14	29-Nov-14
South Tunnels: Blasting Method Statement		160	13-Oct-14	28-Apr-15
FL2022101	Preparation and Submission of Blasting Method Statement	135	13-Oct-14	25-Mar-15
FL2022104	Engineer's/IP's Review & Approval	113	06-Dec-14	28-Apr-15
South Portal: Pilecap, Footings & Tie beams		76	27-Oct-14	26-Jan-15
A2330	Prepare Method Statement	48	27-Oct-14	20-Dec-14



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MAIN CONTRACTOR: 香寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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

THE ENGINEER: AECOM

CONTRACTOR'S DESIGNER: ATKINS

PROJECT: Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE: 3-Months Rolling Programme

DOCUMENT NO.		
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DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20/10/2014	A
PAPER SIZE	SCALE	PAGE
A3	N/A	3 of 10

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
A2340	Engineer's Comment	28	22-Dec-14	26-Jan-15
South Portal: Permanent Retaining Walls		48	08-Dec-14	04-Feb-15
A25481	Prepare Method Statement	48	08-Dec-14	04-Feb-15
3.4 South Portal General Submission		84	09-Jul-14	17-Oct-14
South Portal: Temp.CLP Substation		84	09-Jul-14	17-Oct-14
TSS2050	Prepare & Submit CLP Sub-station Proposal + CLP'sApproval	84	09-Jul-14	17-Oct-14
3.5 South Portal Works		496	20-Dec-13	14-Mar-15
South Portal: CLP Substation		106	18-Oct-14	28-Feb-15
SCLP2060	Sub-station Construction + CLP Installation	106	18-Oct-14	28-Feb-15
South Portal: Demolition		96	12-Jun-14	13-Oct-14
SV2840	Precautionary Measures	24	12-Jun-14	12-Jul-14
SV2860	Demolish Existing Building (LS2 - GLL T14097)	36	14-Jul-14	27-Aug-14
SV2870	Demolish Existing Building (LS1 - GLL T5729)	36	28-Aug-14	13-Oct-14
South Portal: Tree Transplant & Felling		384	21-Jan-14	04-Nov-14
SV2135	Tree Transplant	72	21-Jan-14	22-Apr-14
SV2145	Tree Felling for Bridge	30	21-Jan-14	27-Feb-14
SV2155	Tree Felling Remaining	24	08-Oct-14	04-Nov-14
South Portal: 132kV Diversion (South Portal)		1	20-Dec-13	20-Dec-13
SC01300	*CLP 132kV Diversion (by Others) - CLP Pylon at Portal	1	20-Dec-13	20-Dec-13
South Portal: Temp.Bridge (South Portal)		182	26-May-14	15-Oct-14
SV2620	Foundation works (East)	24	03-Jun-14	03-Jul-14
SV2625	Ramp + Columns (East)	18	04-Jul-14	26-Jul-14
SV2630	Foundation works (West)	30	26-May-14	04-Jul-14
SV2640	Ramp + Columns (West)	38	05-Jul-14	22-Aug-14
SV2650	Main Deck Installation	40	08-Aug-14	26-Sep-14
SV2660	Surfacing works + Finishing works	24	15-Sep-14	14-Oct-14
SV2670	KD9 - Stage 1 (Completion of Temp.Bridge Construction)	0		15-Oct-14
South Portal: Slopeworks		121	15-Oct-14	14-Mar-15
SV2680	Temp.Access Road (~+26.0 >> +57.0)	18	15-Oct-14	04-Nov-14
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
4 Middle Portal Area		444	28-Feb-14	28-Jul-15
4.2 Middle Portal Design Submission		304	18-Mar-14	11-Feb-15
Middle Portal: Site & Portal Formation		28	18-Mar-14	14-Apr-14
DDA Submission		28	18-Mar-14	14-Apr-14
DSN29051	IPs'/ ER's Review /Approval	28	18-Mar-14	14-Apr-14
Mid Vent Building - ELS		50	15-Apr-14	18-Jun-14
DDA Submission		50	15-Apr-14	18-Jun-14
DSN29056	Preparation for resubmission to ER/ICE/IP with ICE Certification	27	15-Apr-14	21-May-14
DSN29057	ER/IP'sApproval	28	22-May-14	18-Jun-14
Mid Vent Building - Foundation		211	26-May-14	11-Feb-15
AIP Submission		146	26-May-14	18-Aug-14
DSN29059	IPs'/ ER's Review	24	26-May-14	23-Jun-14
DSN29060	Preparation for resubmission to ER/ICE/IP with ICE Certification	23	24-Jun-14	21-Jul-14
DSN29061	ER/IP'sApproval	28	22-Jul-14	18-Aug-14
DDA Submission		119	03-Jul-14	11-Feb-15
DSN29062	Preparation for formal submission to ER/ICE/IP	108	03-Jul-14	08-Nov-14
DSN29063	IPs'/ ER's Review	28	10-Nov-14	11-Dec-14
DSN29064	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	12-Dec-14	14-Jan-15
DSN29065	ER/IP'sApproval	28	15-Jan-15	11-Feb-15

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香港寶嘉 Dragages HongKong
A member of the Bouygues Construction group

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

THE ENGINEER
AECOM

CONTRACTOR'S DESIGNER
ATKINS

PROJECT
Contract No. CV/2012/08
Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE
3-Months Rolling Programme

DOCUMENT NO.		
LTH/DHK/PGR/PW/PLP/00016/A		
DOC. STATUS	CREATION DATE	REVISION
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Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
Middle Portal: Temp Support for Mined and D&B Tunnelling		64	16-May-14	31-Jul-14
DDA Submission		64	16-May-14	31-Jul-14
DSN29068	Preparation for resubmission to ER/ICE/IP with ICE Certification	40	16-May-14	03-Jul-14
DSN29069	ER/IP's Approval	28	04-Jul-14	31-Jul-14
Mid Vent Adit Permanent Lining		229	21-Jun-14	04-Feb-15
AIP Submission		28	21-Jun-14	18-Jul-14
DSN29073	ER/IP's Approval	28	21-Jun-14	18-Jul-14
DDA Submission		124	22-Aug-14	04-Feb-15
DSN29074	Preparation for formal submission to ER/ICE/IP	57	22-Aug-14	30-Oct-14
DSN29075	IPs'/ ER's Review	28	31-Oct-14	02-Dec-14
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
Mid Vent Adit Internal Structure		117	05-Jul-14	03-Oct-14
AIP Submission		117	05-Jul-14	03-Oct-14
DSN29079	IPs'/ ER's Review	28	05-Jul-14	06-Aug-14
DSN29080	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	07-Aug-14	05-Sep-14
DSN29081	ER/IP's Approval	28	06-Sep-14	03-Oct-14
Mid Vent Adit/Junction - Temp Works For D&B Tunnelling		106	25-Sep-14	31-Jan-15
DDA Submission		106	25-Sep-14	31-Jan-15
DSN29086	Preparation for formal submission to ER/ICE/IP	49	25-Sep-14	22-Nov-14
DSN29087	IPs'/ ER's Review	28	24-Nov-14	27-Dec-14
DSN29088	Preparation for resubmission to ER/ICE/IP with ICE Certification	29	29-Dec-14	31-Jan-15
Mid Vent Adit/Junction Permanent Lining & Backfill		151	05-Jun-14	04-Nov-14
AIP Submission		151	05-Jun-14	04-Nov-14
DSN29090	Preparation for formal submission to ER/ICE/IP	49	05-Jun-14	01-Aug-14
DSN29091	IPs'/ ER's Review	28	02-Aug-14	03-Sep-14
DSN29092	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	04-Sep-14	07-Oct-14
DSN29093	ER/IP's Approval	28	08-Oct-14	04-Nov-14
Mid Vent Junction Internal Structure		201	19-Jun-14	18-Nov-14
AIP Submission		201	19-Jun-14	18-Nov-14
DSN29098	Preparation for formal submission to ER/ICE/IP	49	19-Jun-14	15-Aug-14
DSN29099	IPs'/ ER's Review	28	16-Aug-14	18-Sep-14
DSN29100	Preparation for resubmission to ER/ICE/IP with ICE Certification	26	19-Sep-14	21-Oct-14
DSN29101	ER/IP's Approval	28	22-Oct-14	18-Nov-14
CBAR Mid Vent Adit		95	27-May-14	27-Aug-14
A26020c	Preparation and Submission of CBAR - 2nd Submission	54	27-May-14	30-Jul-14
A26020d	ER/IP's Review&Approval of CBAR	28	31-Jul-14	27-Aug-14
CBAR Cavern		151	27-Jun-14	12-Dec-14
A26020a1	Preparation and Submission of CBAR- 1st Submission	50	27-Jun-14	25-Aug-14
A26020b1	ER/IP's Review	28	26-Aug-14	27-Sep-14
A26020c1	Preparation and Submission of CBAR - 2nd Submission	39	29-Sep-14	14-Nov-14
A26020d1	ER/IP's Review&Approval of CBAR	28	15-Nov-14	12-Dec-14
4.3 Middle Portal Method Statement Submission		444	28-Feb-14	28-Jul-15
Middle Ventilation Adit Blasting Method Statement		104	12-Jun-14	10-Oct-14
FL2022105	Preparation and Submission of Blasting Method Statement	75	12-Jun-14	08-Sep-14
FL2022106	Engineer's/IP's Review & Approval	45	16-Aug-14	10-Oct-14
Cavern Blasting Method Statement		96	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
Middle Portal: Pipe Pile Works		201	12-Mar-14	16-Aug-14
A2290	Prepare Method Statement for Pipe Pile Works	48	12-Mar-14	13-May-14

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MAIN CONTRACTOR: 香寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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THE ENGINEER: AECOM

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PROJECT: Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE: 3-Months Rolling Programme

DOCUMENT NO.: LTH/DHK/PGR/PW/PLP/00016/A

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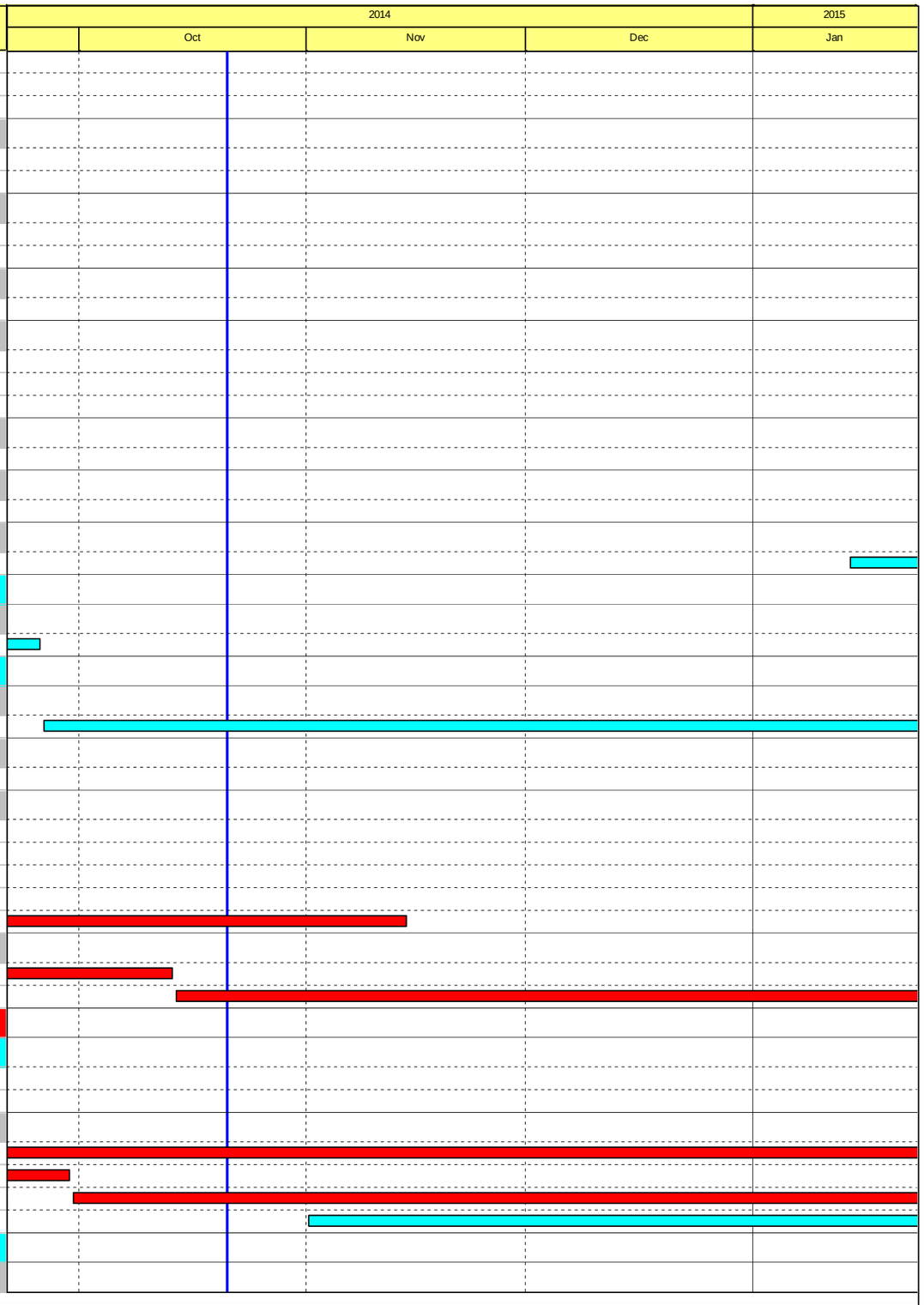
Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
A2300	Engineer's Comment	28	14-May-14	16-Jun-14
A2310	Re-submission Method Statement for Pipe Pile Works	7	17-Jun-14	15-Jul-14
A2320	Engineer's Approval	7	16-Jul-14	16-Aug-14
Middle Portal: Site and Portal Formation		38	28-Feb-14	14-Apr-14
A25470	Re-submission Method Statement for Portal Formation	14	28-Feb-14	15-Mar-14
A25480	Engineer's Approval	24	17-Mar-14	14-Apr-14
Middle Portal: Water Management Plan		38	28-Feb-14	14-Apr-14
A25499	Re-submission Method Statement	14	28-Feb-14	15-Mar-14
A25500	Engineer's Approval	24	17-Mar-14	14-Apr-14
Middle Portal: Soil Nailing Works		28	05-Mar-14	07-Apr-14
A25508	Engineer's Comment & Approval	28	05-Mar-14	07-Apr-14
Middle Portal: Tunnel Mechanical Excavation		62	31-Mar-14	18-Jun-14
A25502	Engineer's Comment	24	31-Mar-14	02-May-14
A25503	Re-submission Method Statement	14	03-May-14	20-May-14
A25504	Engineer's Approval	24	21-May-14	18-Jun-14
Middle Ventilation Adit Lining Works		48	05-Feb-15	09-Apr-15
A25513	Prepare Method Statement	48	05-Feb-15	09-Apr-15
Cavern Permanent Lining		48	01-Jun-15	28-Jul-15
A25521	Prepare Method Statement	48	01-Jun-15	28-Jul-15
Mid Vent Building Construction		48	14-Jan-15	13-Mar-15
FL5900	Prepare Method Statement for Mid Vent Building Construction	48	14-Jan-15	13-Mar-15
4.4 Middle Portal General Submission		84	18-Jun-14	25-Sep-14
Middle Portal: Temp.CLP Substation		84	18-Jun-14	25-Sep-14
TSS332020	Prepare & Submit CLP Sub-station Proposal + CLP's Approval	84	18-Jun-14	25-Sep-14
4.5 Middle Portal Works		336	04-Mar-14	06-Feb-15
Middle Portal: CLP Substation		110	26-Sep-14	06-Feb-15
TSS3P2060	Sub-station Construction + CLP Installation	110	26-Sep-14	06-Feb-15
Middle Portal: Site Establishment		60	04-Mar-14	21-May-14
MV2800	Permanent Slope Stabilization	60	04-Mar-14	21-May-14
Middle Portal: Portal Formation		253	15-Apr-14	14-Nov-14
MV2480	Excavation up to Portal Formation (+15.5.0mPD)	54	15-Apr-14	28-Jun-14
MV2481	Excavation for Site Installation and up to Temporary Working Platform for Pipe Pile Works (+25.0mPD)	54	15-Apr-14	28-Jun-14
MV2482	Temporary Ramp Formation	2	30-Jun-14	02-Jul-14
MV2806	Pipe Piling Works	60	30-Jun-14	15-Sep-14
MV2817	Excavation for Site Installation (Tunneling Works) up to (+22.0mPD)	50	16-Sep-14	14-Nov-14
Adit Construction - Mid Portal		179	03-Jul-14	29-Jan-15
MV2490dwp1	Top Heading Canopies & Bench Excavation Ch0>Ch24	85	03-Jul-14	13-Oct-14
MV2490dwp2a	Top Heading Canopies & Bench Excavation Ch24>Ch70	91	14-Oct-14	29-Jan-15
5 North Portal Area		974	20-Jan-14	30-Mar-17
5.1 North Portal Subcontract & Procurement		974	20-Jan-14	30-Mar-17
NPS&P0050	Subcontract : Tunnel Spoil Disposal	60	21-May-14	31-Jul-14
NPS&P0060	Subcontract : Ventilation Building Bored Piling Works	60	24-May-14	04-Aug-14
North Portal: TBM Procurement & Delivery		974	20-Jan-14	30-Mar-17
DSN027980	TBM Procurement, Fabrication & Delivery	405	20-Jan-14	28-Feb-15
N21400	Precast Segment Mould Fabrication	116	02-May-14	29-Sep-14
N21410a	Precast Segment Fabrication (1.6m Ring) - Temporary Segments	190	30-Sep-14	23-May-15
N21410b	Precast Segment Fabrication (2.2m Ring)	715	01-Nov-14	30-Mar-17
5.2 North Portal Design Submission		387	21-Jan-14	05-Mar-15
TBM Design		297	21-Jan-14	17-Aug-14



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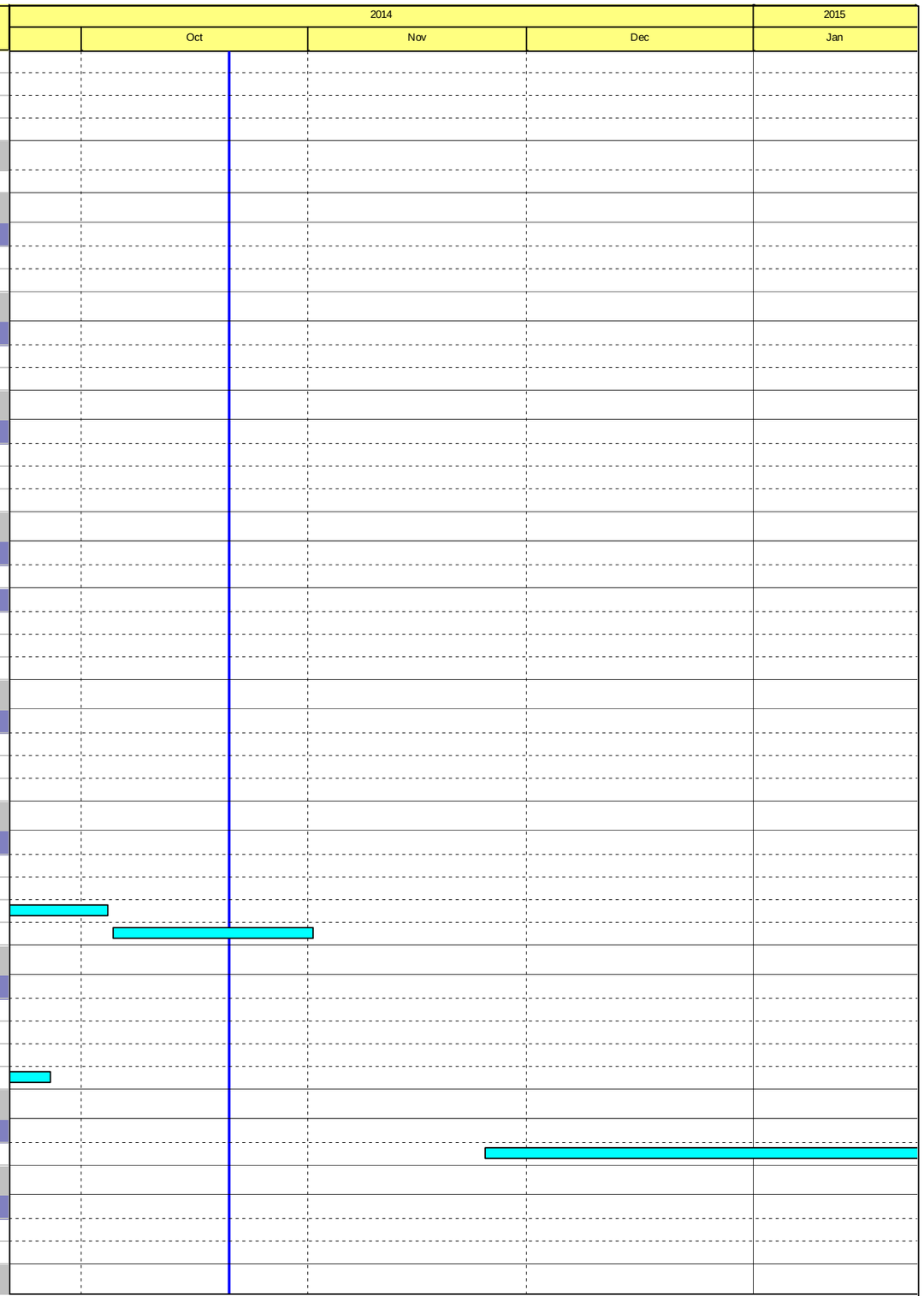
Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
A24660a	*TBM Detailed Design (Group C)	175	21-Jan-14	14-Jul-14
A24660b	Engineer Review & Comments (Group C)	14	15-Jul-14	28-Jul-14
A24660c	Re-submission for (Group C)	10	29-Jul-14	07-Aug-14
A24660d	Engineer Review & Comments for Re-submission (Group C)	10	08-Aug-14	17-Aug-14
Engineeer and Contractor Site Offices		12	18-Feb-14	03-Mar-14
N21345	Engineer's Approval for Site Office	12	18-Feb-14	03-Mar-14
North Portal Site Formation		35	08-May-14	18-Jun-14
DDA Submission		35	08-May-14	18-Jun-14
FL2022115	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	08-May-14	21-May-14
FL2022116	ER/IP's Approval	28	22-May-14	18-Jun-14
North Portal: Temp Support for Retaining Wall		133	12-Jun-14	23-Jul-14
DDA Submission		133	12-Jun-14	23-Jul-14
FL2022123	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	12-Jun-14	25-Jun-14
FL2022124	ER/IP's Approval	28	26-Jun-14	23-Jul-14
North Portal: Permanent Retaining Wall		157	21-May-14	06-Aug-14
DDA Submission		157	21-May-14	06-Aug-14
FL2022126	IPs'/ ER's Review	28	21-May-14	23-Jun-14
FL2022127	Preparation for resubmission to ER/ICE/IP with ICE Certification	13	24-Jun-14	09-Jul-14
FL2022128	ER/IP's Approval	28	10-Jul-14	06-Aug-14
North Portal: Ventilation Building - Foundation Design		188	12-Apr-14	18-Aug-14
AIP Submission		28	12-Apr-14	09-May-14
FL2022132	ER/IP's Approval	28	12-Apr-14	09-May-14
DDA Submission		157	24-May-14	18-Aug-14
FL2022134	IPs'/ ER's Review	28	24-May-14	26-Jun-14
FL2022135	Preparation for resubmission to ER/ICE/IP with ICE Certification	20	27-Jun-14	21-Jul-14
FL2022136	ER/IP's Approval	28	22-Jul-14	18-Aug-14
North Tunnel Curved Section - N/B & S/B- Temp Support in Soft Ground		67	26-Apr-14	17-Jul-14
DDA Submission		67	26-Apr-14	17-Jul-14
FL2022138	IPs'/ ER's Review	28	26-Apr-14	30-May-14
FL2022139	Preparation for resubmission to ER/ICE/IP with ICE Certification	16	31-May-14	19-Jun-14
FL2022140	ER/IP's Approval	28	20-Jun-14	17-Jul-14
North Tunnel Curved Section - N/B & S/B- Temp Support in Rock		160	19-May-14	01-Nov-14
DDA Submission		160	19-May-14	01-Nov-14
FL2022141	Preparation for formal submission to ER/ICE/IP	75	19-May-14	15-Aug-14
FL2022142	IPs'/ ER's Review	28	16-Aug-14	18-Sep-14
FL2022143	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	19-Sep-14	04-Oct-14
FL2022144	ER/IP's Approval	28	05-Oct-14	01-Nov-14
North Tunnel Curved Section Southbound Temp Segmental Lining		162	13-Jun-14	26-Sep-14
DDA Submission		162	13-Jun-14	26-Sep-14
FL2022097	Preparation for formal submission to ER/ICE/IP	21	13-Jun-14	08-Jul-14
FL2022098	IPs'/ ER's Review	28	09-Jul-14	09-Aug-14
FL2022099	Preparation for resubmission to ER/ICE/IP with ICE Certification	12	11-Aug-14	23-Aug-14
FL2022100	ER/IP's Approval	28	25-Aug-14	26-Sep-14
North Tunnel Curved Section Southbound Temp Support For Enlargement		56	25-Nov-14	31-Jan-15
DDA Submission		56	25-Nov-14	31-Jan-15
FL2022145	Preparation for formal submission to ER/ICE/IP	56	25-Nov-14	31-Jan-15
Bored Tunnel Space Proofing & Sight Assessment		36	24-Feb-14	07-Apr-14
AIP Submission		36	24-Feb-14	07-Apr-14
FL2022151	Preparation for resubmission to ER/ICE/IP with ICE Certification	13	24-Feb-14	10-Mar-14
FL2022152	ER/IP's Approval	28	11-Mar-14	07-Apr-14
Bored Tunnel Segmental Lining		204	28-Apr-14	01-Dec-14



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Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
AIP Submission		45	28-Apr-14	21-Jun-14
FL2022155	Preparation for resubmission to ER/ICE/IP with ICE Certification	22	28-Apr-14	24-May-14
FL2022156	ER/IP's Approval	28	25-May-14	21-Jun-14
DDA Submission		43	04-Sep-14	01-Dec-14
FL2022158	IPs'/ ER's Review	28	04-Sep-14	09-Oct-14
FL2022159	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	10-Oct-14	03-Nov-14
FL2022160	ER/IP's Approval	28	04-Nov-14	01-Dec-14
Bored Tunnel OHVD Slab		349	10-Mar-14	05-Mar-15
AIP Submission		252	10-Mar-14	05-Nov-14
FL2022161	Preparation for formal submission to ER/ICE/IP	123	10-Mar-14	08-Aug-14
FL2022162	IPs'/ ER's Review	28	09-Aug-14	11-Sep-14
FL2022163	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	12-Sep-14	08-Oct-14
FL2022164	ER/IP's Approval	28	09-Oct-14	05-Nov-14
DDA Submission		42	13-Jan-15	05-Mar-15
FL2022165	Preparation for formal submission to ER/ICE/IP	42	13-Jan-15	05-Mar-15
Bored Tunnel Internal Structure (except OHVD Slab)		344	15-Mar-14	05-Mar-15
AIP Submission		247	15-Mar-14	01-Nov-14
FL2022169	Preparation for formal submission to ER/ICE/IP	115	15-Mar-14	05-Aug-14
FL2022170	IPs'/ ER's Review	28	06-Aug-14	06-Sep-14
FL2022171	Preparation for resubmission to ER/ICE/IP with ICE Certification	21	08-Sep-14	04-Oct-14
FL2022172	ER/IP's Approval	28	05-Oct-14	01-Nov-14
DDA Submission		42	13-Jan-15	05-Mar-15
FL2022173	Preparation for formal submission to ER/ICE/IP	42	13-Jan-15	05-Mar-15
Bored Tunnel/ D&B Tunnel Transition - Headwall Structure (N/B & S/B)		181	02-Jul-14	21-Nov-14
AIP Submission		181	02-Jul-14	21-Nov-14
FL2022177	Preparation for formal submission to ER/ICE/IP	45	02-Jul-14	22-Aug-14
FL2022178	IPs'/ ER's Review	28	23-Aug-14	25-Sep-14
FL2022179	Preparation for resubmission to ER/ICE/IP with ICE Certification	23	26-Sep-14	24-Oct-14
FL2022180	ER/IP's Approval	28	25-Oct-14	21-Nov-14
Northbound TBM Dismantling Cavern Temporary Works		42	03-Jan-15	24-Feb-15
DDA Submission		42	03-Jan-15	24-Feb-15
FL2022185	Preparation for formal submission to ER/ICE/IP	42	03-Jan-15	24-Feb-15
Bored Tunnel Cross Passages Permanent Lining (Soft Ground)		116	27-Sep-14	03-Feb-15
AIP Submission		116	27-Sep-14	03-Feb-15
FL2022205	Preparation for formal submission to ER/ICE/IP	42	27-Sep-14	17-Nov-14
FL2022206	IPs'/ ER's Review	28	18-Nov-14	19-Dec-14
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
Bored Tunnel Cross Passages Permanent Lining (Rock)		116	27-Sep-14	03-Feb-15
AIP Submission		116	27-Sep-14	03-Feb-15
FL2022213	Preparation for formal submission to ER/ICE/IP	42	27-Sep-14	17-Nov-14
FL2022214	IPs'/ ER's Review	28	18-Nov-14	19-Dec-14
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
Bored Tunnel Cross Passages Internal Structures		70	27-Nov-14	23-Feb-15
AIP Submission		70	27-Nov-14	23-Feb-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
Temp Pre-Cast Reinforced Box for TBM Segment Del in Curved Section		42	03-Dec-14	23-Jan-15
DDA Submission		42	03-Dec-14	23-Jan-15
FL2022229	Preparation for formal submission to ER/ICE/IP	42	03-Dec-14	23-Jan-15

REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.10	20/10/2014	RAN	RBS/SJO	DAL

MAIN CONTRACTOR: 香港寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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

THE ENGINEER: AECOM

CONTRACTOR'S DESIGNER: ATKINS

PROJECT: Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

TITLE: 3-Months Rolling Programme

DOCUMENT NO.		
LTH/DHK/PGR/PW/PLP/00016/A		
DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20/10/2014	A
PAPER SIZE	SCALE	PAGE
A3	N/A	8 of 10

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
Confinement Pressure Report		75	14-Oct-14	29-Jan-15
DDA Submission		75	14-Oct-14	29-Jan-15
FL2022233	Preparation for formal submission to ER/ICE/IP	42	14-Oct-14	01-Dec-14
FL2022234	IPs'/ ER's Review	28	02-Dec-14	06-Jan-15
FL2022235	Preparation for resubmission to ER/ICE/IP with ICE Certification	20	07-Jan-15	29-Jan-15
CBAR North Tunnel (D&B Section)		84	22-Aug-14	18-Nov-14
A26030a2	ER/IP's Review	28	22-Aug-14	24-Sep-14
A26030a3	Preparation and Submission of CBAR -2nd Submission	21	25-Sep-14	21-Oct-14
A26030b	ER/IP's Review&Approval of CBAR	28	22-Oct-14	18-Nov-14
Construction Impact Assesment - North Portal & North D&B Tunnels		70	07-Jun-14	15-Aug-14
SC01115	*Final Report	70	07-Jun-14	15-Aug-14
Construction Impact Assesment - Bored Tunnel		62	21-Oct-14	27-Dec-14
FL21140	Draft Report	31	21-Oct-14	20-Nov-14
FL21175	*Final CIA Report	37	21-Nov-14	27-Dec-14
5.3 North Portal Method Statement Submission		208	04-Aug-14	12-May-15
North Portal: MS for Site Installation for TBM		69	22-Aug-14	24-Oct-14
N21550	Prepare Method Statement	24	22-Aug-14	19-Sep-14
N21560	Engineer's Review / Approval	28	20-Sep-14	24-Oct-14
North Tunnel (D&B Section) Blasting Method Statement		101	03-Oct-14	24-Jan-15
FL2022109	Preparation and Submission of Blasting Method Statement	70	03-Oct-14	23-Dec-14
FL2022110	Engineer's/IP's Review & Approval	60	13-Nov-14	24-Jan-15
North Portal: MS for TBM On-Site Assembly		92	27-Oct-14	14-Feb-15
FL4875	Prepare & Submit Method Statement	24	27-Oct-14	22-Nov-14
FL4880	ER's Comment for Method Statement	30	23-Nov-14	22-Dec-14
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
North Portal: MS forTBM Excavation		49	02-Dec-14	30-Jan-15
FL2875	Prepare & Submit Method Statement	24	02-Dec-14	31-Dec-14
FL2880	ER's Comment for Method Statement	30	01-Jan-15	30-Jan-15
North Portal: MS for TBM Launching		40	02-Dec-14	20-Jan-15
FL2022061	Prepare & Submit Method Statement	40	02-Dec-14	20-Jan-15
North Portal: MS for TBM Turn		24	14-Apr-15	12-May-15
FL3875	Prepare & Submit Method Statement	24	14-Apr-15	12-May-15
North Portal: MS for Temp.CLP Substation		54	04-Aug-14	06-Oct-14
N21020	Prepare & Submit CLP Sub-station Proposal	24	04-Aug-14	30-Aug-14
N21030	CLP Review & Approval	28	01-Sep-14	06-Oct-14
5.5 North Portal Works		487	04-Feb-14	25-Jul-15
Engineer's Principal Site Office & Contractor's Site Office		100	05-Mar-14	08-Jul-14
N21355	Site Office Procurement & Erection	100	05-Mar-14	08-Jul-14
CLP Substation		263	04-May-14	14-Feb-15
N21059	Prepare & Submit CLP Sub-station Proposal + CLP's Approval	150	04-May-14	30-Sep-14
N21060	Sub-station Construction	110	07-Oct-14	14-Feb-15
North Portal: Strengthening Works for WSD Tunnel		18	08-Dec-14	30-Dec-14
DSN018310	Instrument Installation	18	08-Dec-14	30-Dec-14
North Portal: Site Establishment		102	04-Feb-14	14-Jun-14
N20530	Hoarding Erection & Site Installation	18	04-Feb-14	24-Feb-14
N20560a1	Haul Road Widening	39	24-Apr-14	14-Jun-14
North Portal: Site Formation		397	29-Apr-14	25-Jul-15
N20495	Permanent Slope Formation for TBM Site Installation	150	29-Apr-14	07-Nov-14

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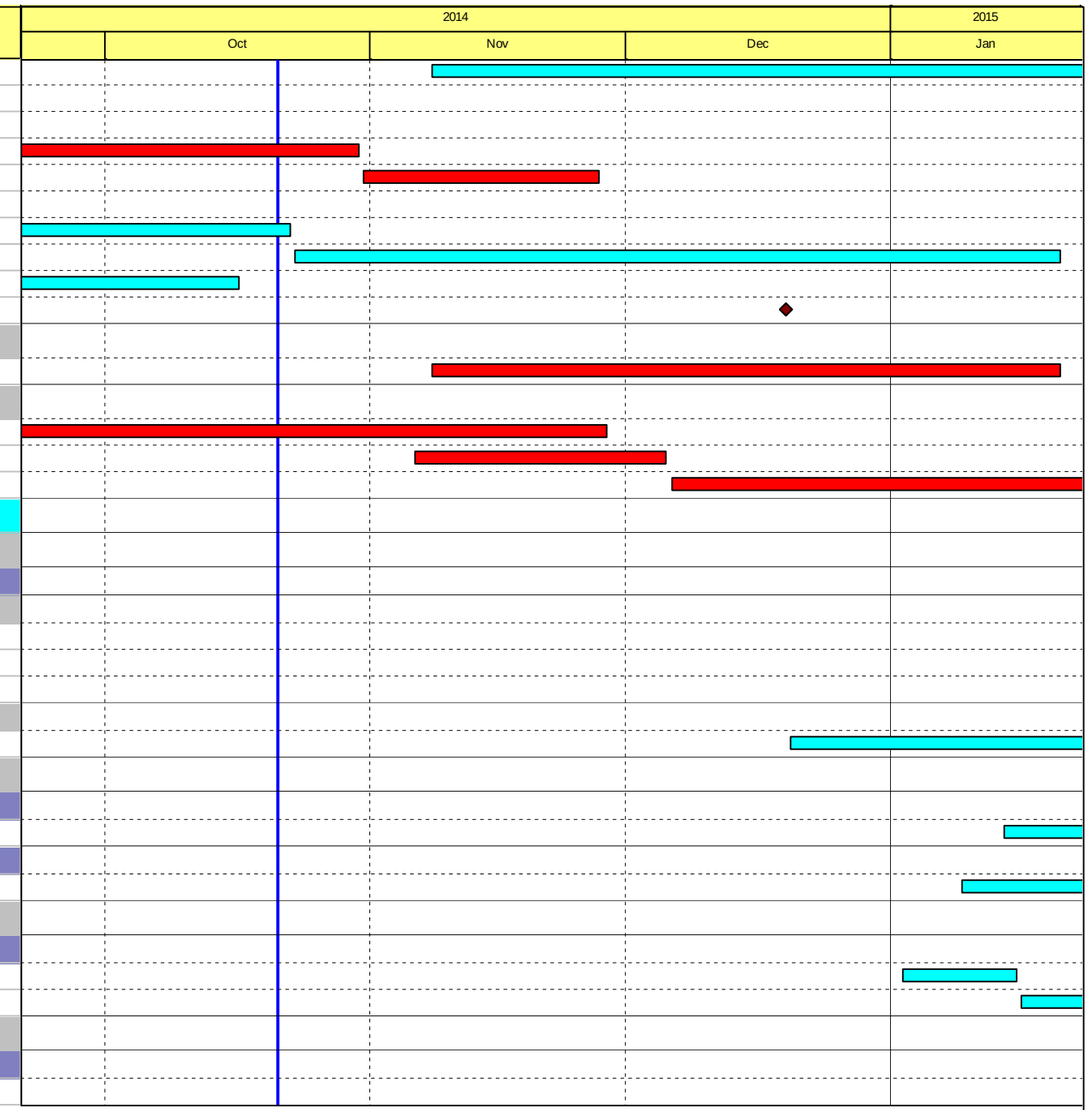
Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
N20505	Permanent Slope Formation (Remaining)	200	08-Nov-14	25-Jul-15
N20515	SB: Stage 1 Open Cut to +30mPD	22	19-Jun-14	17-Jul-14
N20525	SB: Stage 2 Cut Slope w/Temp.Soil Nails from +30mPD to +20mPD	30	18-Jul-14	25-Aug-14
N20535	SB: Vent.Bldg.Bored Piling at +20mPD	46	04-Sep-14	30-Oct-14
N20545	SB: Stage 3 Cut Slope from +20mPD to +12.50mPD w/3 rowsSoil Nail	24	31-Oct-14	27-Nov-14
N20615	NB: Stage 1 Cut Slope to + 38mPD	40	18-Jul-14	06-Sep-14
N20625	NB: Pre-bored H Piles [Retaining Wall]	36	08-Sep-14	22-Oct-14
N20635	NB: Stage 2 Excavation from +38mPD to +18mPD w/10 rows Soil Nail	74	23-Oct-14	20-Jan-15
N20695	Site Clearance for CR6A	96	16-Jun-14	16-Oct-14
N21562	KD-12 Stage IV Completion of site clearance in Portions CR5A, CR6A and TA-1	0		19-Dec-14
North Portal: Site Installation for TBM		60	08-Nov-14	20-Jan-15
SC01310	Site Installation and Logistics for TBM Works	60	08-Nov-14	20-Jan-15
Southbound Tunnel (Mined Excavation) inc Enlargement		120	26-Aug-14	02-Mar-15
DB6370a	Top Heading Excavation (Canopies) (Ch6,450>Ch6,415) (35m) [P21: 4850 to 4815]	80	26-Aug-14	28-Nov-14
DB6370b	Blast door installation + Noise Measurement and 24Hr permit approval	30	06-Nov-14	05-Dec-14
DB6370c	Top Heading Excavation (Canopies) (Ch6,415>Ch6,355) (60m) [P21: 4815 to 4755]	72	06-Dec-14	02-Mar-15
5.6 Adminstration Building		289	23-May-14	04-May-15
5.62 Adminstration Building: Design Submission		289	23-May-14	02-Feb-15
Admin. Building - Foundation Design		289	23-May-14	02-Feb-15
AIP Submission		152	23-May-14	15-Aug-14
DSN015060	IPs'/ ER's Review	24	23-May-14	20-Jun-14
DSN015080	Preparation for resubmission to ER/ICE/IP with ICE Certification	19	21-Jun-14	14-Jul-14
DSN015180	ER/IP's Approval	28	15-Jul-14	15-Aug-14
DDA Submission		35	20-Dec-14	02-Feb-15
DSN29107	Preparation for formal submission to ER/ICE/IP	35	20-Dec-14	02-Feb-15
5.63 Adminstration Building: Method Statement Submission		28	09-Jan-15	10-Feb-15
Method Statement for Admin.Building Construction		24	14-Jan-15	10-Feb-15
A1990	Prepare Method Statement for Adminstration Building Construction	24	14-Jan-15	10-Feb-15
MS for Adminstration Building: Demolition		24	09-Jan-15	05-Feb-15
SV2905	Prepare & Submit Demolition Plan & Method Statement	24	09-Jan-15	05-Feb-15
5.64 Adminstration Building: General Submission		24	02-Jan-15	29-Jan-15
Adminstration Building: Egress/Ingress		24	02-Jan-15	29-Jan-15
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
5.65 Adminstration Building: Works		24	31-Mar-15	04-May-15
Adminstration Building: Site Formation		24	31-Mar-15	04-May-15
AD2000	Site Hoarding	24	31-Mar-15	04-May-15



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MAIN CONTRACTOR: 香寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF
3-Month Rolling Programme 2014-10-21						
Key Dates (Contractual)						
KD-0010	Commencement of Works	0	0	31-Jul-13 A		
Dependent Milestones from Other Contracts						
MS-0100	Completion of Temporary Vehicular Bridge by C2 Contractor	0	0		31-Dec-14*	-99
Major Milestones and Events						
MS-2000A1	T1a: TTA to shift FLHS SB eastward to the widened pavement (shift 1st lanes)	2	2	01-Nov-14*	02-Nov-14	7
MS-2000A2	T1b: TTA to shift FLHS SB eastward to the widened pavement (shift 2nd lanes)	2	2	06-Dec-14*	07-Dec-14	7
MS-2000A3	T1c: TTA to shift FLHS SB eastward to the widened pavement (shift 3rd lanes)	2	2	10-Jan-15*	11-Jan-15	7
Major Procurement & Delivery						
Water Supply Pipeworks						
MM-1050	DN450 DI pipe and pipe fittings	60	7	21-Jun-14 A	28-Oct-14	174
MM-1060	E&M equipment for the re-provisioned WSD Valve Control House	60	60	21-Oct-14	31-Dec-14	5
Precast Bridge Segment Lifting Frames and Precast Yard						
MM-2020	Procurement and fabrication of lifting frame	105	0	05-May-14 A	27-Sep-14 A	
MM-2040	Deliver to Site and assembly works	44	27	28-Sep-14 A	20-Nov-14	30
MM-2050	Certification of lifting frame	6	6	21-Nov-14	27-Nov-14	30
Design and Submissions						
Statutory Approval						
PRE-1040	Submission & approval of temporary works on nullah for construction of pad footing of Bridge E - DSD	40	7	11-Sep-14 A	28-Oct-14	29
PRE-1220	Consent for construction of noise barrier (NB1a) within WSD Tau Pass Restricted Zone - WSD	45	7	09-Apr-14 A	28-Oct-14	31
PRE-1500	Confirmation of Noise Barrier Footing Design for NB71 (CH7150 to CH7290)	70	14	17-Apr-14 A	05-Nov-14	1412
PRE-1260	Approval of Water Mains Alignment beside Fanling Highway (CH7380-7925) (incl. Twin DN1400, DN1200, DN600, DN2300) - WSD	45	14	19-Mar-14 A	05-Nov-14	152
PRE-1230B	Consent for installation of bored pile within 30m from WSD Tau Pass Restricted Zone -WSD	90	36	15-Jan-14 A	01-Dec-14	12
PRE-1210	Consent for Dong Jiang watermians connection for DN1400 - WSD	0	0		02-Jan-15*	0
Method Statement and Design (Major) Approved by AECOM						
PRE-2020	Submission of noise barrier design for absorptive panels, transparent panels and associated fixing details	60	30	11-Mar-14 A	24-Nov-14	181
Contractor's Alternative Design (AD) Submission & Approval						
PRE-4290	Portal Beam Design Package 2 (AD3)	5	0	23-Aug-14 A	30-Sep-14 A	

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

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- Project Baseline Bar

CEDD Contract No. CV/2012/09

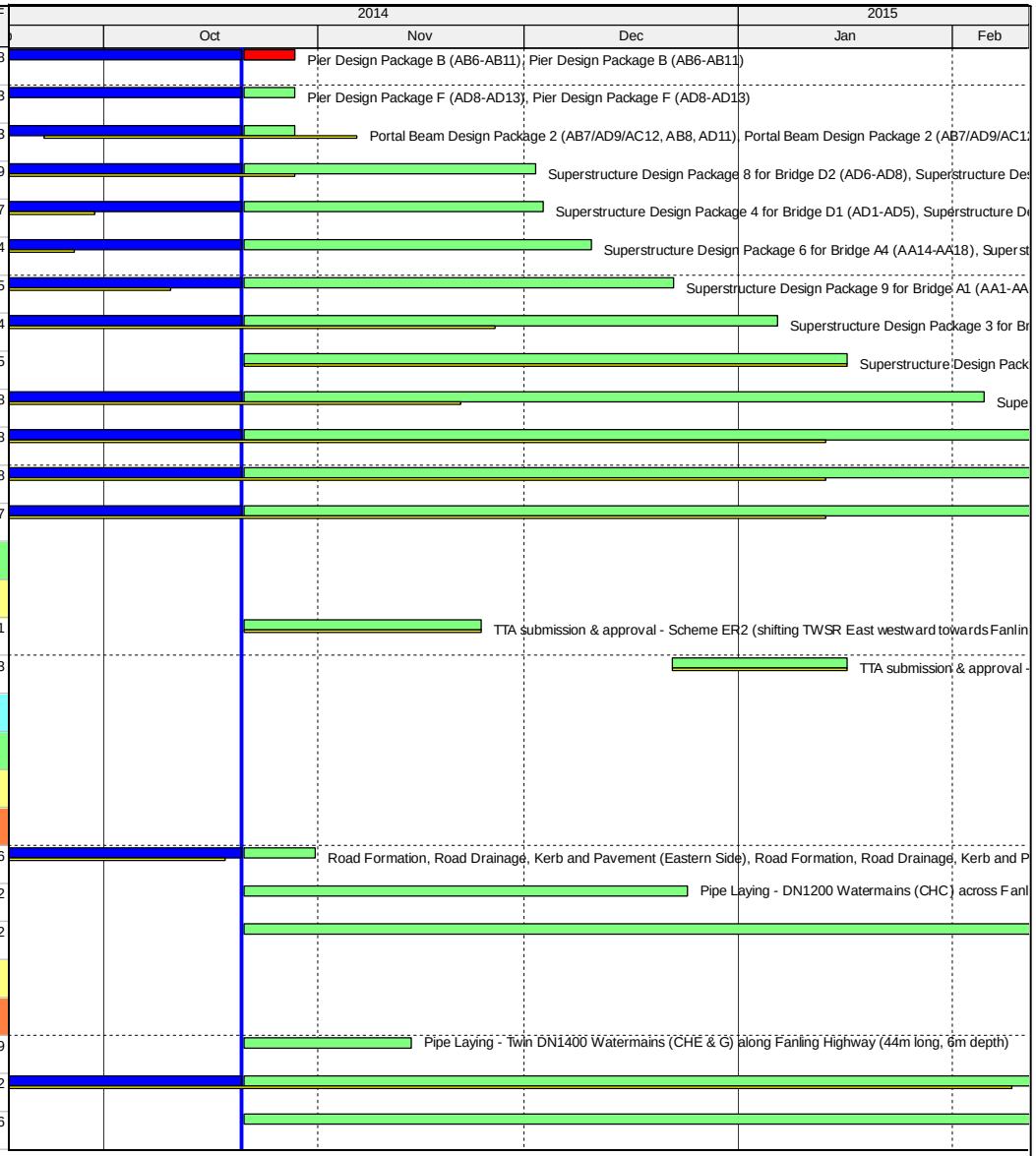
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3-Month Rolling Programme updated to 2014-10-21

Date	Revision	Checked	Approved
23-Oct-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
PRE-4220	Pier Design Package B (AB6-AB11)	43	7	28-Nov-13 A	28-Oct-14	-28
PRE-4260	Pier Design Package F (AD8-AD13)	50	7	20-Jan-14 A	28-Oct-14	23
PRE-4280	Portal Beam Design Package 2 (AB7/AD9/AC12, AB8, AD11)	38	7	23-Aug-14 A	28-Oct-14	3
PRE-4340B	Superstructure Design Package 8 for Bridge D2 (AD6-AD8)	56	37	30-Jul-14 A	02-Dec-14	239
PRE-4340A	Superstructure Design Package 4 for Bridge D1 (AD1-AD5)	110	38	07-May-14 A	03-Dec-14	177
PRE-4310D	Superstructure Design Package 6 for Bridge A4 (AA14-AA18)	108	44	16-May-14 A	10-Dec-14	104
PRE-4310A	Superstructure Design Package 9 for Bridge A1 (AA1-AA5)	118	54	16-May-14 A	22-Dec-14	355
PRE-4310C	Superstructure Design Package 3 for Bridge A3 (AA10-AA13)	158	64	04-Apr-14 A	06-Jan-15	94
PRE-4320A	Superstructure Design Package 11 for Bridge B1 (AB1-AB6)	73	73	21-Oct-14*	16-Jan-15	325
PRE-4310B	Superstructure Design Package 10 for Bridge A2 (AA6-AA9)	154	90	16-May-14 A	05-Feb-15	458
PRE-4330A	Superstructure Design Package 2 for Bridge C1 (AC1-AC5)	196	96	28-Mar-14 A	12-Feb-15	98
PRE-4320B	Superstructure Design Package 7 for Bridge B2 (AB7-AB12)	196	96	21-May-14 A	12-Feb-15	8
PRE-4340C	Superstructure Design Package 5 for Bridge D3 (AD9-AD14)	196	96	07-May-14 A	12-Feb-15	37
Temporary Traffic Arrangement (TTA) Submission and Approval						
TTA for Tai Wo Service Road East						
PRE-6220	TTA submission & approval - Scheme ER2 (shifting TWSR East westward towards Fanling Highway for pipe laying works)	30	30	21-Oct-14*	24-Nov-14	71
PRE-6210	TTA submission & approval - Scheme ER1 (shifting TWSR East to Access Road A)	20	20	22-Dec-14*	16-Jan-15	1353
Section IA & IB - Fanling Highway Widening (KD-1 & KD-2)						
Fanling Highway South Portion between CH6935 and CH7470						
Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZ2)						
At-Grade Roadworks (195m)						
FHW-1160	Road Formation, Road Drainage, Kerb and Pavement (Eastern Side)	48	10	31-Jul-14 A	31-Oct-14	6
FHW-1110*	Pipe Laying - DN1200 Watermains (CHC) across Fanling Highway (total 80m for 2 shafts)	275	56	09-Jun-14 A	24-Dec-14	722
FHW-1150*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	176	20-Feb-14 A	30-May-15	722
Fanling Highway Zone 2 between CH7130 and CH7290						
At-Grade Roadworks (160m)						
FHW-2120*	Pipe Laying - Twin DN1400 Watermains (CHE & G) along Fanling Highway (44m long, 6m depth)	85	22	09-Jul-14 A	14-Nov-14	299
FHW-2110B	Noise Barrier NB71 - Footing adjacent to SB lane (96m) (affected due to design change)	128	154	26-Jul-14 A	04-May-15	102
FHW-2130*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)	95	249	26-May-14 A	26-Aug-15	486



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

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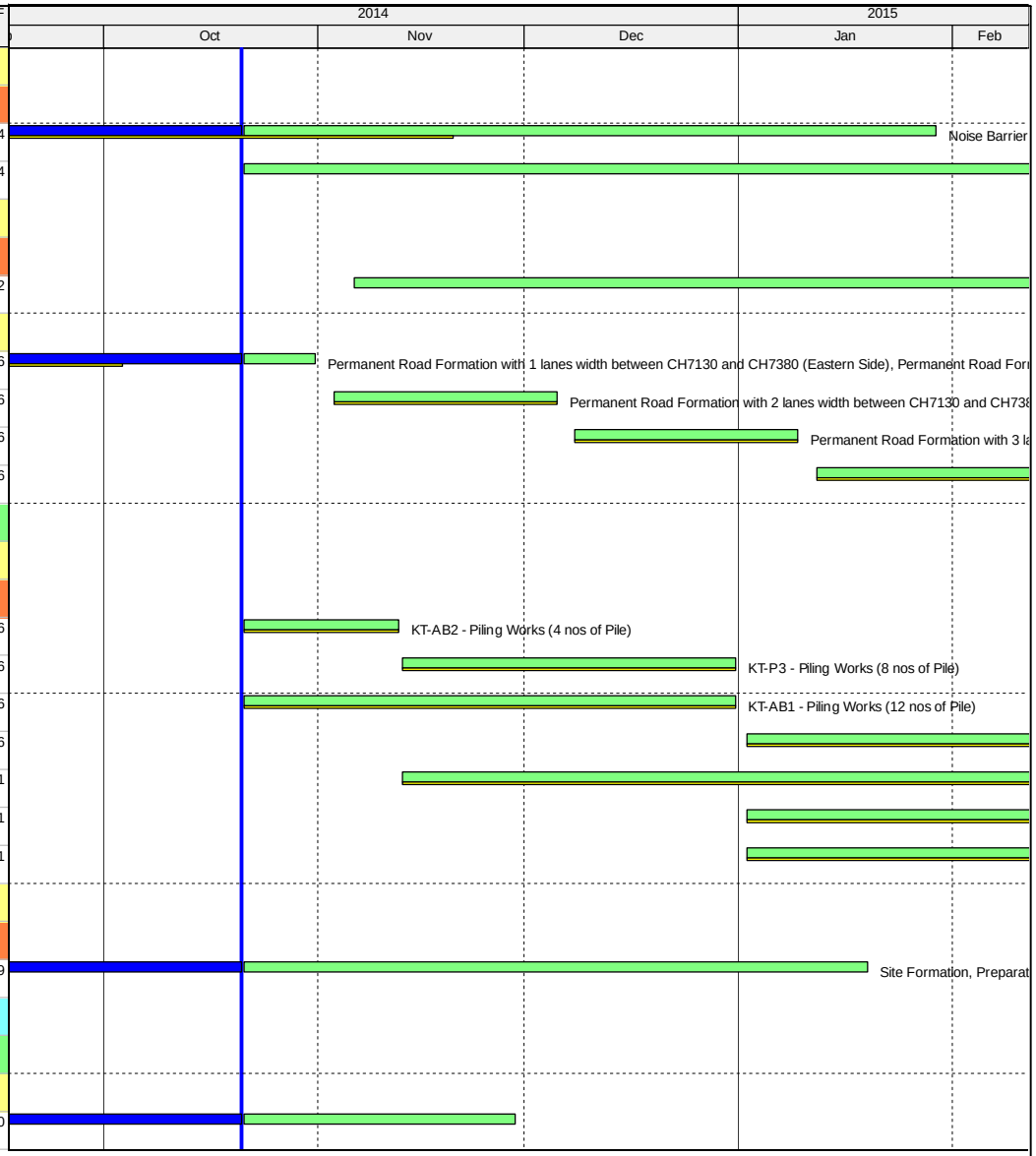
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3-Month Rolling Programme updated to 2014-10-21

Date	Revision	Checked	Approved
23-Oct-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
	Fanling Highway Zone 3 between CH7290 and CH7380					
	At-Grade Roadworks (130m)					
FHW-3130	Noise Barrier NB71 - Footing adjacent to SB lane (130m) Including pile cap	109	84	23-May-14 A	29-Jan-15	144
FHW-3150*	Pipe Laying - DN600, DN1200 Watermains (CHB &CHC) along Fanling Highway (90m long, 3m depth)	150	429	07-Jun-14 A	11-Apr-16	414
	Fanling Highway Zone 4 between CH7380 and CH7470					
	At-Grade Roadworks (90m)					
FHW-4120*	Pipe Laying - Twin DN1400 Watermains (CHE & CHG) along Fanling Highway (90m long, 3m depth)	155	155	06-Nov-14	21-May-15	152
	Miscellaneous Works for Facilitating Traffic Diversion of Fanling Highway					
FHW-M-1010	Permanent Road Formation with 1 lanes width between CH7130 and CH7380 (Eastern Side)	62	10	13-Jul-14 A	31-Oct-14	6
FHW-M-1020	Permanent Road Formation with 2 lanes width between CH7130 and CH7380 (Eastern Side)	29	29	03-Nov-14	05-Dec-14	6
FHW-M-1030	Permanent Road Formation with 3 lanes width between CH7130 and CH7380 (Eastern Side)	26	26	08-Dec-14	09-Jan-15	6
FHW-M-1000	Demolition of Central Barrier & Make Good of Road Pavement for further Traffic Diversion	30	30	12-Jan-15	14-Feb-15	6
	Fanling Highway North Portion between CH7470 and CH7925					
	Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)					
	Kiu Tau Footbridge Reprovision (East)					
FHW-5000B	KT-AB2 - Piling Works (4 nos of Pile)	20	20	21-Oct-14	12-Nov-14	96
FHW-5000D	KT-P3 - Piling Works (8 nos of Pile)	40	40	13-Nov-14	31-Dec-14	96
FHW-5000A	KT-AB1 - Piling Works (12 nos of Pile)	60	60	21-Oct-14	31-Dec-14	96
FHW-5000E	KT-P4 - Piling Works (8 nos of Pile)	40	40	02-Jan-15	17-Feb-15	96
FHW-5010B	KT-AB2 - Pile Cap & Abutment	105	105	13-Nov-14	25-Mar-15	291
FHW-5010D	KT-P3 - Pile Cap & Pier	75	75	02-Jan-15	10-Apr-15	281
FHW-5010A	KT-AB1 - Pile Cap & Abutment	105	105	02-Jan-15	16-May-15	251
	Fanling Highway Zone 7 between CH7660 and CH7925					
	At-Grade Roadworks (265m)					
FHW-7100	Site Formation, Preparation Works & Tree Transplant	127	75	30-Aug-13 A	19-Jan-15	309
	Section II - Remainder of the Works (KD-3)					
	WSD Works					
	DN600 Water Mains (CHB)					
WB-1000	Pipe Laying - CHB 0 - 153 (DN600) near Fanling Highway S/B (FHW: CH7130-7290), 153m long (common trench with NB)	95	35	26-May-14 A	29-Nov-14	700



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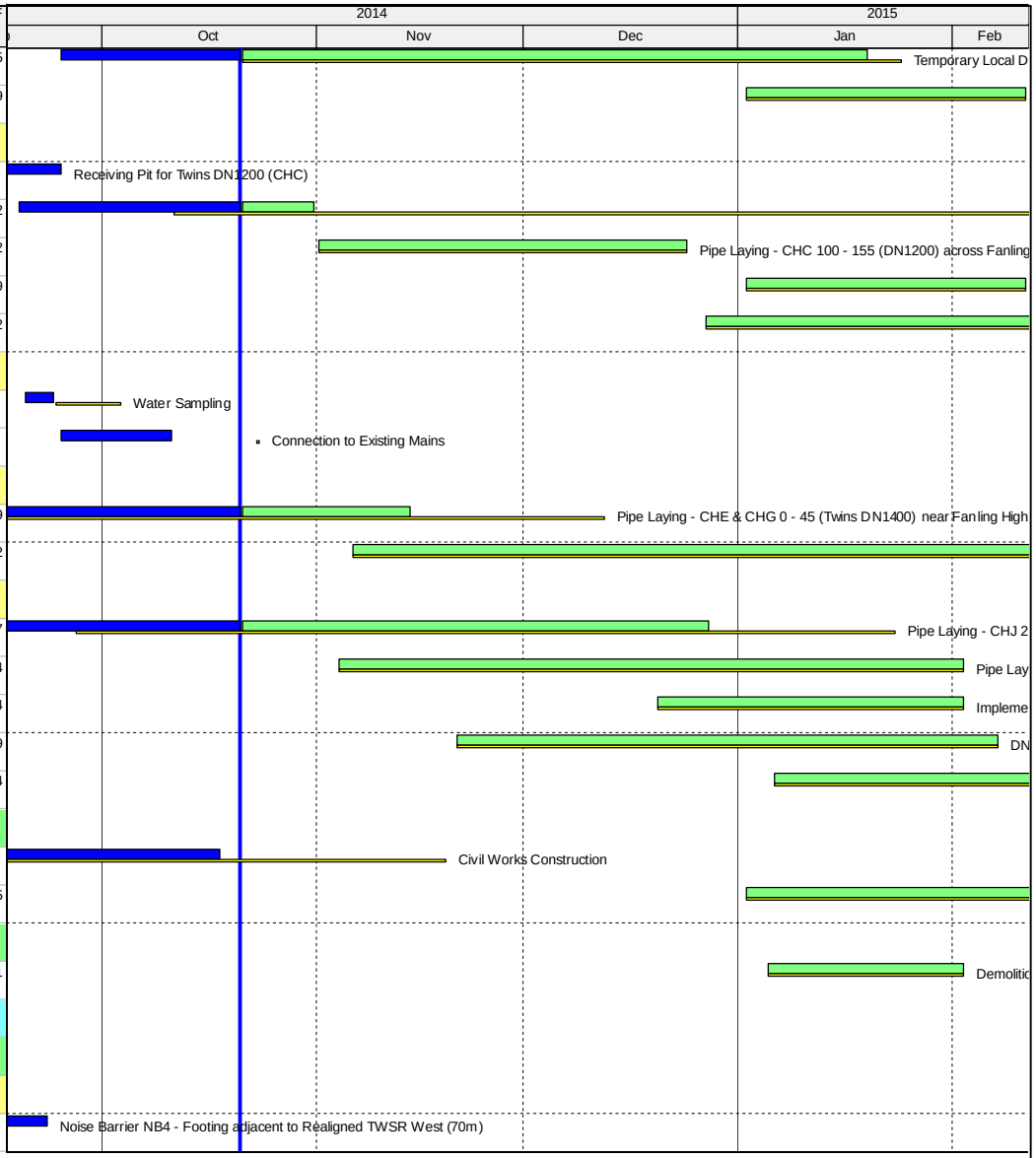
Activity ID	Activity Name	OD	RD	Start	Finish	TF
WB-0100	Temporary Local Diversion for DN600 near Abutment AD1	80	75	25-Sep-14 A	19-Jan-15	565
WB-1080	Pipe Laying - CHB 700 - 756 (DN600) near Realigned TWSR East (along Roundabout), 56m long & GL	35	35	02-Jan-15*	11-Feb-15	19
DN1200 Water Mains (CHC)						
WC-1040	Receiving Pit for Twins DN1200 (CHC)	50	0	09-Jun-14 A	25-Sep-14 A	
WC-1030A	Excavation - CHC 100 - 155 (DN1200) across Fanling Highway by Trenchless Method, 110m long for 2 shafts	169	10	19-Sep-14 A	31-Oct-14	722
WC-1030B	Pipe Laying - CHC 100 - 155 (DN1200) across Fanling Highway & associated Grouting Works	46	46	01-Nov-14	24-Dec-14	722
WC-1140	Pipe Laying - CHC 980 - 1030 (DN1200) near Realigned TWSR East (along Roundabout), 50m long & GL	35	35	02-Jan-15*	11-Feb-15	19
WC-1050A	Pipe Laying - CHC 155 - 235 (DN1200) near Fanling Highway S/B (FHW: CH6935-7130), 50m long, 4m depth	120	120	27-Dec-14	30-May-15	722
DN1400 Water Mains (CHD)						
WD-2020	Water Sampling	7	0	20-Sep-14 A	24-Sep-14 A	
WD-2030	Connection to Existing Mains	1	0	25-Sep-14 A	11-Oct-14 A	
Twin DN1400 Water Mains (CHE & CHG)						
WE-1000	Pipe Laying - CHE & CHG 0 - 45 (Twins DN1400) near Fanling Highway S/B (FHW: CH7130-7290), 45m long & 6m depth	85	22	09-Jul-14 A	14-Nov-14	299
WE-1020	Pipe Laying - CHE & CHG 135 - 225 (Twins DN1400) near Fanling Highway S/B (FHW: CH7380-7470), 90m long & 3m depth	155	155	06-Nov-14	21-May-15	152
DN2300 Water Mains and Leakage Collection System (CHJ & CHKA/CHK)						
WJ-1050	Pipe Laying - CHJ 200 - 292 (DN2300) near Realigned TWSR East (along Access Road A), 92m long & GL	97	57	01-Sep-14 A	27-Dec-14	57
WJ-1030	Pipe Laying - CHJ 100 - 170 (DN2300) near Realigned TWSR East, 70m long & 3m depth	75	75	04-Nov-14	02-Feb-15	14
WJ-1000	Implementation of TTA - Scheme EX2 (Shifting TWSRE toward newly formation area beside Fanling Highway)	35	35	20-Dec-14	02-Feb-15	14
WJ-1100	DN300 Washout at CHJ 212	65	65	21-Nov-14	07-Feb-15	149
WJ-1020B	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth	65	65	06-Jan-15	11-Mar-15	4
Kau Lung Hang Valve Control & Telemetry House Reprovision						
VCTH-1000	Civil Works Construction	75	0	15-Aug-14 A	18-Oct-14 A	
VCTH-1010	BS and E&M Works	90	90	02-Jan-15	28-Apr-15	5
Existing Nam Wa Po Trunk Sewage Pumping Station (PST3)						
PS-1000	Demolition of Existing Boundary Wall of Pumping Station (PST3)	25	25	05-Jan-15*	02-Feb-15	841
Stage 1A - Realignment of Tai Wo Service Road West (KD-7)						
TWSRW Zone 1 betweeen CH100 and CH155						
At-Grade Roadworks						
TWSRW-1120	Noise Barrier NB4 - Footing adjacent to Realigned TWSR West (70m)	85	0	12-Apr-14 A	23-Sep-14 A	



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

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CEDD Contract No. CV/2012/09

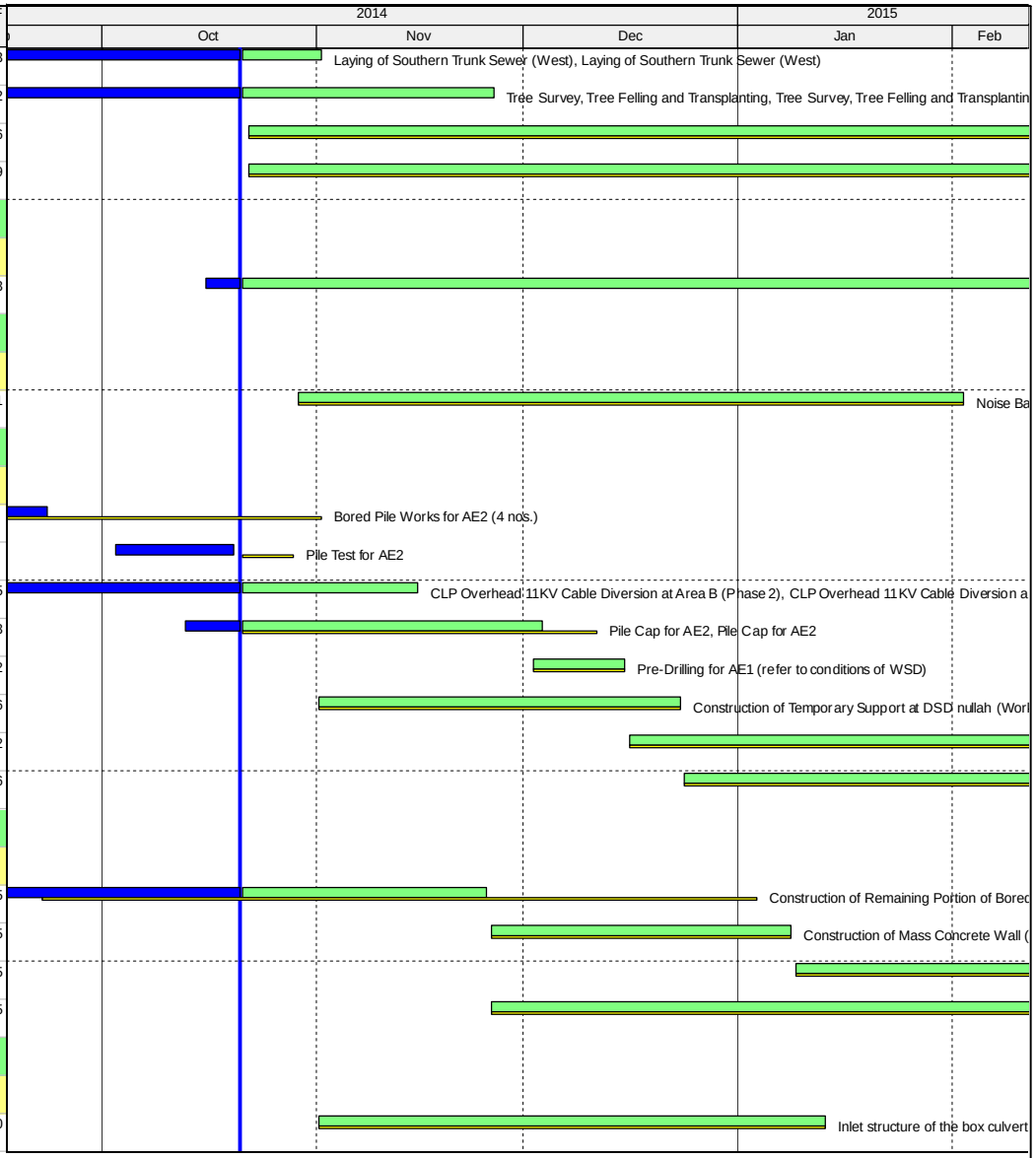
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3-Month Rolling Programme updated to 2014-10-21

Date	Revision	Checked	Approved
23-Oct-14	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
TWSRW-1130	Laying of Southern Trunk Sewer (West)	95	11	23-Apr-14 A	01-Nov-14	83
TWSRW-1100	Tree Survey, Tree Felling and Transplanting	81	32	16-Oct-13 A	26-Nov-14	72
TWSRW-1150	Installation of Cable Ducts for Utilities Diversion Works at Zone 1 & Zone 2 (Approx. 100m) (by utilities undertakers)	167	167	22-Oct-14*	06-Apr-15	96
TWSRW-1160	Road Formation, Road Drainage, Kerb, Planter & Pavement	286	286	22-Oct-14	12-Oct-15	79
TWSRW Zone 2 betweeen CH155 and CH280						
At-Grade Roadworks						
TWSRW-2120	Road Formation, Road Drainage, Kerb, Planter and Pavement	337	333	16-Oct-14 A	05-Dec-15	33
TWSRW Zone 3 betweeen CH280 and CH315						
At-Grade Roadworks						
TWSRW-3100	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (31m)	80	80	29-Oct-14	02-Feb-15	31
TWSRW Zone 4 betweeen CH315 and CH376						
Construction of Bridge E						
TWSRW-4030B	Bored Pile Works for AE2 (4 nos.)	60	0	25-Jul-14 A	23-Sep-14 A	
TWSRW-4040B	Pile Test for AE2	7	0	03-Oct-14 A	20-Oct-14 A	
TWSRW-4000B	CLP Overhead 11KV Cable Diversion at Area B (Phase 2)	140	23	04-Nov-13 A	15-Nov-14	25
TWSRW-4050B	Pile Cap for AE2	45	38	13-Oct-14 A	03-Dec-14	43
TWSRW-4010A	Pre-Drilling for AE1 (refer to conditions of WSD)	12	12	02-Dec-14*	15-Dec-14	12
TWSRW-4060	Construction of Temporary Support at DSD nullah (Work in dry season)	45	45	01-Nov-14	23-Dec-14	26
TWSRW-4030A	Bored Pile Works for AE1	65	65	16-Dec-14	11-Mar-15	12
TWSRW-4070	In-situ Casting for Bridge Segment (North Bay & Middle Bay)	110	110	24-Dec-14	16-May-15	26
TWSRW Zone 5 betweeen CH376 and CH520						
Construction of Retaining Structures						
TWSRW-5050D	Construction of Remaining Portion of Bored Pile Wall at formation level	85	31	02-Sep-14 A	25-Nov-14	25
TWSRW-5070	Construction of Mass Concrete Wall (FL/RW4)	35	35	26-Nov-14	08-Jan-15	35
TWSRW-5080	Slope Work incl. 53 nos. Soil Nail for 3SW-C/C898 & 3SW-D/C29	90	90	09-Jan-15	06-May-15	35
TWSRW-5090	Lagging Wall Construction and Capping Beam	135	135	26-Nov-14	18-May-15	25
TWSRW Zone 6 betweeen CH520 and CH530						
Box Culvert Extension - BC01						
TWSRW-6070	Inlet structure of the box culvert BC01	60	60	01-Nov-14*	13-Jan-15*	60



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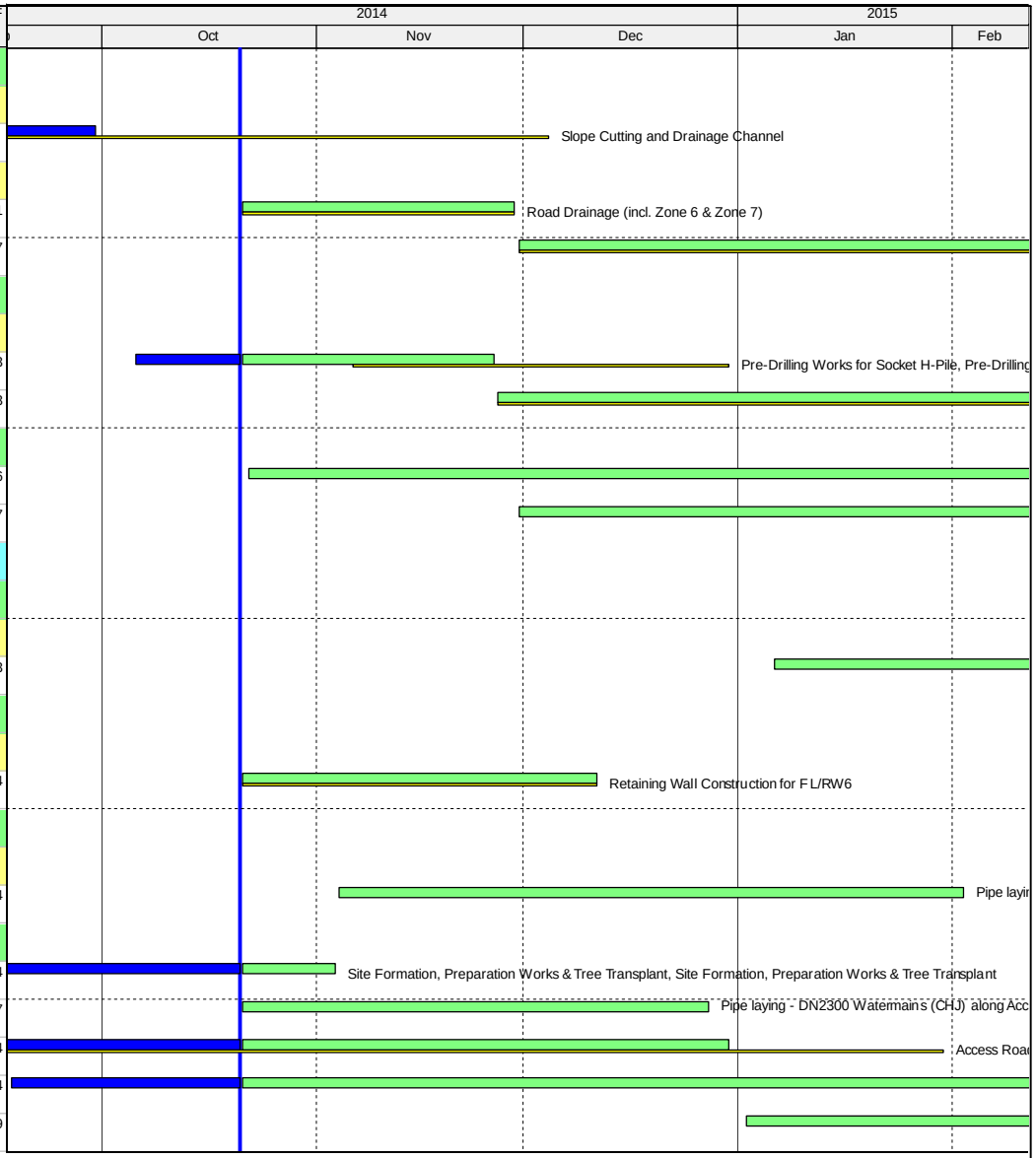
Activity ID	Activity Name	OD	RD	Start	Finish	TF
	TWSRW Zone 7 betweeen CH530 and CH640					
	Construction of Retaining Structures					
TWSRW-7010	Slope Cutting and Drainage Channel	235	0	06-Dec-13 A	30-Sep-14 A	
	At-Grade Roadworks					
TWSRW-7130	Road Drainage (incl. Zone 6 & Zone 7)	35	35	21-Oct-14	29-Nov-14	21
TWSRW-7140	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)	251	251	30-Nov-14	07-Aug-15	27
	TWSRW Zone 8 betweeen CH640 and CH695					
	Kiu Tau Footbridge Reprovision (West)					
TWSRW-8000	Pre-Drilling Works for Socket H-Pile	45	32	06-Oct-14 A	26-Nov-14	13
TWSRW-8010	Installation of Socket H-Pile for Proposed Kiu Tau Footbridge (14 nos of Pile)	70	70	27-Nov-14	26-Feb-15	13
	Remainder of the Works					
TWSRW-9010*	Utilities Diversion in Area 1 (along Re-aligned TWSRW CH100 - CH280)	167	167	22-Oct-14	06-Apr-15	96
TWSRW-9040*	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)	251	251	30-Nov-14	07-Aug-15	27
	Stage N4A & N4B - Realignment of Tai Wo Service Road East (KD-13 & KD-14)					
	TWSRE Zone 1 between CH100 and CH270					
	At-Grade Roadworks					
TWSRE-1140*	Pipe laying - DN1400 Watermains (CHKA) along Realigned TWSR East	50	50	06-Jan-15	11-Mar-15	3
	TWSRE Zone 2 between CH270 and CH380					
	At-Grade Roadworks					
TWSRE-2020	Retaining Wall Construction for FL/RW6	45	45	21-Oct-14	11-Dec-14	4
	TWSRE Zone 3 between CH380 and CH456					
	At-Grade Roadworks					
TWSRE-3020B*	Pipe laying - DN2300 Watermains (CHJ) along Realigned TWSR East	75	75	04-Nov-14	02-Feb-15	14
	Roundabout A, Slip Road and Access Road					
TWSRE-4000	Site Formation, Preparation Works & Tree Transplant	65	12	15-Apr-14 A	03-Nov-14	14
TWSRE-4050B*	Pipe laying - DN2300 Watermains (CHJ) along Access Road A & Roundabout	91	57	20-Jun-14 A	27-Dec-14	57
TWSRE-4060	Access Road A - Road Formation, Road Drainage, Kerb, Planter and Pavement	134	59	18-Jul-14 A	30-Dec-14	114
TWSRE-4040	Slip Road Y (CH100-CH230) - Road Formation, Road Drainage, Kerb, Planter and Pavement	158	132	18-Sep-14 A	02-Apr-15	54
TWSRE-4050A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Access Road A & Roundabout	107	107	02-Jan-15	19-May-15	19



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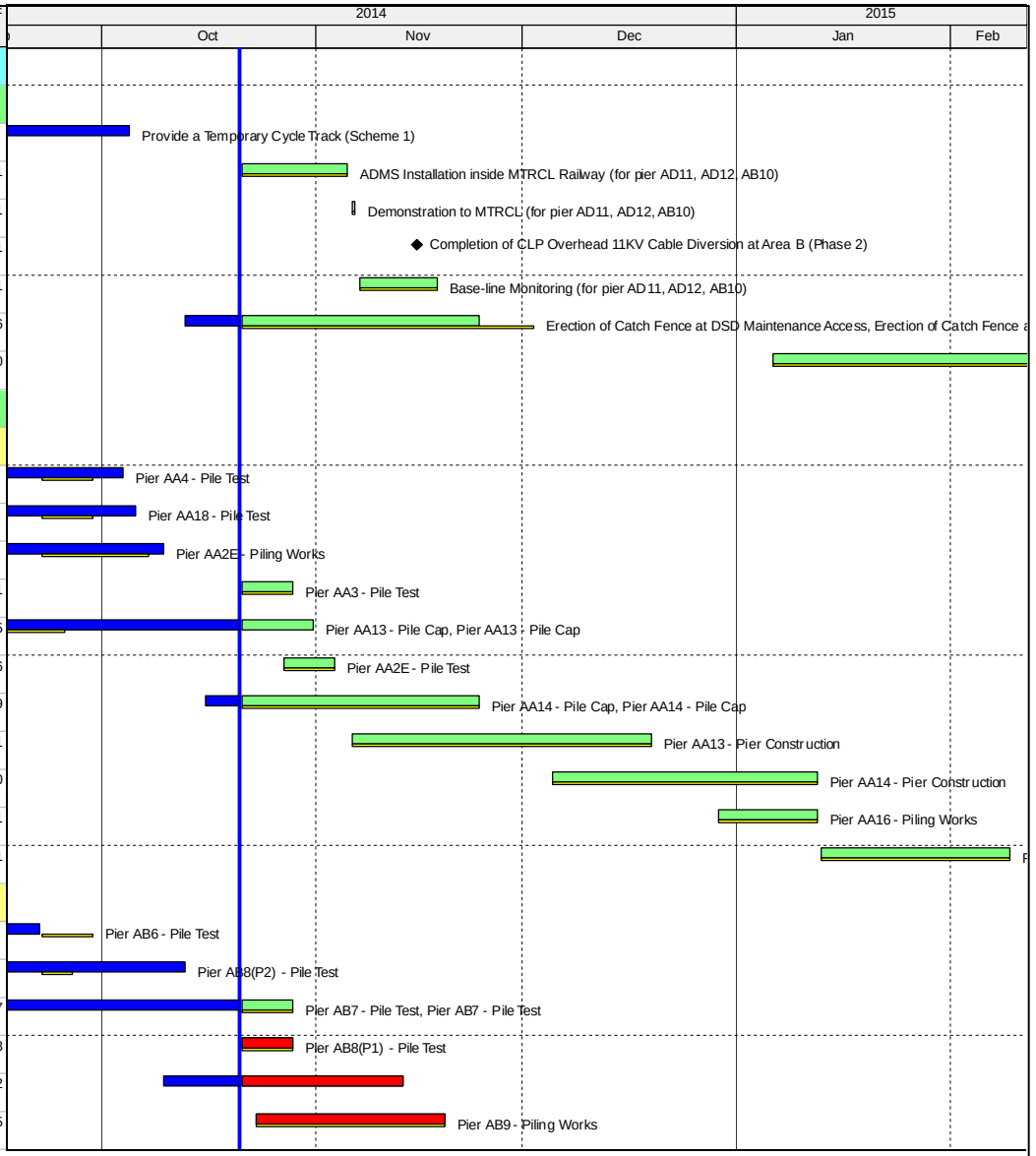
	Stage 1C - Viaduct Structure & TCSS Civil Provisions (KD-9)					
	Preliminaries					
B-5000	Provide a Temporary Cycle Track (Scheme 1)	27	0	22-May-14 A	05-Oct-14 A	
B-1000A	ADMS Installation inside MTRCL Railway (for pier AD11, AD12, AB10)	14	14	21-Oct-14*	05-Nov-14	21
B-1010A	Demonstration to MTRCL (for pier AD11, AD12, AB10)	1	1	06-Nov-14	06-Nov-14	21
B-2030	Completion of CLP Overhead 11KV Cable Diversion at Area B (Phase 2)	0	0		15-Nov-14	51
B-1020A	Base-line Monitoring (for pier AD11, AD12, AB10)	10	10	07-Nov-14	18-Nov-14	21
B-4020	Erection of Catch Fence at DSD Maintenance Access	37	30	13-Oct-14 A	24-Nov-14	16
B-9000	Trial Operation (AC8 - Early Start on 26 Nov 14)	60	60	06-Jan-15	23-Mar-15	0
	Foundation & Pier Construction					
	Bridge A					
BA-04-1010	Pier AA4 - Pile Test	7	0	30-Aug-14 A	04-Oct-14 A	
BA-18-1010	Pier AA18 - Pile Test	7	0	08-Sep-14 A	06-Oct-14 A	
BA-02-2000	Pier AA2E - Piling Works	12	0	17-Sep-14 A	10-Oct-14 A	
BA-03-1010	Pier AA3 - Pile Test	7	7	21-Oct-14	28-Oct-14	201
BA-13-1020	Pier AA13 - Pile Cap	30	10	13-Aug-14 A	31-Oct-14	25
BA-02-2010	Pier AA2E - Pile Test	7	7	27-Oct-14	03-Nov-14	226
BA-14-1020	Pier AA14 - Pile Cap	30	30	16-Oct-14 A	24-Nov-14	9
BA-13-1030	Pier AA13 - Pier Construction	38	38	06-Nov-14	19-Dec-14	21
BA-14-1030	Pier AA14 - Pier Construction	30	30	05-Dec-14	12-Jan-15	0
BA-16-1000	Pier AA16 - Piling Works	12	12	29-Dec-14	12-Jan-15	41
BA-10-1000	Pier AA10 - Piling Works	24	24	13-Jan-15	09-Feb-15	41
	Bridge B					
BB-06-1010	Pier AB6 - Pile Test	7	0	19-Jul-14 A	22-Sep-14 A	
BB-08-1010A	Pier AB8(P2) - Pile Test	5	0	04-Jul-14 A	13-Oct-14 A	
BB-07-1010	Pier AB7 - Pile Test	7	7	13-Sep-14 A	28-Oct-14	17
BB-08-1010B	Pier AB8(P1) - Pile Test	7	7	21-Oct-14	28-Oct-14	-58
BB-06-1020A	Pier AB6E - Pile Cap	30	21	10-Oct-14 A	13-Nov-14	-72
BB-09-1000	Pier AB9 - Piling Works	24	24	23-Oct-14*	19-Nov-14	-35



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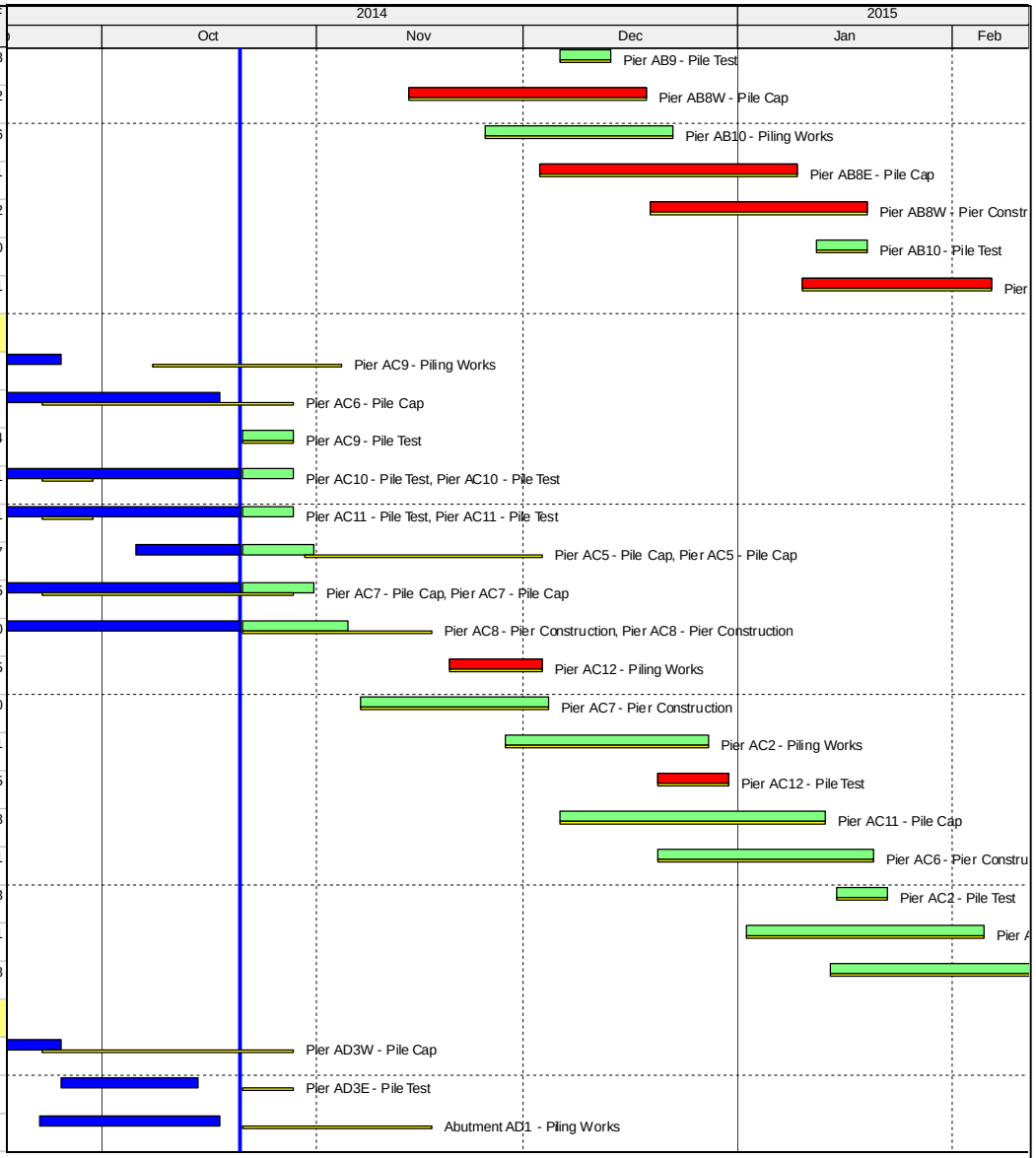
BB-09-1010	Pier AB9 - Pile Test	7	7	06-Dec-14	13-Dec-14	38
BB-08-1020B	Pier AB8W - Pile Cap	30	30	14-Nov-14	18-Dec-14	-72
BB-10-1000	Pier AB10 - Piling Works	24	24	25-Nov-14	22-Dec-14	16
BB-08-1020A	Pier AB8E - Pile Cap	30	30	03-Dec-14	09-Jan-15	-81
BB-08-1030	Pier AB8W - Pier Construction	24	24	19-Dec-14	19-Jan-15	-72
BB-10-1010	Pier AB10 - Pile Test	7	7	12-Jan-15	19-Jan-15	40
BB-08-1040	Pier AB8E - Pier Construction	24	24	10-Jan-15*	06-Feb-15	-81
Bridge C						
BC-09-1000	Pier AC9 - Piling Works	24	0	01-Sep-14 A	25-Sep-14 A	
BC-06-1020	Pier AC6 - Pile Cap	30	0	25-Aug-14 A	18-Oct-14 A	
BC-09-1010	Pier AC9 - Pile Test	7	7	21-Oct-14	28-Oct-14	84
BC-10-1010	Pier AC10 - Pile Test	7	7	13-Sep-14 A	28-Oct-14	141
BC-11-1010	Pier AC11 - Pile Test	7	7	30-Aug-14 A	28-Oct-14	111
BC-05-1020	Pier AC5 - Pile Cap	30	10	06-Oct-14 A	31-Oct-14	57
BC-07-1020	Pier AC7 - Pile Cap	30	10	05-Sep-14 A	31-Oct-14	5
BC-08-1030	Pier AC8 - Pier Construction	24	14	13-Sep-14 A	05-Nov-14	0
BC-12-1000	Pier AC12 - Piling Works	12	12	20-Nov-14	03-Dec-14	-35
BC-07-1030	Pier AC7 - Pier Construction	24	24	07-Nov-14	04-Dec-14	0
BC-02-1000	Pier AC2 - Piling Works	24	24	28-Nov-14	27-Dec-14	41
BC-12-1010	Pier AC12 - Pile Test	7	7	20-Dec-14	30-Dec-14	-35
BC-11-1020	Pier AC11 - Pile Cap	30	30	06-Dec-14	13-Jan-15	78
BC-06-1030	Pier AC6 - Pier Construction	24	24	20-Dec-14	20-Jan-15	21
BC-02-1010	Pier AC2 - Pile Test	7	7	15-Jan-15	22-Jan-15	43
BC-09-1020	Pier AC9 - Pile Cap	30	30	02-Jan-15	05-Feb-15	31
BC-10-1020	Pier AC10 - Pile Cap	30	30	14-Jan-15	17-Feb-15	78
Bridge D						
BD-03-1020B	Pier AD3W - Pile Cap	30	0	22-Aug-14 A	25-Sep-14 A	
BD-03-2010	Pier AD3E - Pile Test	7	0	25-Sep-14 A	15-Oct-14 A	
BD-01-1000	Abutment AD1 - Piling Works	24	0	22-Sep-14 A	18-Oct-14 A	



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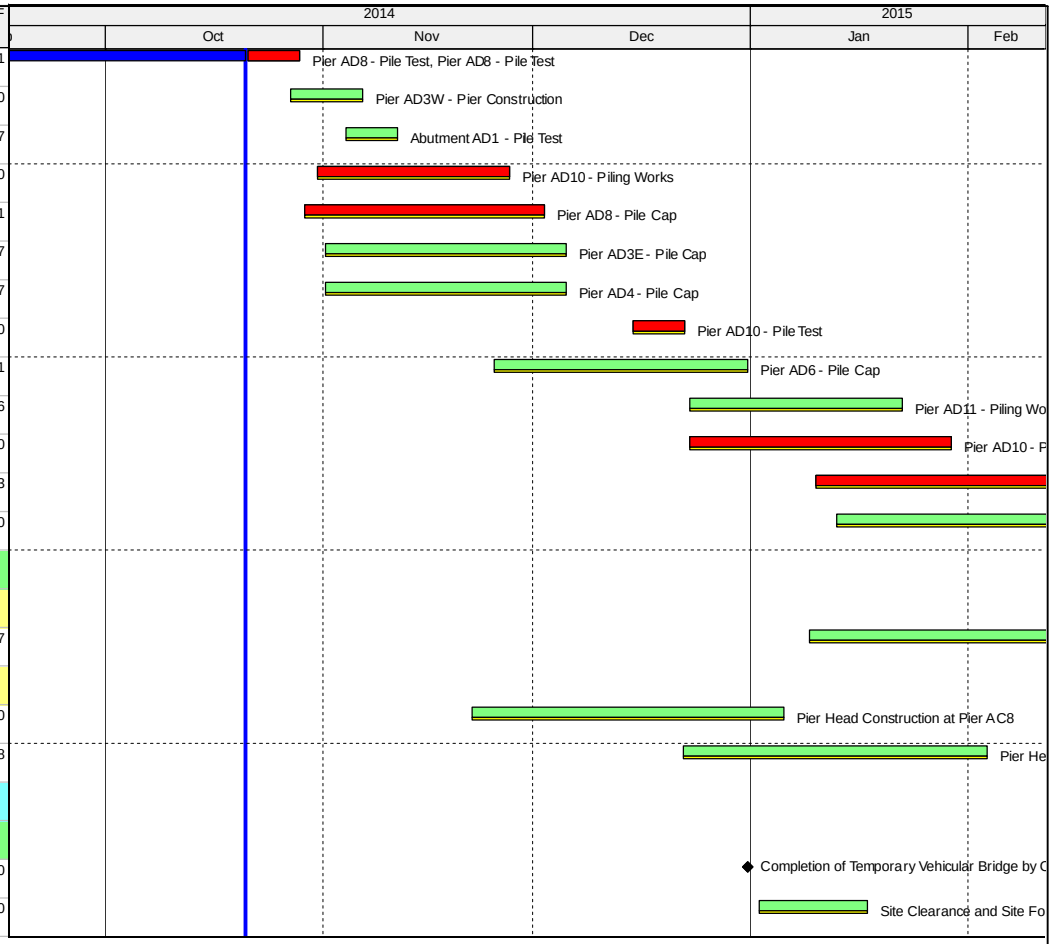
BD-08-1010	Pier AD8 - Pile Test	7	7	23-Aug-14 A	28-Oct-14	-81
BD-03-1030	Pier AD3W - Pier Construction	10	10	27-Oct-14*	06-Nov-14	0
BD-01-1010	Abutment AD1 - Pile Test	7	7	04-Nov-14	11-Nov-14	537
BD-10-1000	Pier AD10 - Piling Works	24	24	31-Oct-14*	27-Nov-14	-60
BD-08-1020	Pier AD8 - Pile Cap	30	30	29-Oct-14	02-Dec-14	-81
BD-03-1020A	Pier AD3E - Pile Cap	30	30	01-Nov-14	05-Dec-14	57
BD-04-1020	Pier AD4 - Pile Cap	30	30	01-Nov-14	05-Dec-14	67
BD-10-1010	Pier AD10 - Pile Test	7	7	15-Dec-14	22-Dec-14	-60
BD-06-1020	Pier AD6 - Pile Cap	30	30	25-Nov-14	31-Dec-14	31
BD-11-1000	Pier AD11 - Piling Works	24	24	23-Dec-14	22-Jan-15	16
BD-10-1020	Pier AD10 - Pile Cap	30	30	23-Dec-14	29-Jan-15	-60
BD-09-1020	Pier AD9 - Pile Cap	30	30	10-Jan-15	13-Feb-15	-73
BD-05-1030	Pier AD5 - Pier Construction (Twin Pier)	38	38	13-Jan-15	04-Mar-15	0
Pier Head Construction						
Bridge A						
PA-1130	Pier Head Construction at Pier AA13	35	35	09-Jan-15	18-Feb-15	57
Bridge C						
PC-1080	Pier Head Construction at Pier AC8	35	35	22-Nov-14	05-Jan-15	0
PC-1070	Pier Head Construction at Pier AC7	35	35	22-Dec-14	03-Feb-15	48
Section VI - Works in Portion FH9 (KD-6A)						
Preliminary Preparation Works						
S6-1000	Completion of Temporary Vehicular Bridge by C2 Contractor	0	0		31-Dec-14	20
S6-1020	Site Clearance and Site Formation	14	14	02-Jan-15	17-Jan-15	20



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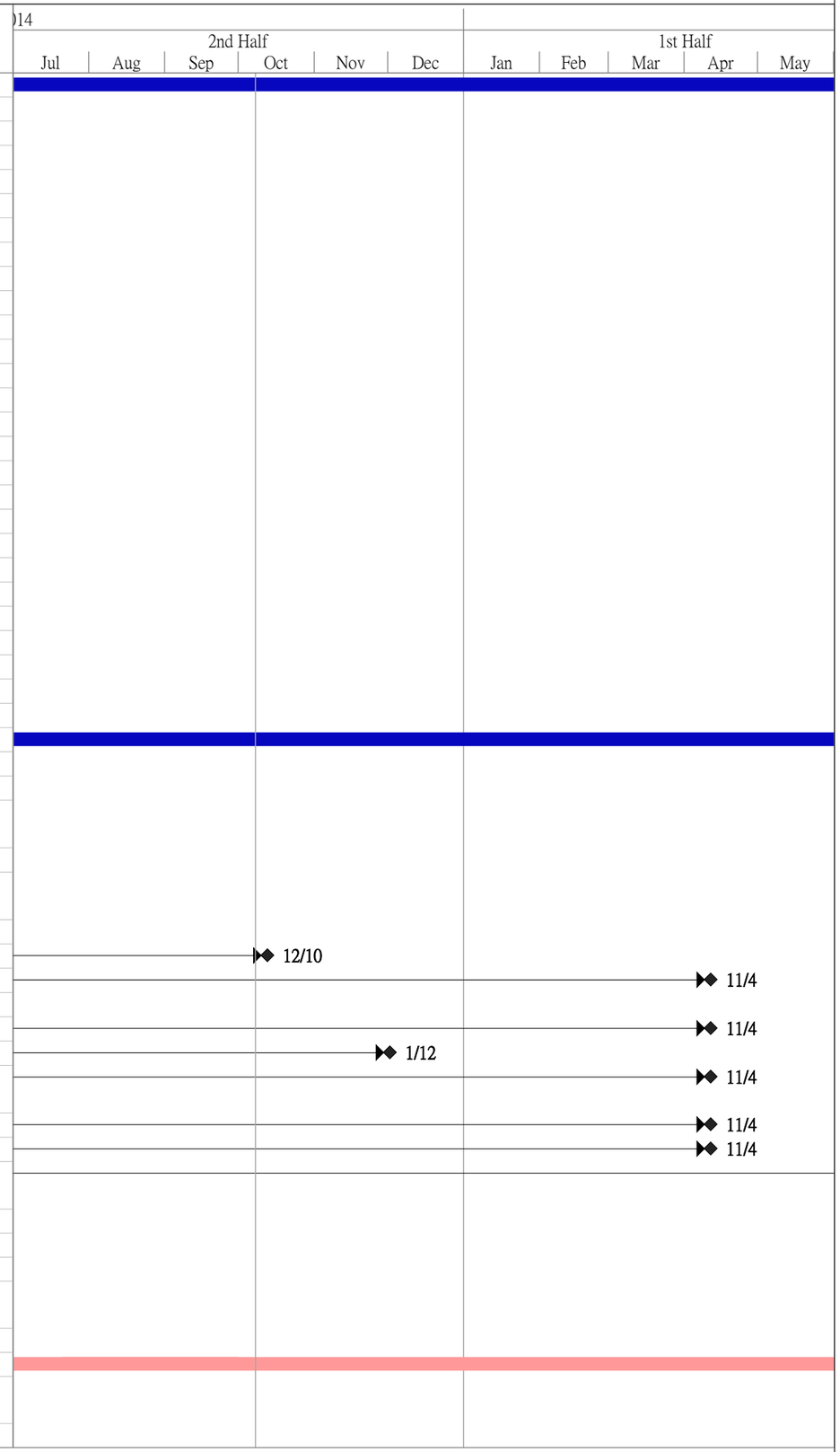
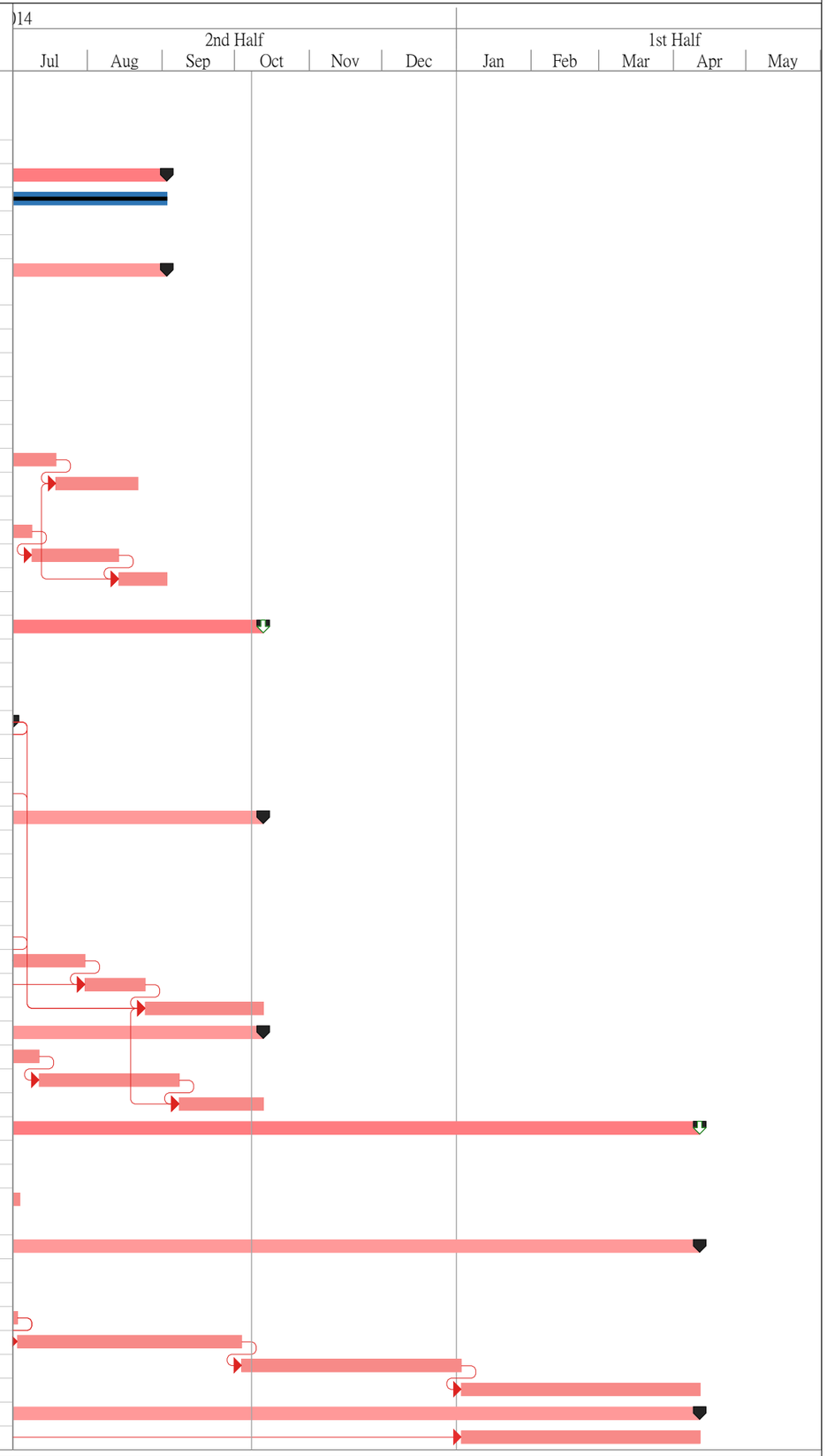
Contract 5

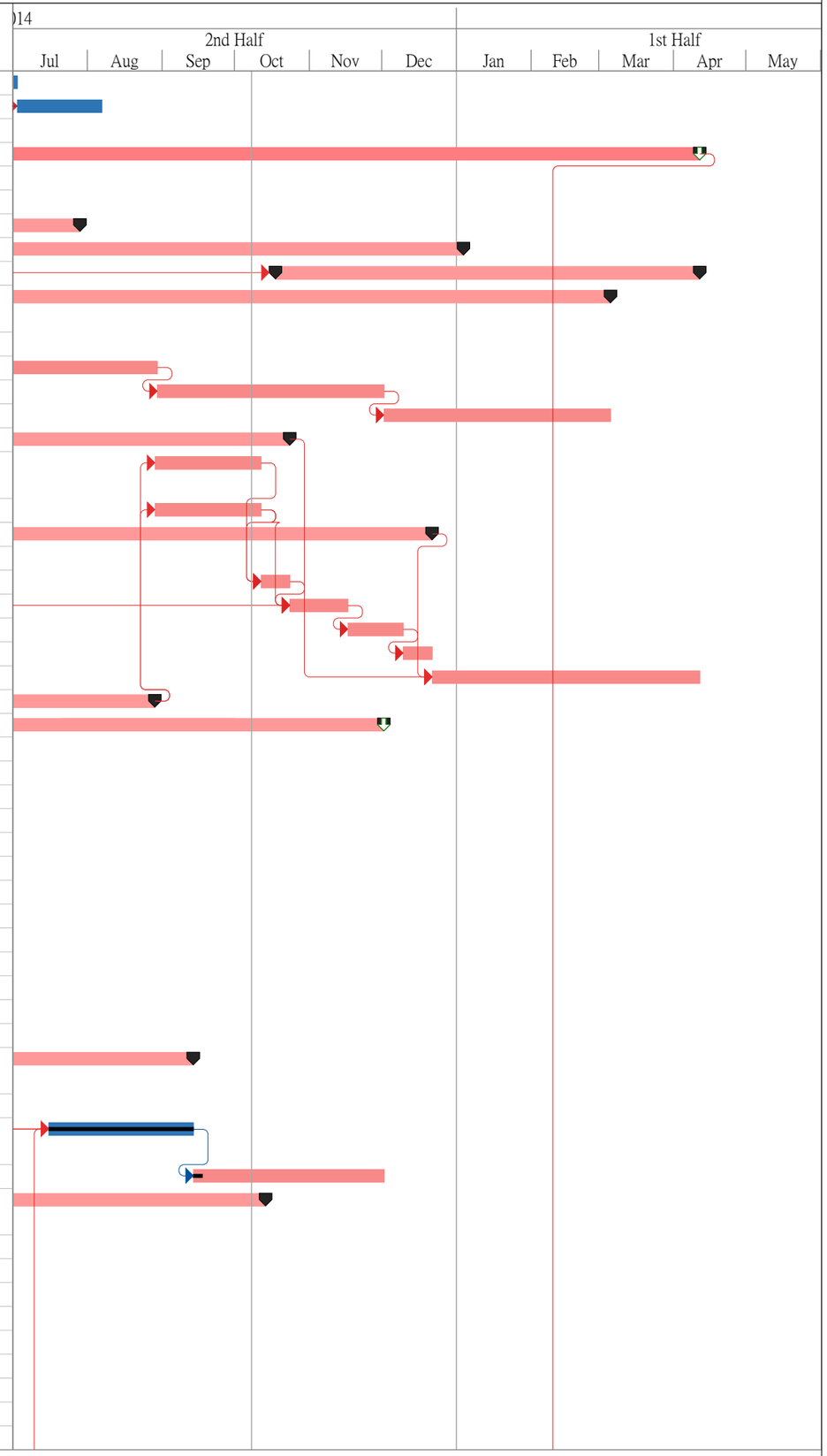
ID	WBS	Task Name	Duration	Start	Finish	% Complete
1	**1**	**Key Dates**	**1110 days**	**28/3/2013**	**10/4/2016**	**0%**
2	**1.1**	**Contract Award & Commencement**	**15 days**	**28/3/2013**	**11/4/2013**	**100%**
3	1.1.1	Letter of Acceptance	0 days	28/3/2013	28/3/2013	100%
4	1.1.2	Commencement of Works	0 days	11/4/2013	11/4/2013	100%
5	**1.2**	**Site Possession Date**	**330 days**	**11/4/2013**	**7/3/2014**	**100%**
6	1.2.1	Portion BCP 1	0 days	11/5/2013	11/5/2013	100%
7	1.2.2	Portion BCP 2	0 days	10/6/2013	10/6/2013	100%
8	1.2.3	Portion BCP 3 (villagers illegal occcupation)	0 days	8/9/2013	8/9/2013	100%
9	1.2.4	Portion BCP 4 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%
10	1.2.5	Portion BCP 5	0 days	8/9/2013	8/9/2013	100%
11	1.2.6	Portion BCP 6	0 days	8/9/2013	8/9/2013	100%
12	1.2.7	Portion BCP 7	0 days	8/9/2013	8/9/2013	100%
13	1.2.8	Portion CR 2	0 days	7/12/2013	7/12/2013	100%
14	1.2.9	Portion CR 40 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%
15	1.2.10	Portion CR 41 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%
16	1.2.11	Portion CR 42 (delaying site possession)	0 days	7/3/2014	7/3/2014	100%
17	1.2.12	Portion CR 44 (delaying site possession)	0 days	5/2/2014	5/2/2014	100%
18	1.2.13	Area LMH 0	0 days	11/4/2013	11/4/2013	100%
19	1.2.14	Area LMH 1	0 days	8/9/2013	8/9/2013	100%
20	1.2.15	Area LMH 2	0 days	11/5/2013	11/5/2013	100%
21	1.2.16	Area LMH 3	0 days	7/3/2014	7/3/2014	100%
22	1.2.17	Area LMH 4	0 days	8/9/2013	8/9/2013	100%
23	1.2.18	Area LMH 5	0 days	8/10/2013	8/10/2013	100%
24	1.2.19	Area RS 1	0 days	11/5/2013	11/5/2013	100%
25	1.2.20	Area RS 2 (Omitted)	0 days	11/5/2013	11/5/2013	100%
26	1.2.21	Area RS 3	0 days	11/5/2013	11/5/2013	100%
27	1.2.22	Area RS 4	0 days	11/5/2013	11/5/2013	100%
28	**1.3**	**Section Completion Date**	**976 days**	**8/8/2013**	**10/4/2016**	**0%**
29	1.3.1	KD-1 Section I of the Works - G.I. field works	0 days	4/2/2014	4/2/2014	100%
30	1.3.2	KD-2 Section II of the Works - All laboratory tests for Section I	0 days	6/3/2014	6/3/2014	100%
31	1.3.3	KD-3 Section III of the Works - Site formation works for portion RS1, RS2 & RS3	0 days	8/8/2013	8/8/2013	100%
32	1.3.4	KD-4 Section IV of the Works - Village house within portion RS4	0 days	5/1/2014	5/1/2014	100%
33	1.3.5	KD-5 Section V of the Works - All works within portion RS4 exclude Section IV	0 days	5/1/2014	5/1/2014	100%
34	1.3.6	KD-7 Section VII of the Works - All works within Area CRD	0 days	15/5/2014	15/5/2014	100%
35	1.3.7	KD-8 Section VIII of the Works - All works within Area BCPA	0 days	12/10/2014	12/10/2014	0%
36	1.3.8	KD-8 Section IX of the Works - All works within Area BCPB	0 days	11/4/2015	11/4/2015	0%
37	1.3.9	KD-10 Section X of the Works - All works within Area BCPC	0 days	4/6/2014	4/6/2014	100%
38	1.3.10	KD-11 Section XI of the Works - All works within Area BCPD	0 days	11/4/2015	11/4/2015	0%
39	1.3.11	KD-12 Section XII of the Works - All works within Area LMH	0 days	1/12/2014	1/12/2014	0%
40	1.3.12	KD-13 Section XIII of the Works - Works not covered in any other Sections	0 days	11/4/2015	11/4/2015	0%
41	1.3.13	KD-14 Section XIV of the Works - Trees preservation and protection	0 days	11/4/2015	11/4/2015	0%
42	1.3.14	KD-15 Section XV of the Works - Landscape soft works	0 days	11/4/2015	11/4/2015	0%
43	1.3.15	KD-16 Section XVI of the Works - Establishment works for landscape soft works	0 days	10/4/2016	10/4/2016	0%
44	**1.4**	**Stage Completion Date**	**60 days**	**8/8/2013**	**7/10/2013**	**100%**
47	**2**	**Preliminaries and Statuary / Contractual Submissions**	**424 days**	**11/4/2013**	**9/6/2014**	**100%**
78	**3**	**Stage of the Works**	**180 days**	**11/4/2013**	**7/10/2013**	**100%**
79	**3.1**	**Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road**	**179 days**	**12/4/2013**	**7/10/2013**	**100%**
90	**3.2**	**Stage II of the Works - Temporary ArchSD Depot (LMH2)**	**78 days**	**11/4/2013**	**27/6/2013**	**100%**
94	**4**	**Section of the Works**	**1095 days**	**12/4/2013**	**10/4/2016**	**47%**
95	**4.1**	**Section I of the Works - Ground Investigation field works (Drg. 7101A-7111A)**	**251 days**	**30/5/2013**	**4/2/2014**	**100%**
100	**4.2**	**Section II of the Works - All laboratory tests for Section I**	**188 days**	**31/8/2013**	**6/3/2014**	**100%**



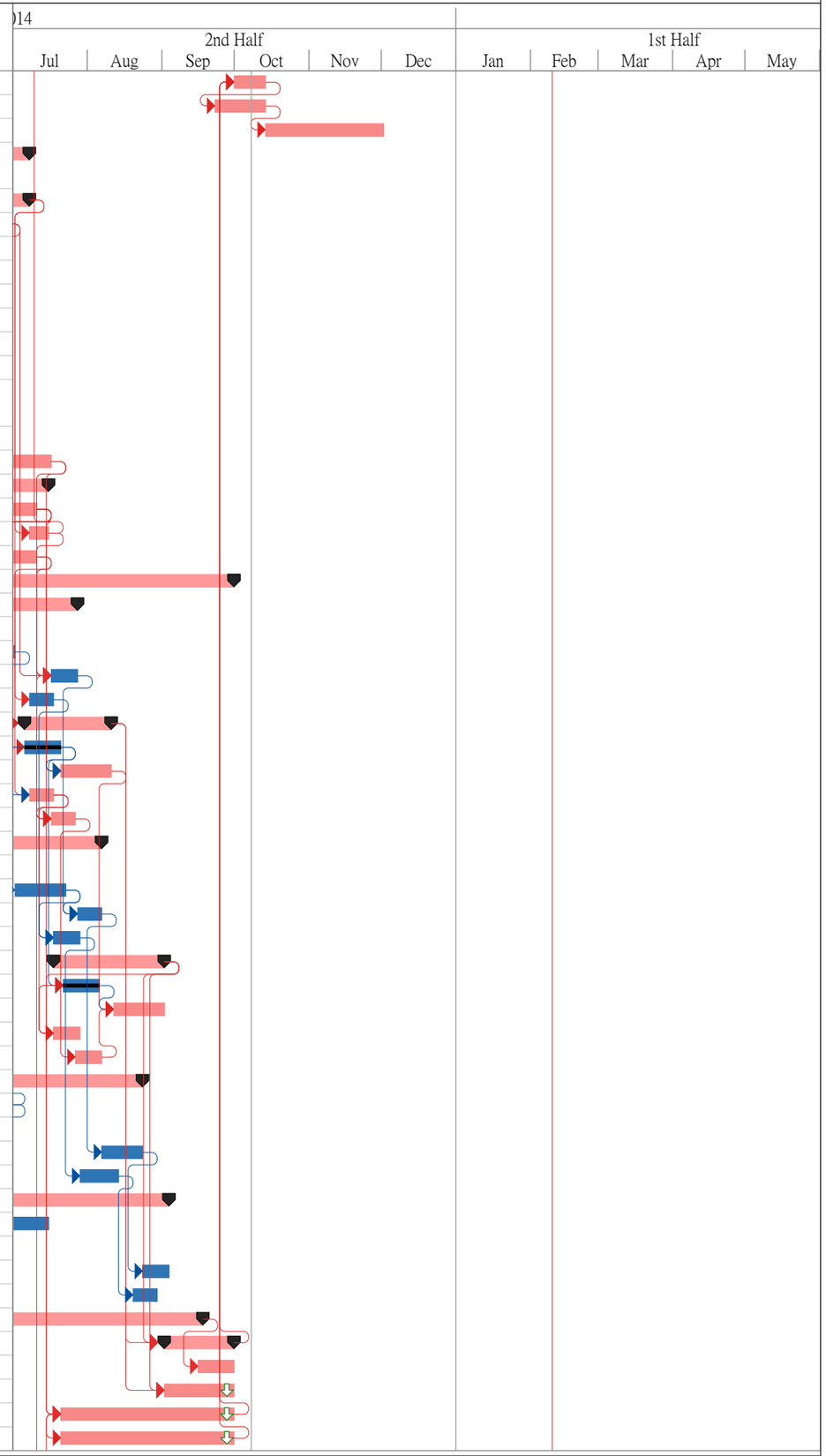
ID	WBS	Task Name	Duration	Start	Finish	% Complete
105	**4.3**	**Section III of the Works - Site formation works for Portions RS1, RS2 & RS3 (seek for certificate of completion in letter ref. SRJV/W47/SO/J5/1308/00416 dated 23/8/2013)**	**89 days**	**12/5/2013**	**8/8/2013**	**100%**
111	**4.4**	**Section IV of the Works - Village house within portion RS4**	**399 days**	**12/4/2013**	**15/5/2014**	**100%**
123	**4.5**	**Section V of the Works-All works within portion RS4 exclude Section IV**	**509 days**	**12/4/2013**	**2/9/2014**	**42%**
124	**4.5.1**	**ISSUED EOT2**	**241 days**	**5/1/2014**	**2/9/2014**	**100%**
125	4.5.2	Submissions and method statement	37 days	12/4/2013	18/5/2013	100%
126	4.5.3	Approvals from ER	30 days	26/4/2013	25/5/2013	100%
127	**4.5.4**	**Construction of footbridge and staircase with mini-piles 8 nos. x Ø 273 and staircase (Drg. 2201A to 2207B, 6001B)**	**235 days**	**11/1/2014**	**2/9/2014**	**0%**
128	4.5.4.1	Mini-piles	61 days	11/1/2014	12/3/2014	0%
129	4.5.4.2	Pile Caps	52 days	14/2/2014	6/4/2014	0%
130	4.5.4.3	Abutments	45 days	10/3/2014	23/4/2014	0%
131	4.5.4.4	Wing walls	45 days	27/3/2014	10/5/2014	0%
132	4.5.4.5	Mass concrete	41 days	13/4/2014	23/5/2014	0%
133	4.5.4.6	Remove sheetpiles from abutments	11 days	24/5/2014	3/6/2014	0%
134	4.5.4.7	Beams	45 days	4/6/2014	18/7/2014	0%
135	4.5.4.8	Deck	34 days	19/7/2014	21/8/2014	0%
136	4.5.4.9	Compact fill behind abutments	14 days	4/6/2014	17/6/2014	0%
137	4.5.4.10	New footpath	21 days	18/6/2014	8/7/2014	0%
138	4.5.4.11	New staircase	36 days	9/7/2014	13/8/2014	0%
139	4.5.4.12	Miscellaneous (pedestrian parapet, granite tile etc.)	20 days	14/8/2014	2/9/2014	0%
140	**4.6**	**Section VII of the Works - All works within Area CRD**	**249 days**	**9/9/2013**	**15/5/2014**	**100%**
177	**4.7**	**Section VIII of the Works - All works within Area BCPA**	**489 days**	**11/6/2013**	**12/10/2014**	**49%**
178	4.7.1	Submission for Site Formation Works & import fill	72 days	11/6/2013	21/8/2013	100%
179	4.7.2	Approval of submission for Site Formation Works	50 days	22/8/2013	10/10/2013	100%
180	4.7.3	Approval for sources of import fill	69 days	28/9/2013	5/12/2013	100%
181	4.7.4	Site formation of land (import fill 121433m3)	263 days	11/10/2013	30/6/2014	61%
182	4.7.4.1	site formation (A1-A9)	82 days	11/10/2013	31/12/2013	98%
183	4.7.4.2	site formation (A10-13, A15-20, A23, A24-A25)	90 days	1/1/2014	31/3/2014	90%
184	4.7.4.3	site formation (A14, A22, A26)	91 days	1/4/2014	30/6/2014	0%
185	4.7.5	Slope drainage works (Drg. 7156B-7159B)	284 days	2/1/2014	12/10/2014	37%
186	4.7.5.1	submission of design of sedimentation tank/pond	38 days	2/1/2014	8/2/2014	100%
187	4.7.5.2	approval of design of sedimentation tank/pond	36 days	9/2/2014	16/3/2014	100%
188	4.7.5.3	discharge to existing Box Culvert No. 4 & sedimentation tank	16 days	17/3/2014	1/4/2014	60%
189	4.7.5.4	DN1050 from CP to sedimentation tank	73 days	2/4/2014	13/6/2014	0%
190	4.7.5.5	shortcreted TC (from A3,A2,A1,A5)	31 days	31/5/2014	30/6/2014	90%
191	4.7.5.6	shortcreted TC (from A10-13)	30 days	1/7/2014	30/7/2014	0%
192	4.7.5.7	shortcreted TC (from A10,A15,A19)	25 days	31/7/2014	24/8/2014	0%
193	4.7.5.8	shortcreted TC (from A20-24A26,A14)	49 days	25/8/2014	12/10/2014	0%
194	4.7.6	Chain link fence (1120m)	195 days	1/4/2014	12/10/2014	0%
195	4.7.6.1	chain link fence (A1-5,A10,A15,A19)	102 days	1/4/2014	11/7/2014	0%
196	4.7.6.2	chain link fence (A4,A9,A14,A26,A24)	58 days	12/7/2014	7/9/2014	0%
197	4.7.6.3	chain link fence (A21-24)	35 days	8/9/2014	12/10/2014	0%
198	**4.8**	**Section IX of the Works - All works within Area BCPB**	**492 days**	**6/12/2013**	**11/4/2015**	**11%**
199	4.8.1	Submission for demolition of existing building structures	37 days	20/12/2013	25/1/2014	100%
200	4.8.2	Approval of submission for demolish existing building structures	41 days	26/1/2014	7/3/2014	100%
201	4.8.3	Demolition of existing building structures UPON instruction (Drg. 6152A, 6153A)	118 days	8/3/2014	3/7/2014	0%
202	4.8.4	Site formation works (import fill 370523m3)	492 days	6/12/2013	11/4/2015	3%
203	4.8.4.1	site formation works (B20)	28 days	6/12/2013	2/1/2014	0%
204	4.8.4.2	site formation works (B1,3,6,9,21,22)	89 days	3/1/2014	1/4/2014	16%
205	4.8.4.3	site formation works (B2,5)	92 days	2/4/2014	2/7/2014	0%
206	4.8.4.4	site formation works (B7,11,12)	93 days	3/7/2014	3/10/2014	0%
207	4.8.4.5	site formation works (4,8,10,13,14,16,17)	91 days	4/10/2014	2/1/2015	0%
208	4.8.4.6	site formation works (B15,18,19)	99 days	3/1/2015	11/4/2015	0%
209	4.8.5	Temp. boundary fence, chain link fence (Drg.1002C, 1032B, 1033B)	320 days	27/5/2014	11/4/2015	0%
210	4.8.5.1	chain link fence (780m)	99 days	3/1/2015	11/4/2015	0%



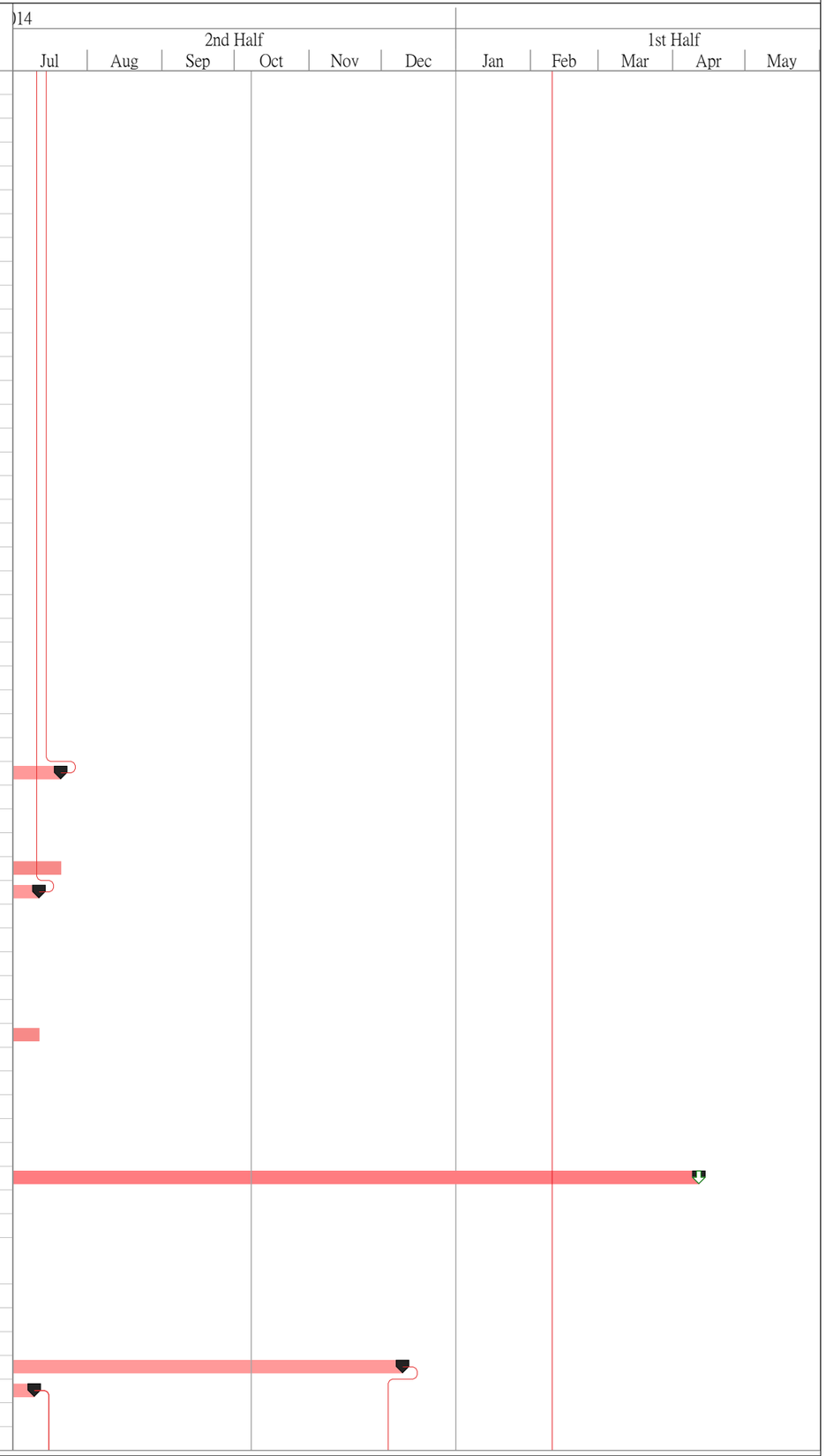
ID	WBS	Task Name	Duration	Start	Finish	% Complete
211	4.8.5.2	fabricate temporary boundary fence & post	37 days	27/5/2014	2/7/2014	0%
212	4.8.5.3	fix temporary boundary fence (105m)	35 days	3/7/2014	6/8/2014	0%
213	**4.9**	**Section X of the Works - All works within Area BCPC**	**269 days**	**9/9/2013**	**4/6/2014**	**100%**
229	**4.10**	**Section XI of the Works - All works within Area BCPD**	**598 days**	**22/8/2013**	**11/4/2015**	**14%**
230	4.10.1	Submissions	23 days	22/8/2013	13/9/2013	100%
231	4.10.2	Approval of Submissions	37 days	14/9/2013	20/10/2013	100%
232	**4.10.3**	**Construction of retaining wall RW2 - CH0 to 840 (length 840m)**	**281 days**	**21/10/2013**	**28/7/2014**	**35%**
248	4.10.4	Boundary fence (Drg.1002C, 1003A)	267 days	12/4/2014	3/1/2015	0%
253	4.10.5	Modified CEDD hoarding Type III (Drg. 1032B)	176 days	18/10/2014	11/4/2015	0%
257	4.10.6	Site Formation works (import fill 104958m3) including slope drainage works (Drg. 7155B-7159B)	423 days	7/1/2014	5/3/2015	18%
258	4.10.6.1	D1-D2	84 days	7/1/2014	31/3/2014	60%
259	4.10.6.2	D3, D10,D11, D17, D12- D14	95 days	27/5/2014	29/8/2014	18%
260	4.10.6.3	D4, D15, D16	94 days	30/8/2014	1/12/2014	0%
261	4.10.6.4	D5-D9	94 days	2/12/2014	5/3/2015	0%
262	4.10.7	Sewerage, Drainage & Water Works (Drg. 1323B,1305C,1309A)	368 days	21/10/2013	23/10/2014	0%
277	4.10.8	Irrigation system (sequence 3)(see Appendix C) adjacent to underpass & depressed road	44 days	29/8/2014	11/10/2014	0%
278	4.10.9	Irrigation system (sequence 4) (see Appendix C) next to BCPC	44 days	29/8/2014	11/10/2014	0%
279	4.10.10	Utilities works (Drg. 1405A) (see Appendix A)	369 days	18/12/2013	21/12/2014	0%
280	4.10.10.1	Sequence 1 - allow ducts for 11kV & LV across the underpass	13 days	18/12/2013	30/12/2013	0%
281	4.10.10.2	Sequence 5a - 132kV	12 days	12/10/2014	23/10/2014	0%
282	4.10.10.3	Sequence 5b - 11kV	24 days	24/10/2014	16/11/2014	0%
283	4.10.10.4	Sequence 5c - LV	23 days	17/11/2014	9/12/2014	0%
284	4.10.10.5	Sequence 5d - PCCW	12 days	10/12/2014	21/12/2014	0%
285	4.10.11	Road works and Road lighting works (Drg.1205A,1505C,1605B)	111 days	22/12/2014	11/4/2015	0%
286	**4.10.12**	**Construction of depressed road & underpass-9.3m wide x168m long**	**241 days**	**31/12/2013**	**28/8/2014**	**0%**
292	**4.11**	**Section XII of the Works - All works within Area LMH**	**467 days**	**22/8/2013**	**1/12/2014**	**59%**
293	4.11.1	Submissions for method statement of subway & staircase	70 days	22/8/2013	30/10/2013	100%
294	4.11.2	Approval of Submissions for method statement of subway & staircase	68 days	30/8/2013	5/11/2013	100%
295	**4.11.3**	**Construction of retaining wall RW1 - CH0 to 561.053m**	**213 days**	**26/9/2013**	**26/4/2014**	**94%**
296	4.11.3.1	Bay 1075 to Bay 1068 (8 bays) -H1	77 days	26/9/2013	11/12/2013	100%
297	4.11.3.2	Bay 1067 to Bay 1060 (8 bays) -H2	77 days	8/10/2013	23/12/2013	100%
298	4.11.3.3	Bay 1059 to Bay 1052 (8 bays) - H3	93 days	15/11/2013	15/2/2014	100%
299	4.11.3.4	Bay 1051 to Bay 1044 (8 bays) -H4	80 days	29/11/2013	16/2/2014	100%
300	4.11.3.5	Bay 1043 to Bay 1036 (8 bays) - H5	79 days	13/12/2013	1/3/2014	100%
301	4.11.3.6	Bay 1035 to Bay 1028 (8 bays) -H5,H6	83 days	17/1/2014	9/4/2014	100%
302	4.11.3.7	Bay 1027 to Bay 1020 (8 bays) -H6	79 days	16/12/2013	4/3/2014	100%
303	4.11.3.8	Bay 1019 to Bay 1012 (8 bays) -H7	105 days	28/12/2013	11/4/2014	100%
304	4.11.3.9	Bay 1011 to Bay 1004 (8 bays) H7,H8	87 days	30/12/2013	26/3/2014	77%
305	4.11.3.10	Bay 1003 to Bay 1001 (3 bays) - H8	31 days	27/3/2014	26/4/2014	0%
306	**4.11.4**	**Construction of retaining wall RW1A-CH561.053 to 612.457m (length approx.. 51.4m)**	**368 days**	**11/9/2013**	**13/9/2014**	**100%**
307	4.11.4.1	Bay 1076 to Bay 1078 (base & wall)	49 days	11/9/2013	29/10/2013	100%
308	4.11.4.2	Bay 1079 to Bay 1082 (after divert existing Rd i.e. after Staircase & Lift Shaft)	60 days	16/7/2014	13/9/2014	100%
309	4.11.5	Filling & Slope drainage behind RW1A (involve TTA)	79 days	14/9/2014	1/12/2014	5%
310	**4.11.6**	**Site formation works (import fill 15300m3) including slope drainage works (Drg. 7154B, 7159B) (see Appendix B)**	**294 days**	**24/12/2013**	**13/10/2014**	**48%**
311	**4.11.6.1**	**site formation (H1-H8) & slope drainage works**	**157 days**	**24/12/2013**	**29/5/2014**	**58%**
312	4.11.6.1.1	fill H1	36 days	24/4/2014	29/5/2014	5%
313	4.11.6.1.2	fill H2	20 days	24/12/2013	12/1/2014	100%
314	4.11.6.1.3	fill H3	17 days	17/2/2014	5/3/2014	100%
315	4.11.6.1.4	fill H4	17 days	17/2/2014	5/3/2014	100%
316	4.11.6.1.5	fill H5	18 days	10/4/2014	27/4/2014	95%
317	4.11.6.1.6	fill H6	19 days	16/4/2014	4/5/2014	95%
318	4.11.6.1.7	fill H7	18 days	12/4/2014	29/4/2014	20%
319	4.11.6.1.8	fill H8	19 days	27/3/2014	14/4/2014	0%



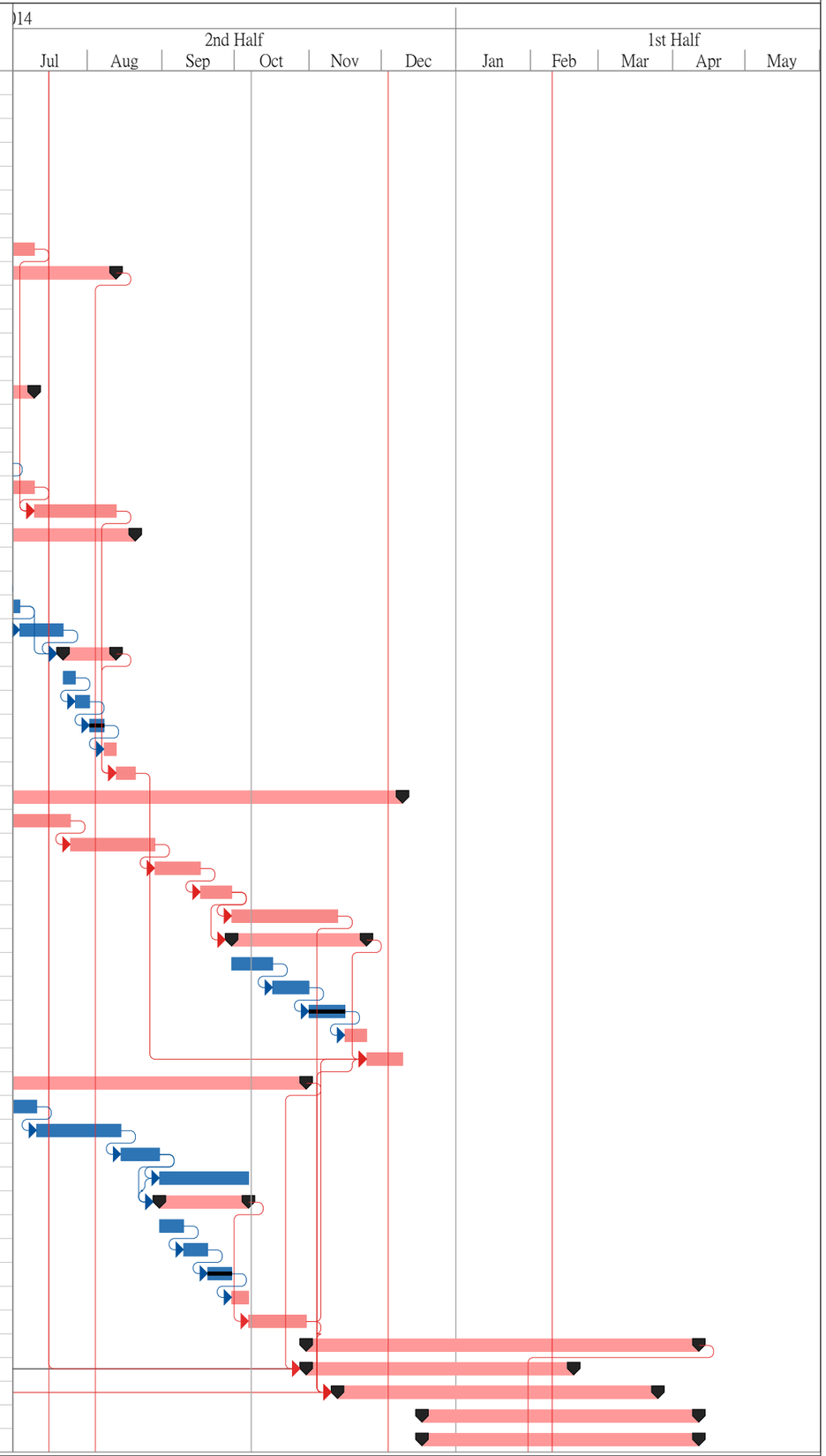
ID	WBS	Task Name	Duration	Start	Finish	% Complete
320	4.11.6.2	Remove existing Lin Ma Hang Road	13 days	1/10/2014	13/10/2014	0%
321	4.11.6.3	Fill H9 & B15 for slope	21 days	23/9/2014	13/10/2014	0%
322	4.11.7	Boundary fence & chain link fence on top of slope	49 days	14/10/2014	1/12/2014	0%
323	**4.11.8**	**Drainage works at Lin Ma Hang Road (Drg. 1304B, 1306A, 1307A, 1309A) (see Appendix B)**	**244 days**	**6/11/2013**	**7/7/2014**	**34%**
324	4.11.8.1	H1-SM16-9062, 9201 & 9105A-9062, 9054-9062, 9101-9105	244 days	6/11/2013	7/7/2014	1%
330	4.11.8.2	SMH6895-6808, 6804-6808	49 days	10/5/2014	27/6/2014	0%
331	4.11.8.3	H2 - SMH9054-45,44, 9043	52 days	13/1/2014	5/3/2014	100%
332	4.11.8.4	H3 - SMH9043-37, 9036 (DN900)	41 days	6/3/2014	15/4/2014	100%
333	4.11.8.5	H4 - SMH9036-30,9029 (DN900)	32 days	15/3/2014	15/4/2014	100%
334	4.11.8.6	H5 - SMH9029-22,9021 (DN750,900)	43 days	28/4/2014	9/6/2014	100%
335	4.11.8.7	H6 - SMH9021-14,9013 (DN750)	36 days	5/5/2014	9/6/2014	50%
336	4.11.8.8	H7 - SMH9013-06,9005 (DN600,750)	35 days	30/4/2014	3/6/2014	15%
337	4.11.8.9	H8 - SMH9005-03,9002 (DN450)	23 days	8/5/2014	30/5/2014	0%
338	4.11.8.10	H8 - SMH9002-9001 (DN300)	9 days	31/5/2014	8/6/2014	0%
339	4.11.9	Water works at Lin Ma Hang Road (Drg.1914B-1917B)	128 days	11/3/2014	16/7/2014	75%
340	4.11.10	Irrigation System at Lin Ma Hang Road (Drg.1974B, 1976A, 1977A)	42 days	4/6/2014	15/7/2014	0%
341	4.11.10.1	from Phase H2-H8	37 days	4/6/2014	10/7/2014	0%
342	4.11.10.2	for Phase H1	8 days	8/7/2014	15/7/2014	0%
343	4.11.10.3	after Phase H8	13 days	28/6/2014	10/7/2014	0%
344	**4.11.11**	**Utility Works**	**168 days**	**16/4/2014**	**30/9/2014**	**25%**
345	**4.11.11.1**	**CLP - LV (west side of new Lin Ma Hang Road)**	**103 days**	**16/4/2014**	**27/7/2014**	**26%**
346	4.11.11.1.1	from chainage 840 to chainage 1125	15 days	16/4/2014	30/4/2014	100%
347	4.11.11.1.2	from chainage 630 to chainage 840	22 days	10/6/2014	1/7/2014	0%
348	4.11.11.1.3	from chainage 475 to chainage 630	11 days	17/7/2014	27/7/2014	0%
349	4.11.11.1.4	from chainage 1125 to chainage 1270	10 days	8/7/2014	17/7/2014	0%
350	4.11.11.2	CLP - LV (east side of new Lin Ma Hang Road)	36 days	6/7/2014	10/8/2014	27%
351	4.11.11.2.1	from chainage 840 to chainage 1125	15 days	6/7/2014	20/7/2014	100%
352	4.11.11.2.2	from chainage 630 to chainage 840	21 days	21/7/2014	10/8/2014	0%
353	4.11.11.2.3	from chainage 475 to chainage 630	10 days	8/7/2014	17/7/2014	0%
354	4.11.11.2.4	from chainage 1125 to chainage 1270	10 days	17/7/2014	26/7/2014	0%
355	**4.11.11.3**	**CLP - 11kV (west side of new Lin Ma Hang Road)**	**97 days**	**2/5/2014**	**6/8/2014**	**26%**
356	4.11.11.3.1	from chainage 840 to chainage 1125	15 days	2/5/2014	16/5/2014	100%
357	4.11.11.3.2	from chainage 630 to chainage 840	21 days	2/7/2014	22/7/2014	0%
358	4.11.11.3.3	from chainage 475 to chainage 630	10 days	28/7/2014	6/8/2014	0%
359	4.11.11.3.4	from chainage 1125 to chainage 1270	11 days	18/7/2014	28/7/2014	0%
360	4.11.11.4	CLP - 11kV (east side of new Lin Ma Hang Road)	46 days	18/7/2014	1/9/2014	26%
361	4.11.11.4.1	from chainage 840 to chainage 1125	15 days	22/7/2014	5/8/2014	100%
362	4.11.11.4.2	from chainage 630 to chainage 840	21 days	12/8/2014	1/9/2014	0%
363	4.11.11.4.3	from chainage 475 to chainage 630	11 days	18/7/2014	28/7/2014	0%
364	4.11.11.4.4	from chainage 1125 to chainage 1270	11 days	27/7/2014	6/8/2014	0%
365	**4.11.11.5**	**PCCW (west side of new Lin Ma Hang Road)**	**114 days**	**2/5/2014**	**23/8/2014**	**0%**
366	4.11.11.5.1	from chainage 840 to chainage 1125	25 days	5/6/2014	29/6/2014	0%
367	4.11.11.5.2	from chainage 630 to chainage 840	34 days	2/5/2014	4/6/2014	0%
368	4.11.11.5.3	from chainage 475 to chainage 630	17 days	7/8/2014	23/8/2014	0%
369	4.11.11.5.4	from chainage 1125 to chainage 1270	16 days	29/7/2014	13/8/2014	0%
370	**4.11.11.6**	**HGC (west side of new Lin Ma Hang Road)**	**91 days**	**5/6/2014**	**3/9/2014**	**0%**
371	4.11.11.6.1	from chainage 840 to chainage 1125	16 days	30/6/2014	15/7/2014	0%
372	4.11.11.6.2	from chainage 630 to chainage 840	21 days	5/6/2014	25/6/2014	0%
373	4.11.11.6.3	from chainage 475 to chainage 630	11 days	24/8/2014	3/9/2014	0%
374	4.11.11.6.4	from chainage 1125 to chainage 1270	10 days	20/8/2014	29/8/2014	0%
375	**4.11.11.7**	**NWT (west side of new Lin Ma Hang Road)**	**84 days**	**26/6/2014**	**17/9/2014**	**100%**
380	4.11.11.8	Street lighting work	29 days	2/9/2014	30/9/2014	0%
381	4.11.11.8.1	west side of new Lin Ma Hang Road	15 days	16/9/2014	30/9/2014	0%
382	4.11.11.8.2	east side of new Lin Ma Hang Road	29 days	2/9/2014	30/9/2014	0%
383	4.11.12	Roadwork of carriageway (new Lin Ma Hang Road for BCPA)	72 days	21/7/2014	30/9/2014	0%
384	4.11.13	Construction of footpath (for BCPA)	72 days	21/7/2014	30/9/2014	0%



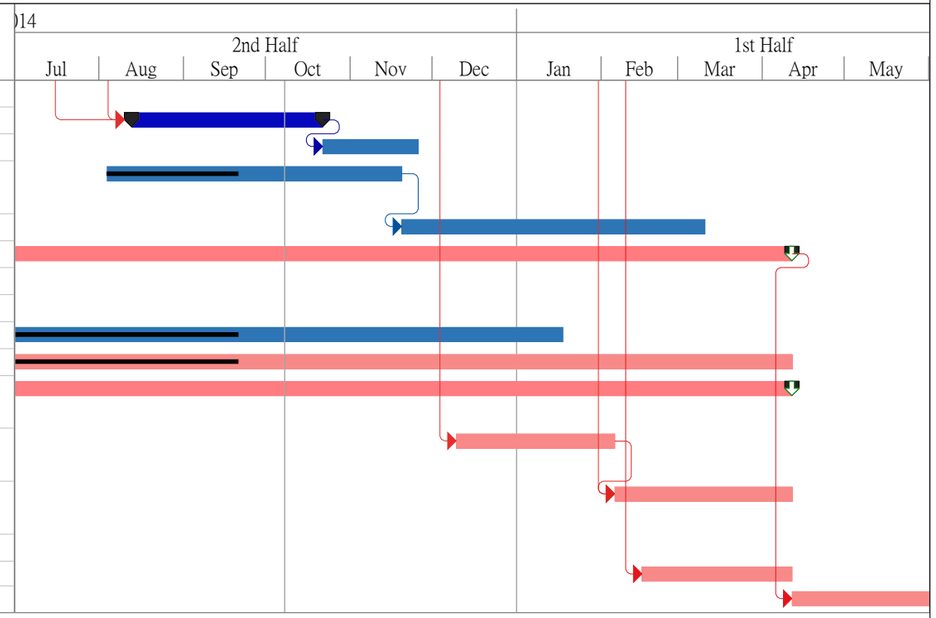
ID	WBS	Task Name	Duration	Start	Finish	% Complete
385	**4.11.14**	**Construction of pedestrian subway & pump room**	**202 days**	**6/11/2013**	**26/5/2014**	**92%**
386	4.11.14.1	prepare formation of sheetpiling/excavation	9 days	6/11/2013	14/11/2013	100%
387	4.11.14.2	excavation &/or sheetpiling	33 days	15/11/2013	17/12/2013	100%
388	4.11.14.3	rubble mound	16 days	2/12/2013	17/12/2013	100%
389	4.11.14.4	cast blinding layer	17 days	11/12/2013	27/12/2013	100%
390	4.11.14.5	pump house	30 days	16/12/2013	14/1/2014	100%
391	4.11.14.6	subway 8th bay	27 days	15/1/2014	10/2/2014	100%
392	4.11.14.7	subway 7th bay	23 days	11/2/2014	5/3/2014	99%
393	4.11.14.8	subway 6th bay	17 days	25/2/2014	13/3/2014	100%
394	4.11.14.9	miscellaneous works	74 days	14/3/2014	26/5/2014	75%
395	**4.11.15**	**Construction of staircase with lift shaft with 6 nos. of mini pile**	**225 days**	**14/10/2013**	**26/5/2014**	**100%**
396	4.11.15.1	mini-piles	54 days	14/10/2013	6/12/2013	100%
397	4.11.15.2	lift shaft	41 days	7/12/2013	16/1/2014	100%
398	4.11.15.3	Bay 9	33 days	17/1/2014	18/2/2014	100%
399	4.11.15.4	Staircase	64 days	19/2/2014	23/4/2014	100%
400	4.11.15.5	miscellaneous works	73 days	15/3/2014	26/5/2014	100%
401	**4.11.16**	**1 no. DN1650 pipe jacking LV009 including jacking & receiving pits**	**147 days**	**6/11/2013**	**1/4/2014**	**87%**
402	**4.11.16.1**	**Pits construction**	**36 days**	**6/11/2013**	**11/12/2013**	**100%**
403	4.11.16.1.1	utility detection of the area	3 days	6/11/2013	8/11/2013	100%
404	4.11.16.1.2	inspection pits for jacking pit and receiving pit	5 days	9/11/2013	13/11/2013	100%
405	4.11.16.1.3	temporary work & excavation for receiving pit	14 days	28/11/2013	11/12/2013	100%
406	4.11.16.1.4	temporary work & excavation for jacking pit	14 days	14/11/2013	27/11/2013	100%
407	**4.11.16.2**	**Jack sleeve Pipes**	**89 days**	**12/12/2013**	**10/3/2014**	**100%**
408	4.11.16.2.1	establishment of jacking equipment	15 days	12/12/2013	26/12/2013	100%
409	4.11.16.2.2	jack pipe and excavate	74 days	27/12/2013	10/3/2014	100%
410	4.11.16.3	HDPE pipes	22 days	11/3/2014	1/4/2014	16%
411	4.11.16.3.1	Lay HDPE pipes	7 days	11/3/2014	17/3/2014	50%
412	4.11.16.3.2	Grout HDPE pipes	7 days	18/3/2014	24/3/2014	0%
413	4.11.16.3.3	Remove temporary works and backfilling	8 days	25/3/2014	1/4/2014	0%
414	**4.11.17**	**Construction of retaining wall RW9 - CH0 to 75m (length 75m)**	**110 days**	**2/4/2014**	**20/7/2014**	**0%**
415	4.11.17.1	drive sheetpile & excavation	14 days	2/4/2014	15/4/2014	0%
416	4.11.17.2	grade 200 rock fill	14 days	6/4/2014	19/4/2014	0%
417	4.11.17.3	cast blinding layer	14 days	14/4/2014	27/4/2014	0%
418	4.11.17.4	Bay 9001-9010	94 days	18/4/2014	20/7/2014	0%
419	**4.11.18**	**Construction of Bridge J with 6 x Ø 1500 bored piles**	**217 days**	**7/12/2013**	**11/7/2014**	**49%**
420	4.11.18.1	bored piles	73 days	7/12/2013	17/2/2014	100%
421	4.11.18.2	pile caps	15 days	18/2/2014	4/3/2014	100%
422	4.11.18.3	abutment walls	24 days	3/3/2014	26/3/2014	80%
423	4.11.18.4	falsework for deck	15 days	25/3/2014	8/4/2014	0%
424	4.11.18.5	deck	55 days	9/4/2014	2/6/2014	0%
425	4.11.18.6	parapet	39 days	3/6/2014	11/7/2014	0%
426	**4.11.19**	**Construction of retaining wall RW5 - CH0 to 60m (length 60m)**	**44 days**	**27/3/2014**	**9/5/2014**	**0%**
427	4.11.19.1	drive sheetpile & excavation	11 days	27/3/2014	6/4/2014	0%
428	4.11.19.2	grade 200 rock fill	4 days	7/4/2014	10/4/2014	0%
429	4.11.19.3	cast blinding layer	5 days	11/4/2014	15/4/2014	0%
430	4.11.19.4	Bay 5001-5008	24 days	16/4/2014	9/5/2014	0%
431	**4.12**	**Section XIII of the Works - Works not covered in any other Sections**	**598 days**	**22/8/2013**	**11/4/2015**	**31%**
432	4.12.1	Submissions	70 days	22/8/2013	30/10/2013	100%
433	4.12.2	Approval of Submissions	68 days	16/9/2013	22/11/2013	100%
434	**4.12.3**	**Temporary Traffic Arrangement (TTA) Scheme for Works at existing LMH Rd**	**92 days**	**23/8/2013**	**22/11/2013**	**100%**
435	4.12.3.1	Preparation of TTA scheme	21 days	23/8/2013	12/9/2013	100%
436	4.12.3.2	Comment & approval of TTA scheme by TD & RMO	55 days	13/9/2013	6/11/2013	100%
437	4.12.3.3	Obtain roadwork advice from RMO	16 days	7/11/2013	22/11/2013	100%
438	**4.12.4**	**Northbound of Re-aligned Lin Ma Hang Road (west side)**	**382 days**	**23/11/2013**	**9/12/2014**	**29%**
439	**4.12.4.1**	**Works from chainage 190 to chainage 310**	**229 days**	**23/11/2013**	**9/7/2014**	**54%**
440	4.12.4.1.1	Drainage & slope drain	76 days	23/11/2013	6/2/2014	100%
441	4.12.4.1.2	Waterwork	38 days	7/2/2014	16/3/2014	97%



ID	WBS	Task Name	Duration	Start	Finish	% Complete
442	4.12.4.1.3	Irrigation System	18 days	17/3/2014	3/4/2014	0%
443	4.12.4.1.4	Roadwork	40 days	4/4/2014	13/5/2014	0%
444	4.12.4.1.5	Utilities works	38 days	14/5/2014	20/6/2014	26%
445	4.12.4.1.5.1	11kV	9 days	14/5/2014	22/5/2014	0%
446	4.12.4.1.5.2	LV	9 days	23/5/2014	31/5/2014	0%
447	4.12.4.1.5.3	NWT	10 days	1/6/2014	10/6/2014	100%
448	4.12.4.1.5.4	Highway lighting	10 days	11/6/2014	20/6/2014	0%
449	4.12.4.1.6	Footpath	19 days	21/6/2014	9/7/2014	0%
450	**4.12.4.2**	**Works from chainage 380 to chainage 580**	**263 days**	**23/11/2013**	**12/8/2014**	**57%**
451	4.12.4.2.1	Drainage	76 days	23/11/2013	6/2/2014	96%
452	4.12.4.2.2	Waterwork	35 days	7/2/2014	13/3/2014	96%
453	4.12.4.2.3	Irrigation System	18 days	14/3/2014	31/3/2014	0%
454	4.12.4.2.4	Roadwork	43 days	1/4/2014	13/5/2014	0%
455	**4.12.4.2.5**	**Utilities works**	**57 days**	**14/5/2014**	**9/7/2014**	**78%**
456	4.12.4.2.5.1	11kV	15 days	14/5/2014	28/5/2014	95%
457	4.12.4.2.5.2	LV	16 days	29/5/2014	13/6/2014	95%
458	4.12.4.2.5.3	NWT	15 days	14/6/2014	28/6/2014	100%
459	4.12.4.2.5.4	Highway lighting	11 days	29/6/2014	9/7/2014	0%
460	4.12.4.2.6	Footpath	34 days	10/7/2014	12/8/2014	0%
461	**4.12.4.3**	**Works from chainage 310 to chainage 380**	**99 days**	**14/5/2014**	**20/8/2014**	**8%**
462	4.12.4.3.1	Drainage	30 days	14/5/2014	12/6/2014	5%
463	4.12.4.3.2	Waterwork	12 days	13/6/2014	24/6/2014	0%
464	4.12.4.3.3	Irrigation System	9 days	25/6/2014	3/7/2014	0%
465	4.12.4.3.4	Roadwork	18 days	4/7/2014	21/7/2014	0%
466	4.12.4.3.5	Utilities works	22 days	22/7/2014	12/8/2014	27%
467	4.12.4.3.5.1	11kV	5 days	22/7/2014	26/7/2014	0%
468	4.12.4.3.5.2	LV	6 days	27/7/2014	1/8/2014	0%
469	4.12.4.3.5.3	NWT	6 days	2/8/2014	7/8/2014	100%
470	4.12.4.3.5.4	Highway lighting	5 days	8/8/2014	12/8/2014	0%
471	4.12.4.3.6	Footpath	8 days	13/8/2014	20/8/2014	0%
472	**4.12.4.4**	**Works from chainage 580 to chainage 780**	**210 days**	**14/5/2014**	**9/12/2014**	**6%**
473	4.12.4.4.1	Drainage	72 days	14/5/2014	24/7/2014	0%
474	4.12.4.4.2	Waterwork	35 days	25/7/2014	28/8/2014	0%
475	4.12.4.4.3	Irrigation System	19 days	29/8/2014	16/9/2014	0%
476	4.12.4.4.4	Sewerage	13 days	17/9/2014	29/9/2014	0%
477	4.12.4.4.5	Roadwork	44 days	30/9/2014	12/11/2014	0%
478	4.12.4.4.6	Utilities works	56 days	30/9/2014	24/11/2014	27%
479	4.12.4.4.6.1	11kV	17 days	30/9/2014	16/10/2014	0%
480	4.12.4.4.6.2	LV	15 days	17/10/2014	31/10/2014	0%
481	4.12.4.4.6.3	NWT	15 days	1/11/2014	15/11/2014	100%
482	4.12.4.4.6.4	Highway lighting	9 days	16/11/2014	24/11/2014	0%
483	4.12.4.4.7	Footpath	15 days	25/11/2014	9/12/2014	0%
484	**4.12.4.5**	**Works from chainage 80 to chainage 190**	**170 days**	**14/5/2014**	**30/10/2014**	**5%**
485	4.12.4.5.1	Drainage	58 days	14/5/2014	10/7/2014	0%
486	4.12.4.5.2	Waterwork	35 days	11/7/2014	14/8/2014	0%
487	4.12.4.5.3	Irrigation System	16 days	15/8/2014	30/8/2014	0%
488	4.12.4.5.4	Roadwork	37 days	31/8/2014	6/10/2014	0%
489	4.12.4.5.5	Utilities works	37 days	31/8/2014	6/10/2014	27%
490	4.12.4.5.5.1	11kV	10 days	31/8/2014	9/9/2014	0%
491	4.12.4.5.5.2	LV	10 days	10/9/2014	19/9/2014	0%
492	4.12.4.5.5.3	NWT	10 days	20/9/2014	29/9/2014	100%
493	4.12.4.5.5.4	Highway lighting	7 days	30/9/2014	6/10/2014	0%
494	4.12.4.5.6	Footpath	24 days	7/10/2014	30/10/2014	0%
495	**4.12.5**	**Southbound of Re-aligned Lin Ma Hang Road (east side)**	**163 days**	**31/10/2014**	**11/4/2015**	**0%**
496	**4.12.5.1**	**Works from chainage 60 to chainage 200**	**111 days**	**31/10/2014**	**18/2/2015**	**0%**
506	**4.12.5.2**	**Works from chainage 400 to chainage 600**	**133 days**	**13/11/2014**	**25/3/2015**	**0%**
516	**4.12.5.3**	**Works from chainage 200 to chainage 400**	**115 days**	**18/12/2014**	**11/4/2015**	**0%**
527	**4.12.5.4**	**Works from chainage 600 to chainage 780**	**115 days**	**18/12/2014**	**11/4/2015**	**0%**

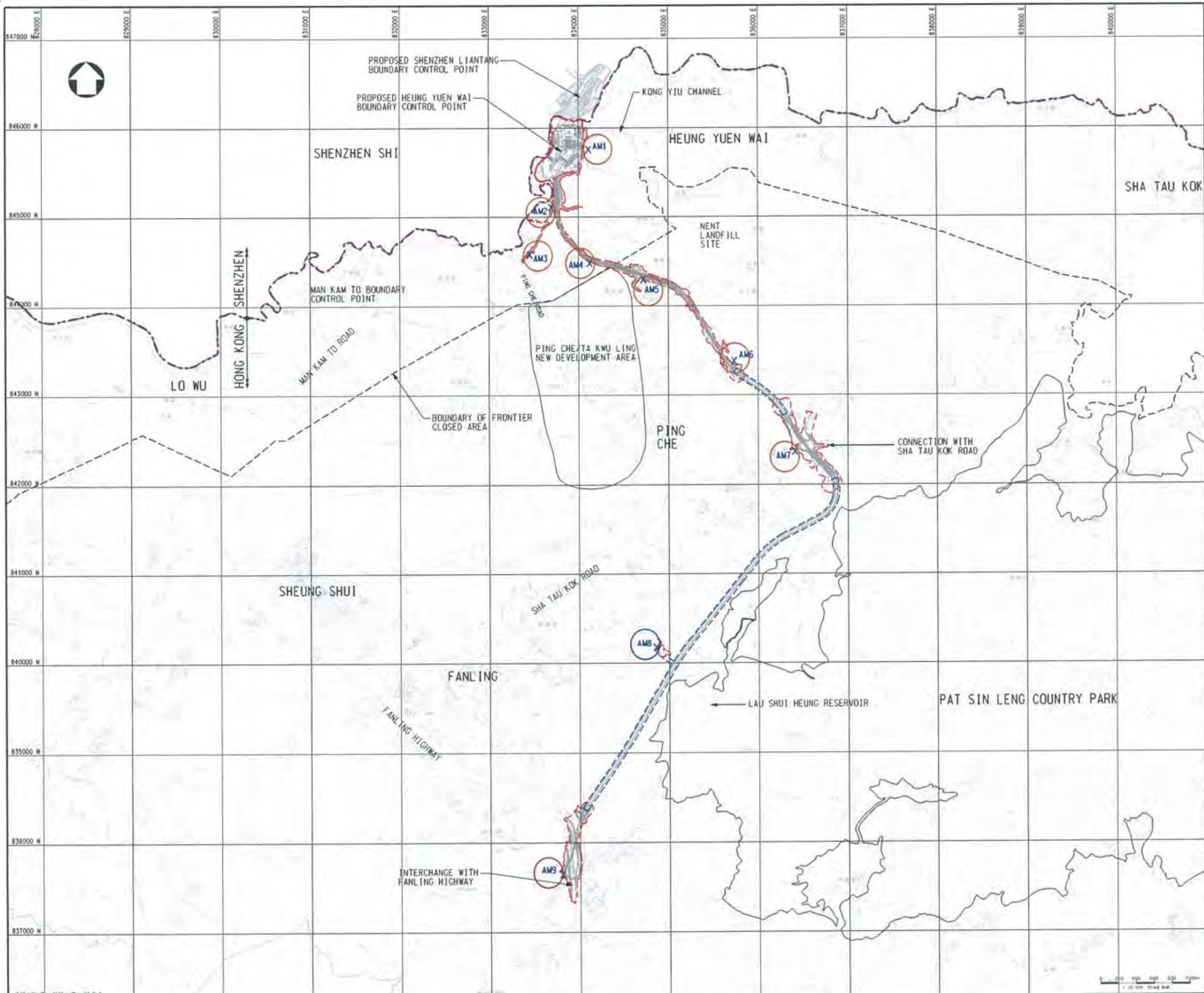


ID	WBS	Task Name	Duration	Start	Finish	% Complete
537	**4.12.6**	**Archaeological survey (Sections T1 to T3)(Drg. 6403A)**	**167 days**	**24/10/2013**	**8/4/2014**	**100%**
543	**4.12.7**	**Construction of retaining wall RW8 - CH0 to 22 (3 bays)**	**70 days**	**13/8/2014**	**21/10/2014**	**0%**
545	4.12.8	Site Formation works for ArchSD Depot (Drg. 1001B)	35 days	22/10/2014	25/11/2014	0%
546	4.12.9	Existing road to be improved & run-in to the site to be constructed at RS1 (Drg.1203A, 1001B)	108 days	4/8/2014	19/11/2014	44%
547	4.12.10	Access road to be re-constructed / upgraded at RS3 (Drg/1203)	111 days	20/11/2014	10/3/2015	0%
548	**4.13**	**Section XIV of the Works - Trees preservation and protection**	**730 days**	**12/4/2013**	**11/4/2015**	**74%**
549	4.13.1	Submissions	69 days	12/4/2013	19/6/2013	100%
550	4.13.2	Approval of Submissions	70 days	20/6/2013	28/8/2013	100%
551	4.13.3	Tree felling/removal works and tree transplanting works	499 days	6/9/2013	17/1/2015	76%
552	4.13.4	Preservation and Protection of Existing Trees in all Portion of the Site	591 days	29/8/2013	11/4/2015	66%
553	**4.14**	**Section XV of the Works - Landscape soft works (including transplant trees to permanent locations)**	**332 days**	**15/5/2014**	**11/4/2015**	**11%**
554	4.14.1	tree & shrub planting at re-aligned Lin Ma Hang Road (west) for Section XIII of the Works	58 days	10/12/2014	5/2/2015	0%
555	4.14.2	tree & shrub planting at re-aligned Lin Ma Hang Road (east) for Section XIII of the Works	65 days	6/2/2015	11/4/2015	0%
556	4.14.3	shrub planting at BCPC for Section X of the Works	21 days	15/5/2014	4/6/2014	100%
557	4.14.4	tree & shrub planting at BCPD Section XI of the Works	55 days	16/2/2015	11/4/2015	0%
558	**4.15**	**Section XVI of the Works - Establishment works for landscape soft works**	**365 days**	**12/4/2015**	**10/4/2016**	**0%**



Appendix D

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



Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	WING	FIRST ISSUE	DC	HT

Mott MacDonald

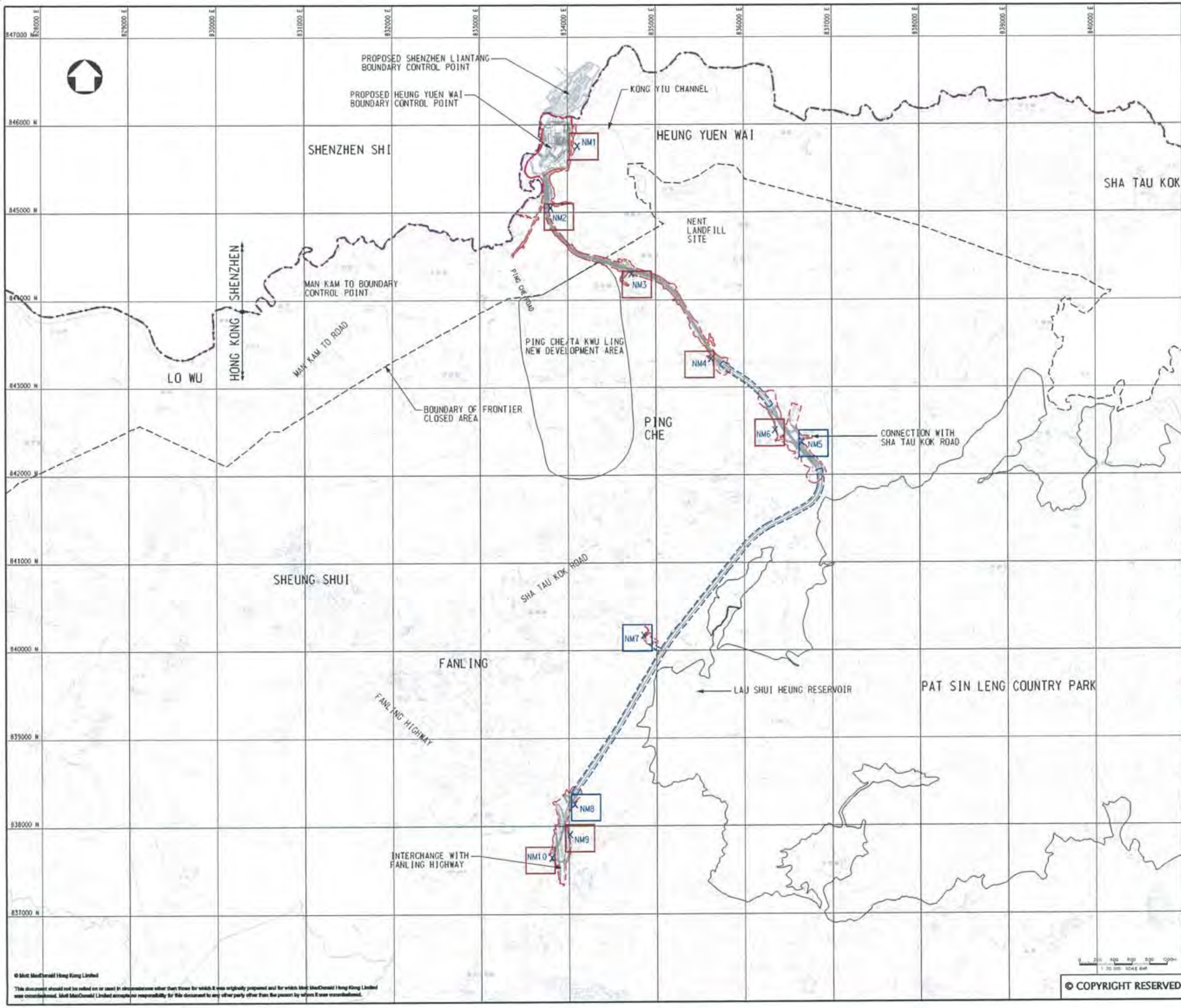
20/F Two Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong

Client: CEDD 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	WING	Coordination	EC		
Dwg.Chk.	DC	Approved	HT		
Scale at A1	1:20000	Project	255228	Status	PRE
Drawing No	FIGURE 2.1			Rev	P1



P1	AUG 10	WING	FIRST ISSUE	DC	HT
Rev	Date	Drawn	Description	Ch'k'd	App'd

Mott MacDonald

Client: CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

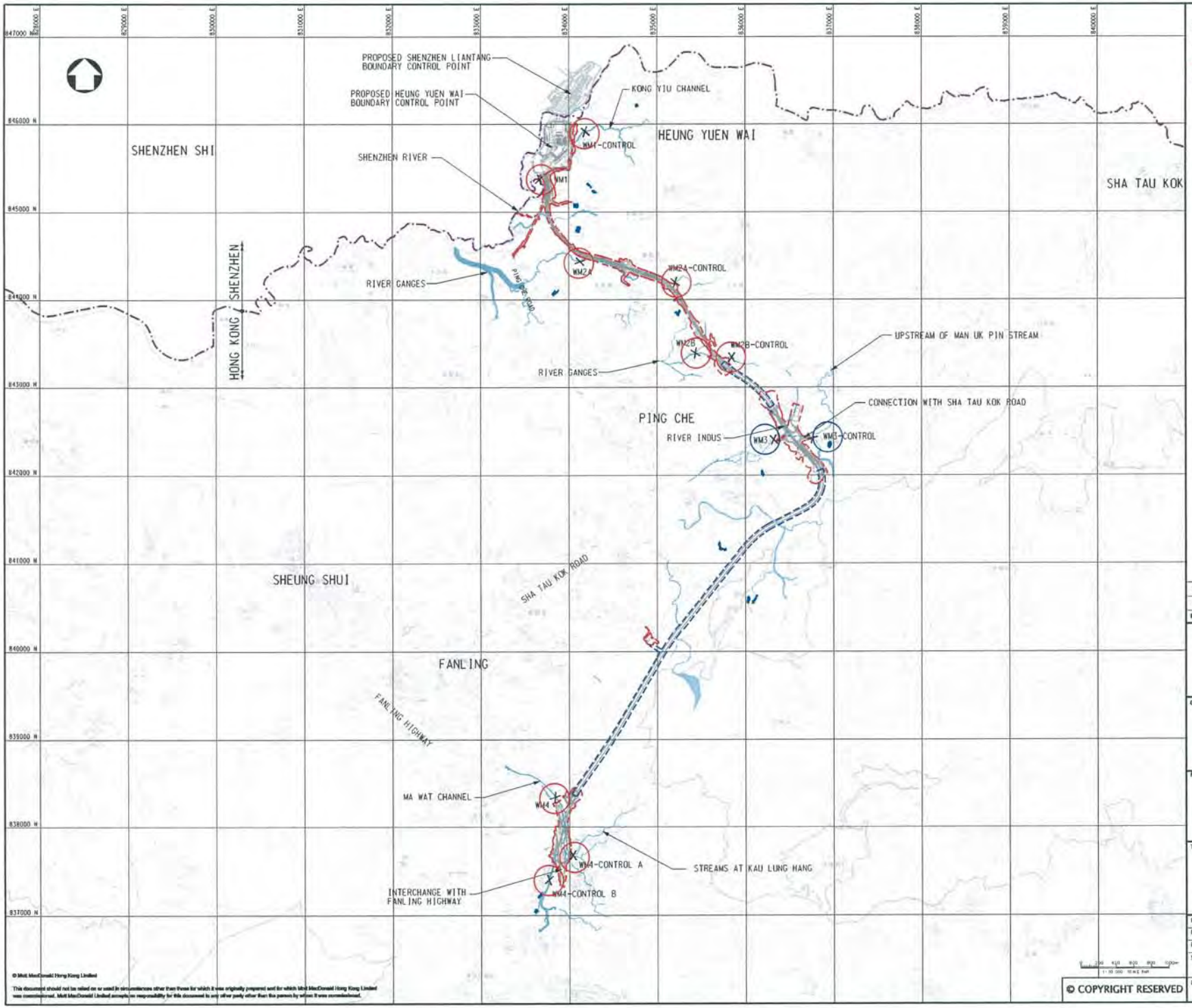
Title: PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designed	DC	Eng Chk.	EC
Drawn	WING	Coordination	EC
Dwg Chk.	DC	Approved	HT
Scale at A1	1:20000	Project	255228

Status: PRE

Drawing No: FIGURE 3.1

Rev: P1



LEGEND:

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

MONITORING STATION	CO-ORDINATES	
	EAST(NG(m)	NORTHING(m)
WM1	833668.635	845371.097
WM1-CONTROL	834185.480	845916.662
WM2A	834132.193	844432.910
WM2A-CONTROL	835205.329	844200.151
WM2B	835434.744	843394.606
WM2B-CONTROL	835845.878	843343.625
WM3	836323.622	842404.977
WM3-CONTROL	836763.419	842425.507
WM4	833840.783	838344.842
WM4-CONTROL A	834038.937	837688.995
WM4-CONTROL B	833769.123	837406.936

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	NOV 10	WING	GENERAL REVISION	HC	HT
P1	OCT 10	WING	FIRST ISSUE	HC	HT

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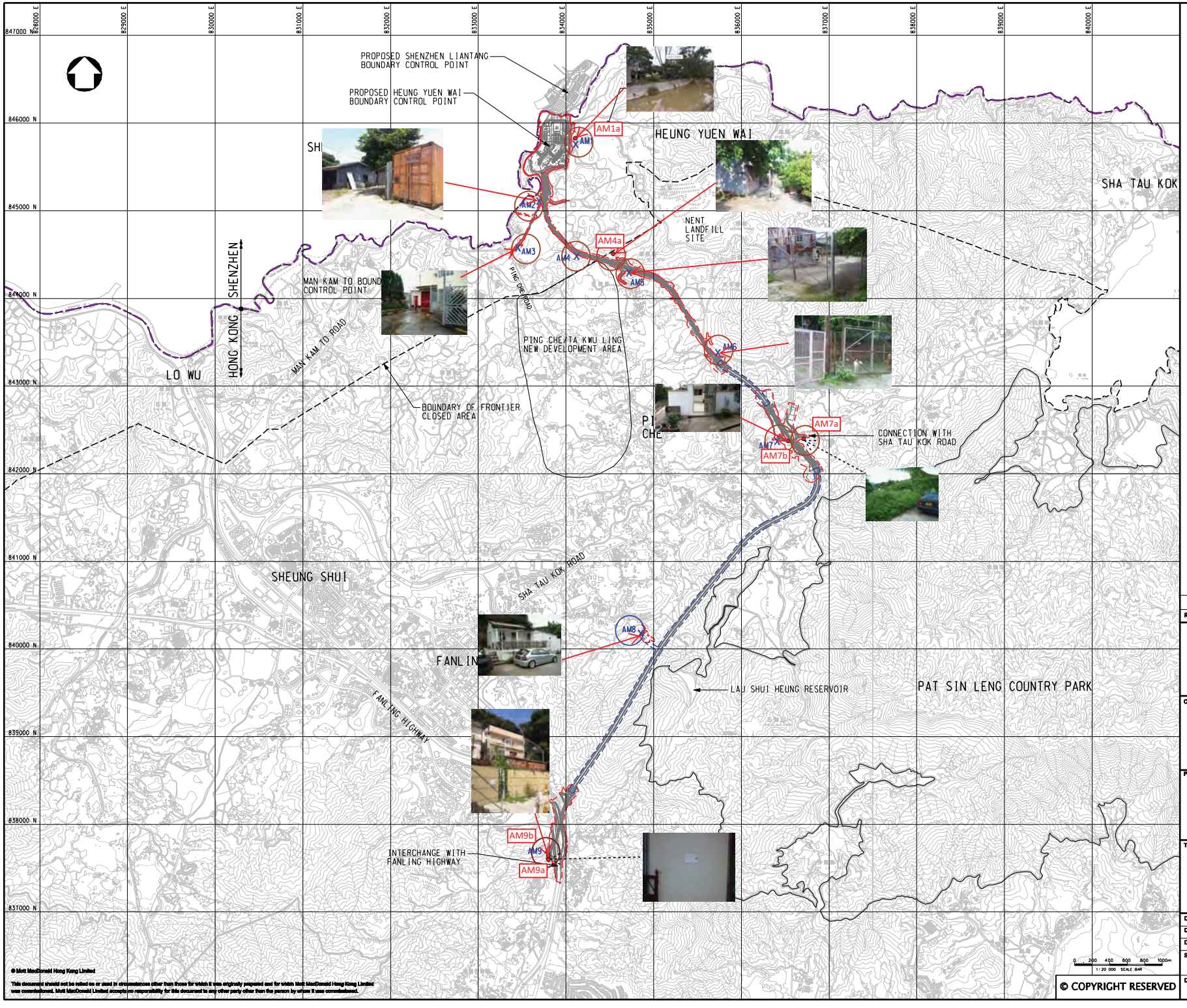
Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Designed	HC		Eng.Chk.	EC	
Drawn	WING		Coordination	EC	
Eng.Chk.	HC		Approved	HT	
Scale at A1	1:20000	Project	255228		Status PRE
Drawing No	FIGURE 4.1				Rev P2

Appendix E

Monitoring Locations for Impact Monitoring



LEGEND:

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

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

Mott MacDonald
20/F Two Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W www.mottmac.com.hk

Client

CEDD
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	
Dwg.Chk.	DC		Approved	HT	
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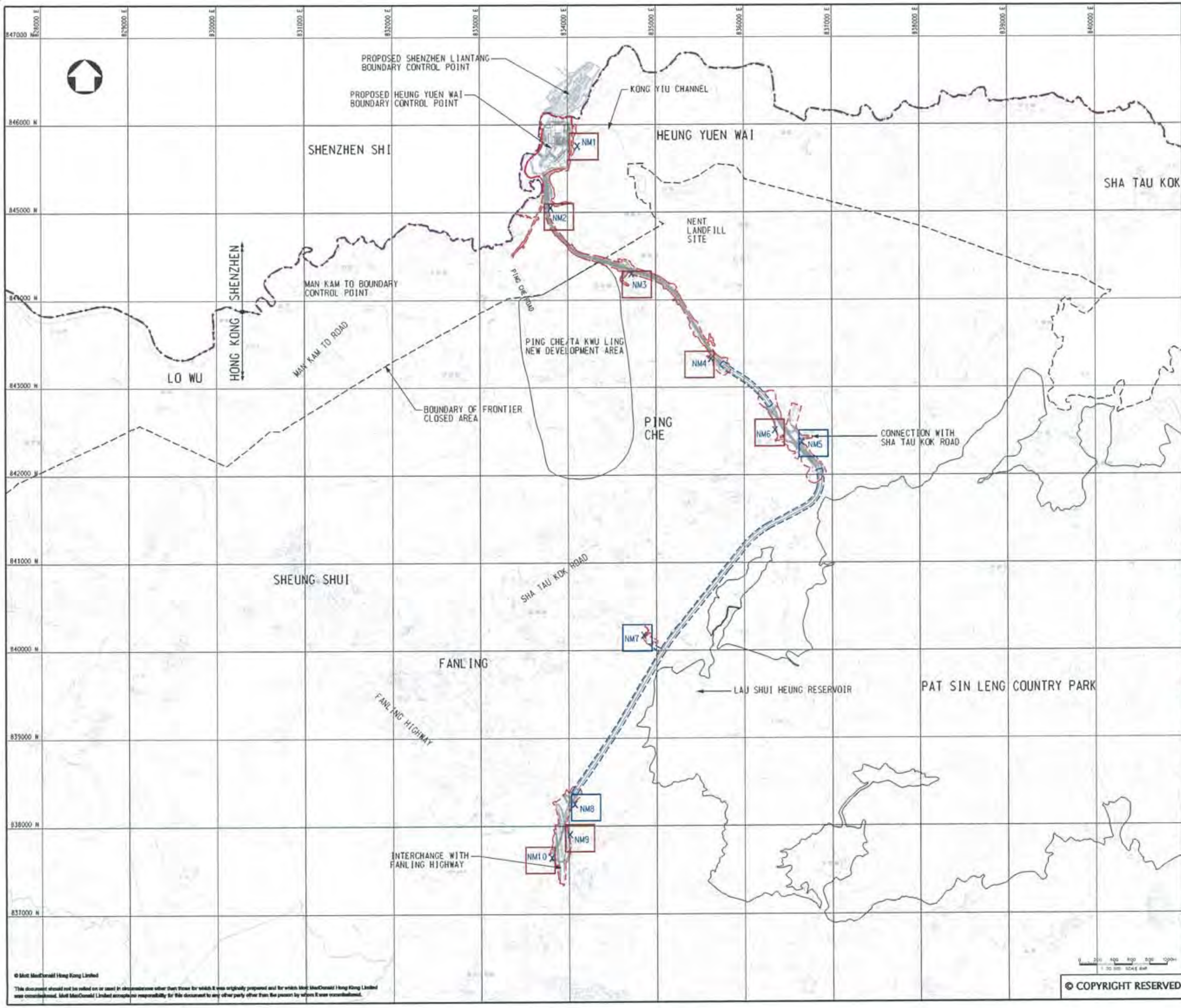
		CAD file	j:\255228\report\env\em&o\00831\FIG 2-1.dgn		
Drawing No	FIGURE 2.1			Rev	P1

0 200 400 600 800 1000m
1:20 000 SCALE BAR



LEGEND:

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

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	WING	FIRST ISSUE	DC	HT

Mott MacDonald

Client: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

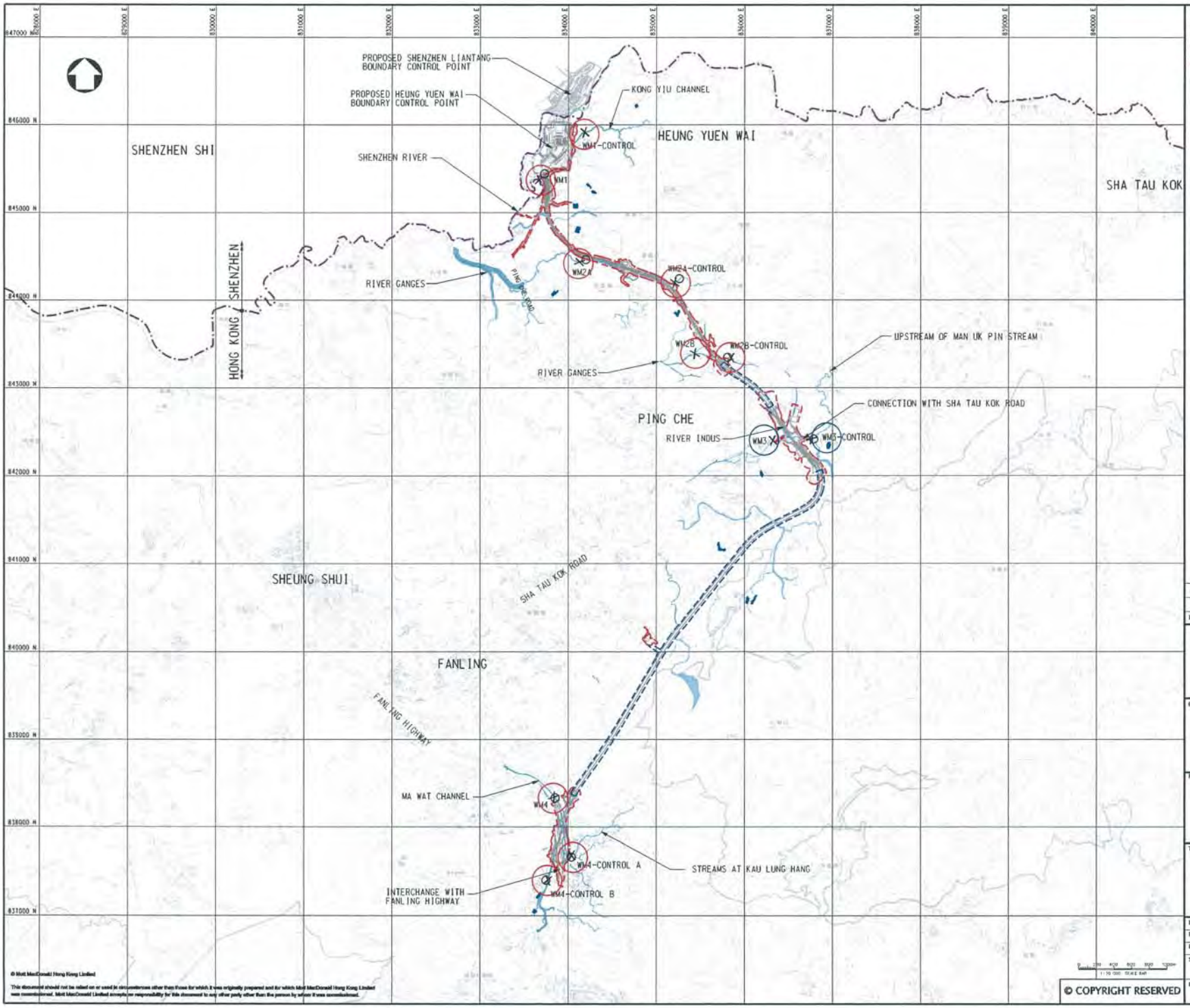
Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designed	DC	Eng Chk.	EC
Drawn	WING	Coordination	EC
Dwg Chk.	DC	Approved	HT

Scale at A1: 1:20000 | Project: 255228 | Status: PRE

Drawing No: FIGURE 3.1 | Rev: P1



LEGEND:

- BOUNDARY OF HKSAR
- 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 – Coordinates		Location found during site visit – Coordinates	
	Easting	Northing	Easting	Northing
WM1	833668.635	845371.097	833679	845423
WM1-Control	834185.480	845916.662	834185	845917
WM2A	834132.193	844432.910	834204	844471
WM2A-Control	835205.529	844200.151	835270	844243
WM2B	835434.744	843394.606	835433	843397
WM2B-Control	835845.878	843343.625	835835	843351
WM3	836523.622	842404.977	836524	842407
WM3-Control	836763.419	842425.507	836763	842400
WM4	833840.785	838344.842	833850	838358
WM4-Control A	834038.937	837668.995	834028	837695
WM4-Control B	833769.123	837406.936	833760	837395

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	NOV 10	MING	GENERAL REVISION	HC	HT
P1	OCT 10	MING	FIRST ISSUE	HC	HT

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Client

CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

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

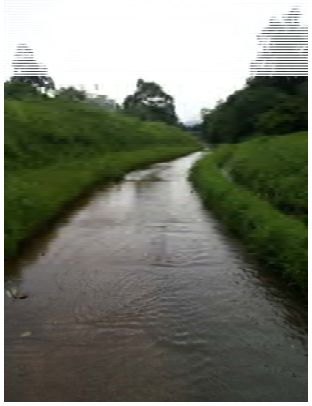
Title

LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Designed	HC		Eng.Chk.	EC	
Drawn	MING		Coordination	EC	
Dwg.Chk.	HC		Approved	HT	
Scale at A1	1:20000	Project	255228	Status	PRE
		CAD file	A1\255228\REPORT\EMY-EM&A MANUAL\FIG 4-1.dgn		
Drawing No	FIGURE 4.1			Rev	P2

Photographic Records for Water Quality Monitoring Location

	
Alternative Location of WM1	**Co-ordinates of Alternative Location of WM1**
	
Alternative Location of WM1 - Control	**Co-ordinates of Alternative Location of WM1 - Control**
	
Alternative Location of WM2A	**Co-ordinates of Alternative Location of WM2A**
	
Alternative Location of WM2-Control A	**Co-ordinates of Alternative Location of WM2 – Control**

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.3	5.3	10.6	1.623	47	46.79	Slope = 33.6876
13	4.3	4.3	8.6	1.462	42	41.81	Intercept = -7.4866
10	3.3	3.3	6.6	1.282	36	35.84	Corr. coeff. = 0.9978
7	2.2	2.2	4.4	1.048	29	28.87	
5	1.4	1.4	2.8	0.838	20	19.91	

Calculations :

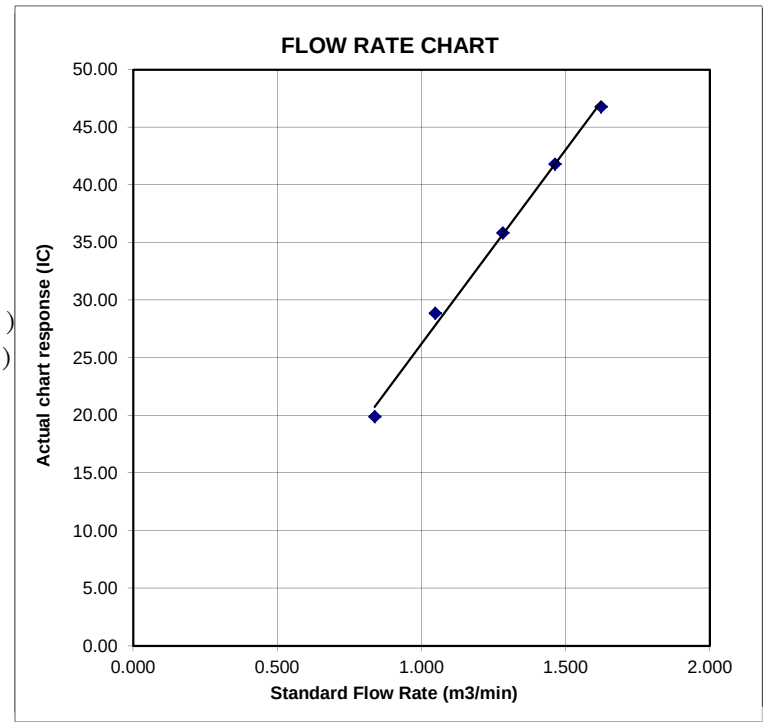
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.754	56	55.75	Slope = 25.9448
13	4.8	4.8	9.6	1.545	51	50.77	Intercept = 10.7235
10	3.5	3.5	7.0	1.320	46	45.79	Corr. coeff. = 0.9981
7	2.3	2.3	4.6	1.072	39	38.83	
5	1.4	1.4	2.8	0.838	32	31.86	

Calculations :

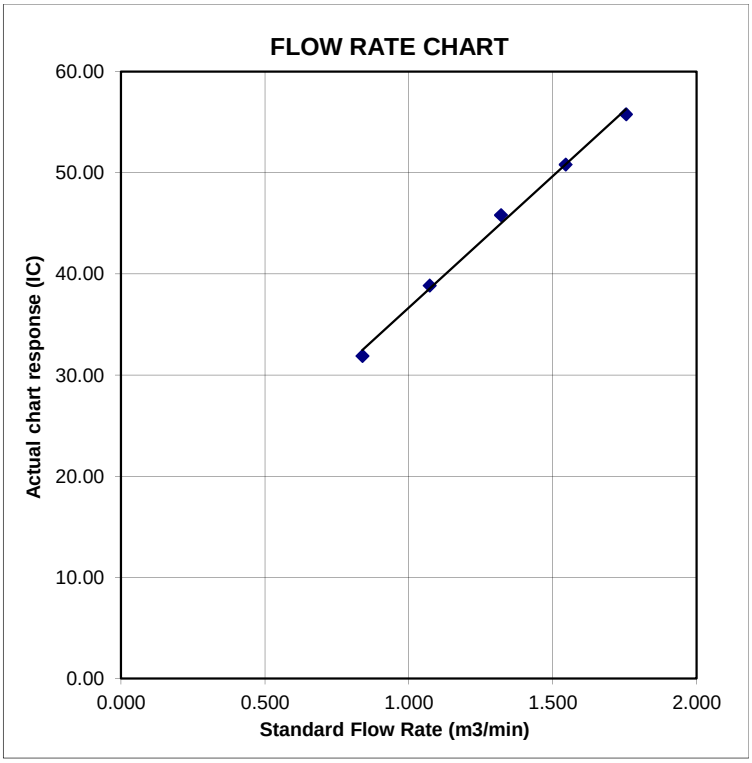
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.712	55	54.75	Slope = 31.6885
13	4.8	4.8	9.6	1.545	51	50.77	Intercept = 1.4008
10	3.3	3.3	6.6	1.282	44	43.80	Corr. coeff. = 0.9942
7	2.4	2.4	4.8	1.095	35	34.84	
5	1.4	1.4	2.8	0.838	28	27.87	

Calculations :

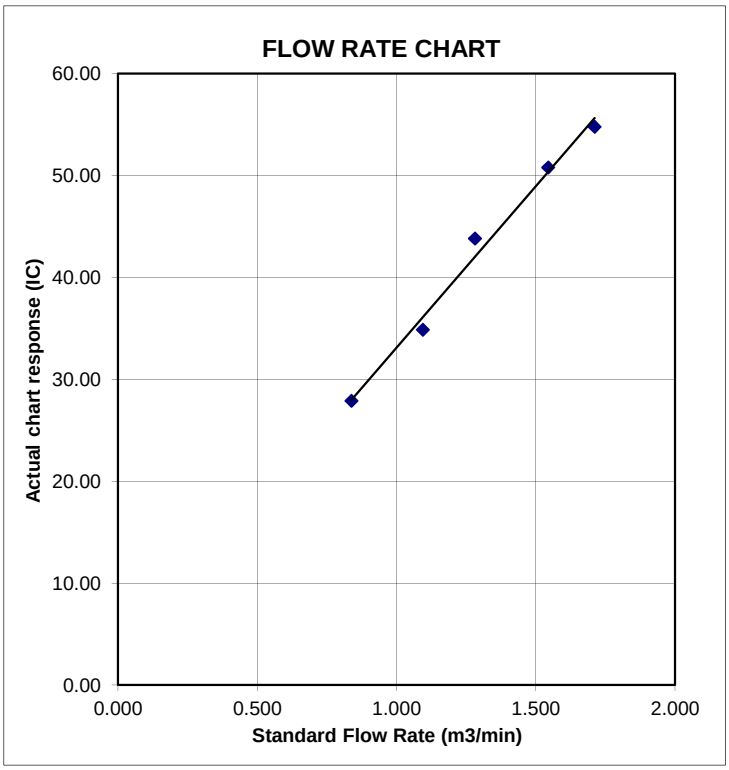
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/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
Location ID : AM7b

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.1	12.3	1.740	64	63.45	Slope = 34.7864
13	4.9	4.9	9.8	1.554	57	56.51	Intercept = 2.7832
10	3.8	3.8	7.6	1.370	51	50.56	Corr. coeff. = 0.9998
7	2.5	2.5	5.0	1.112	42	41.64	
5	1.5	1.5	3.0	0.863	33	32.72	

Calculations :

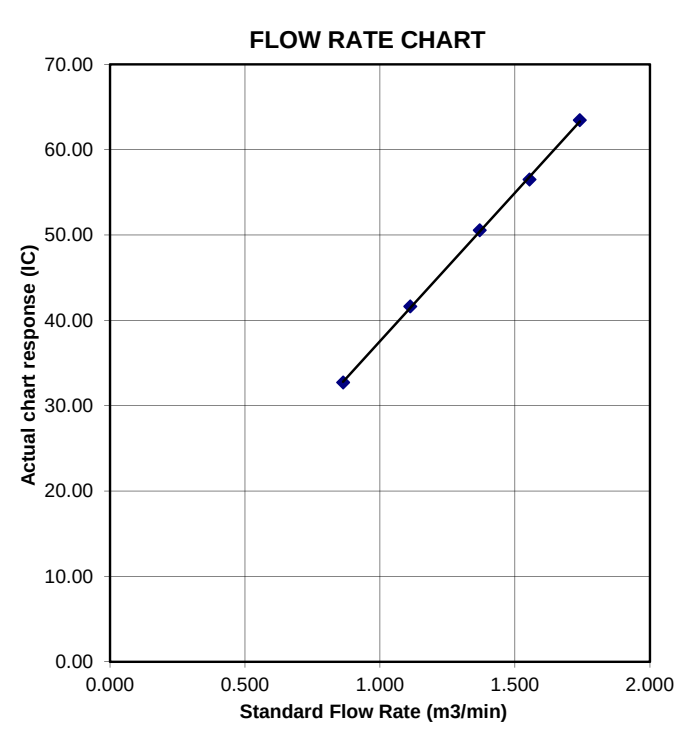
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.7	5.7	11.4	1.676	58	57.50	Slope = 30.8717
13	4.4	4.4	8.8	1.473	52	51.56	Intercept = 5.9092
10	3.5	3.5	7.0	1.315	47	46.60	Corr. coeff. = 0.9999
7	2.3	2.3	4.6	1.067	39	38.67	
5	1.4	1.4	2.8	0.834	32	31.73	

Calculations :

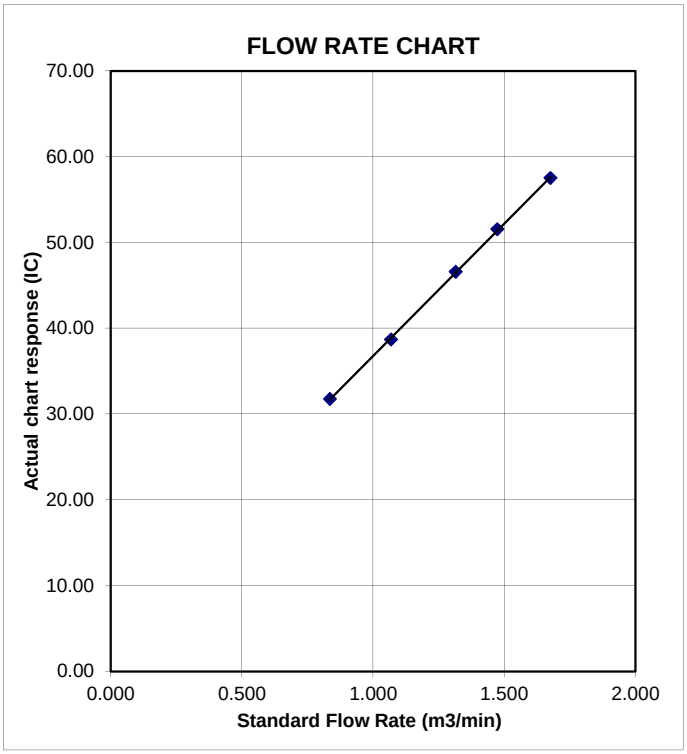
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/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		Date of Calibration:	21/8/2014
Location ID : AM9b		Next Calibration Date:	21/10/2014
		Technician:	Keung Chi Young

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION	
18	5.1	5.1	10.2	1.592	50	49.78	Slope =	37.3205
13	4	4	8.0	1.411	43	42.81	Intercept =	-9.3966
10	3.1	3.1	6.2	1.243	38	37.83	Corr. coeff. =	0.9966
7	2	2	4.0	1.000	29	28.87		
5	1.6	1.6	3.2	0.895	23	22.90		

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

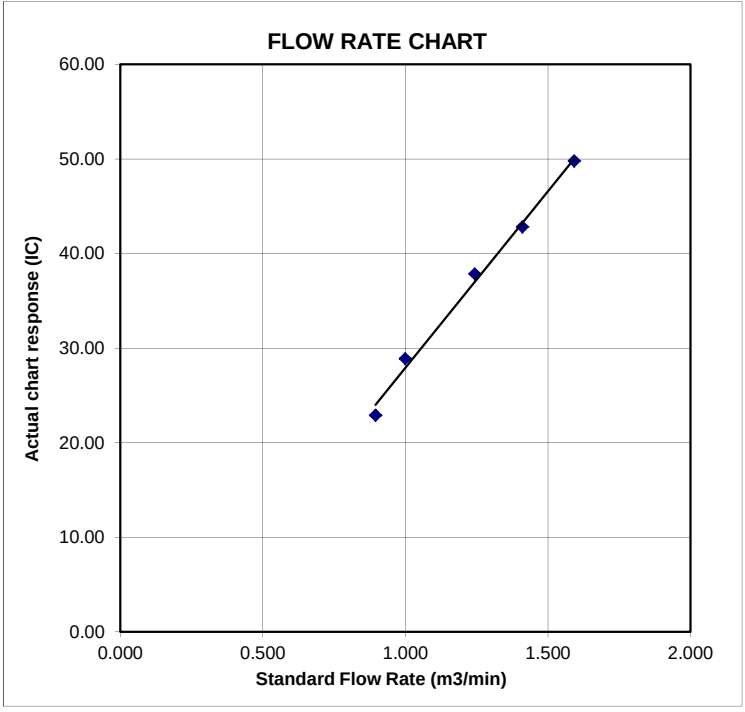
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/10/2014
Next Calibration Date: 21/12/2014
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (°C)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.743	50	49.85	Slope = 31.2132
13	4.7	4.7	9.4	1.531	43	42.87	Intercept = -4.6874
10	3.6	3.6	7.2	1.341	37	36.89	Corr. coeff. = 0.9989
7	2.2	2.2	4.4	1.050	29	28.92	
5	1.5	1.5	3.0	0.868	22	21.94	

Calculations :

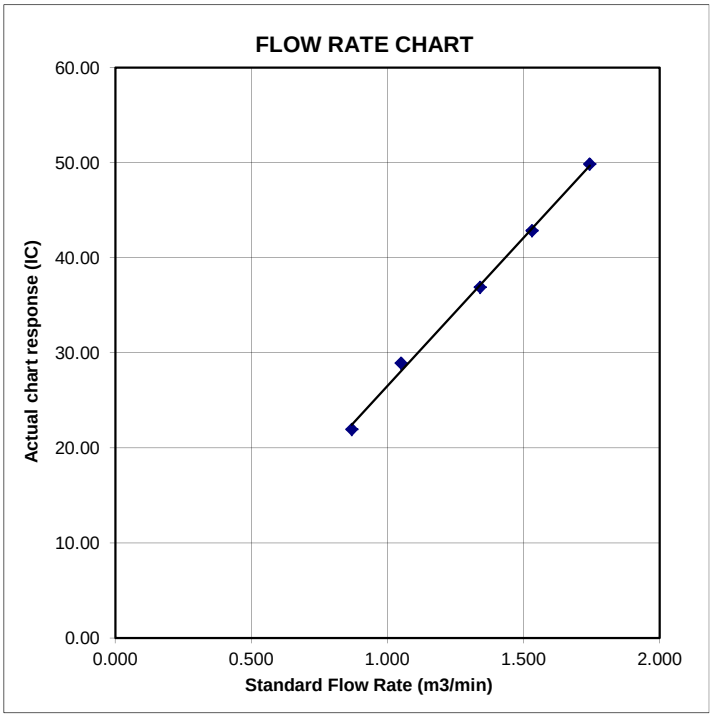
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/10/2014
Next Calibration Date: 21/12/2014
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (°C)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.6	5.6	11.2	1.670	58	57.83	Slope = 34.4826
13	4.5	4.5	9.0	1.498	52	51.85	Intercept = -0.4064
10	3.6	3.6	7.2	1.341	44	43.87	Corr. coeff. = 0.9957
7	2.3	2.3	4.6	1.073	37	36.89	
5	1.3	1.3	2.6	0.809	28	27.92	

Calculations :

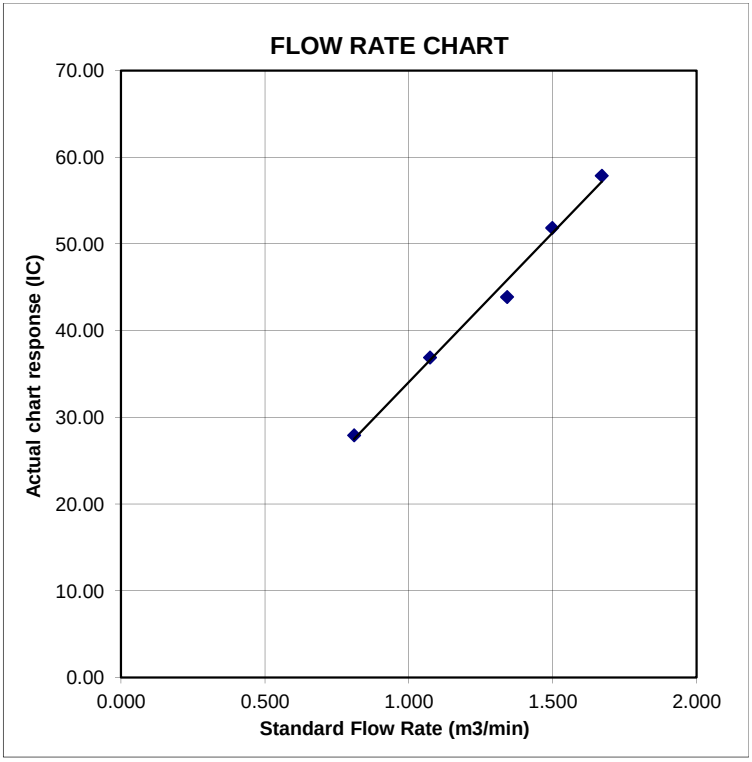
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/10/2014
Next Calibration Date: 21/12/2014
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (ºC)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.714	56	55.84	Slope = 31.6174
13	4.7	4.7	9.4	1.531	48	47.86	Intercept = 0.1254
10	3.7	3.7	7.4	1.359	42	41.88	Corr. coeff. = 0.9932
7	2.4	2.4	4.8	1.096	34	33.90	
5	1.4	1.4	2.8	0.839	28	27.92	

Calculations :

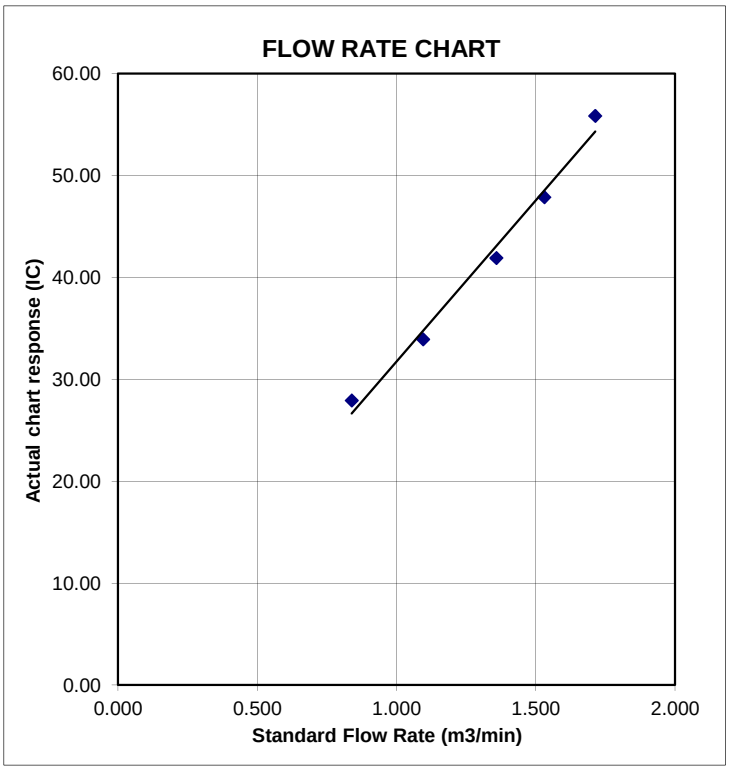
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/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
Location ID : AM7b

Date of Calibration: 21/10/2014
Next Calibration Date: 21/12/2014
Technician: C Y Keung

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (°C)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.5	4.5	9.0	1.498	54	53.84	Slope = 36.0946
13	3.5	3.5	7.0	1.322	48	47.86	Intercept = -0.1066
10	2.7	2.7	5.4	1.162	42	41.88	Corr. coeff. = 0.9998
7	1.8	1.8	3.6	0.950	34	33.90	
5	1.1	1.1	2.2	0.745	27	26.92	

Calculations :

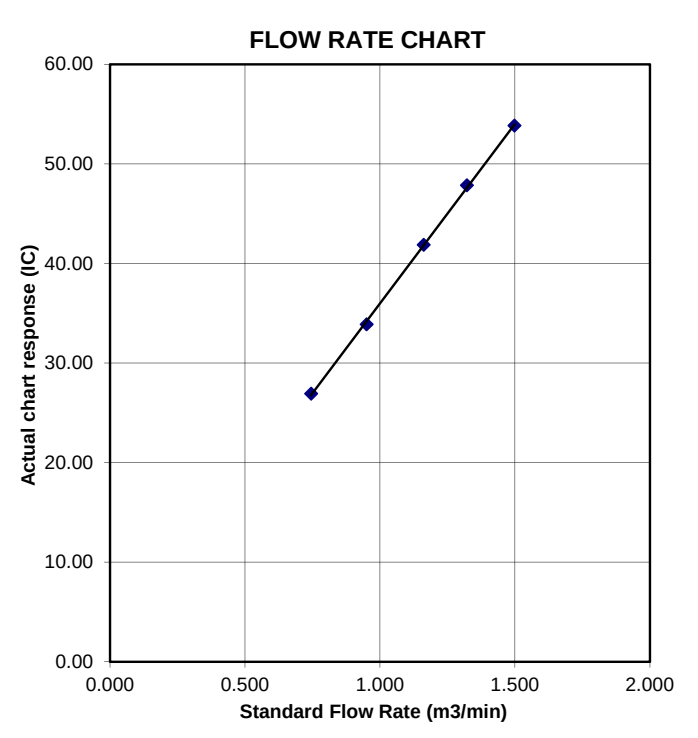
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

Date of Calibration: 21/10/2014
Next Calibration Date: 21/12/2014
Technician: C Y Keung

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (°C)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.700	63	62.82	Slope = 38.2955
13	4.7	4.7	9.4	1.531	55	54.84	Intercept = -3.3425
10	3.7	3.7	7.4	1.359	49	48.86	Corr. coeff. = 0.9952
7	2.9	2.9	5.8	1.204	41	40.88	
5	1.4	1.4	2.8	0.839	30	29.91	

Calculations :

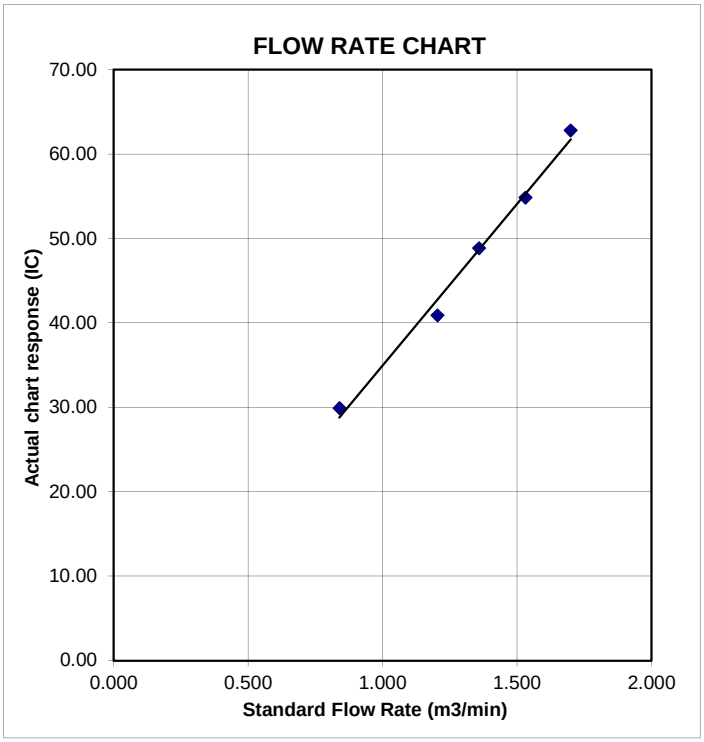
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/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		Date of Calibration:	21/10/2014
Location ID : AM9b		Next Calibration Date:	21/12/2014
		Technician:	Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015.2	Corrected Pressure (mm Hg)	761.4
Temperature (ºC)	27.3	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.714	57	56.83	Slope = 28.0192
13	4.7	4.7	9.4	1.531	51	50.85	Intercept = 8.1853
10	3.6	3.6	7.2	1.341	45	44.87	Corr. coeff. = 0.9983
7	2.2	2.2	4.4	1.050	38	37.89	
5	1.4	1.4	2.8	0.839	32	31.91	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

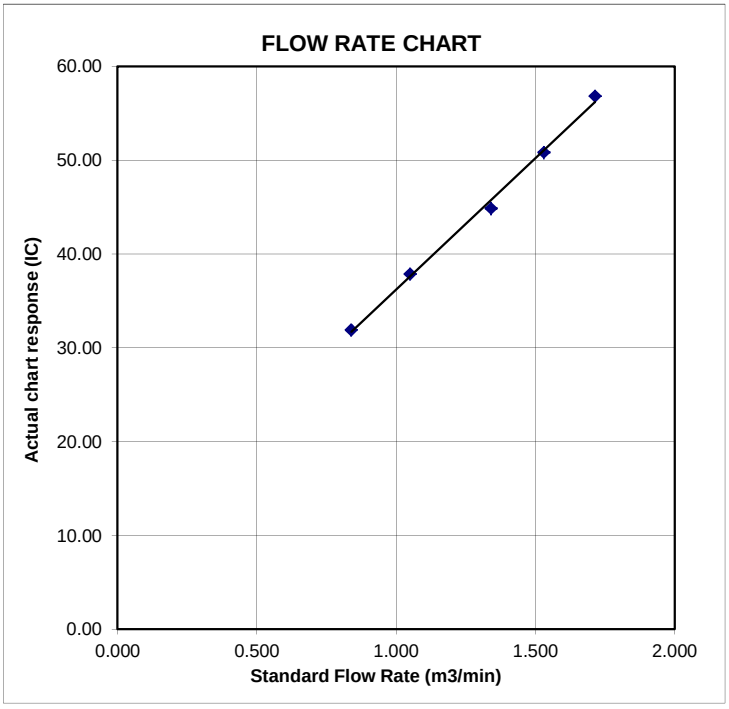
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, 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 Rootsmeter 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)
0.9866	0.7077	1.4077
0.9823	1.0034	1.9908
0.9804	1.1140	2.2258
0.9791	1.1726	2.3345
0.9739	1.4094	2.8155

Qstd slope (m) = 2.00757
intercept (b) = -0.01628
coefficient (r) = 0.99989

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7142	0.8896
0.9914	1.0127	1.2581
0.9894	1.1243	1.4066
0.9881	1.1834	1.4753
0.9829	1.4224	1.7793

Qa slope (m) = 1.25710
intercept (b) = -0.01029
coefficient (r) = 0.99989

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

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

SIBATA

EQ113

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: February 26, 2014

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6502
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	563 CPM
Scale Setting	:	February 25, 2014

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

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Susumu Egashira
Overseas Sales Division

SIBATA

EQ114

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: December 18, 2013

Equipment Name	:	Laser Dust Monitor, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6505
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	591 CPM
Calibration Date	:	November 12, 2013

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

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Kentaro Togo
Section Manager
Overseas Sales Division

Equipment Calibration Record

Equipment Calibrated:

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

Standard Equipment:

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

Equipment Calibration Results:

Calibration Date: 16 & 17 January 2014

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

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

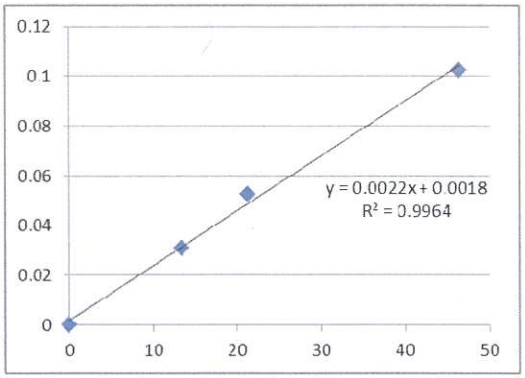
Sensitivity Adjustment Scale Setting (After Calibration) 597 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9964

Validity of Calibration Record 22 Jan 2014



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

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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751
13	4.6	4.6	9.2	1.460	50	50.67	Intercept = 17.5690
10	2.8	2.8	5.6	1.141	44	44.59	Corr. coeff. = 0.9966
8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

Calculations :

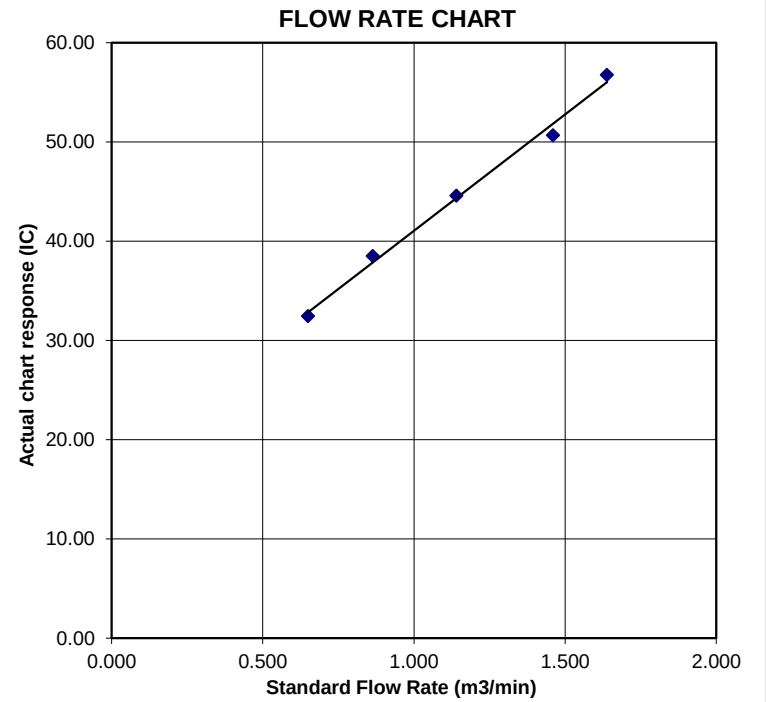
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



Equipment Calibration Record

Equipment Calibrated:

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

Standard Equipment:

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

Equipment Calibration Results:

Calibration Date: 16 & 17 January 2014

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

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

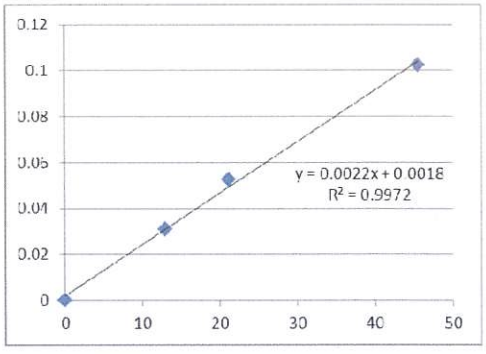
Sensitivity Adjustment Scale Setting (After Calibration) 593 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9972

Validity of Calibration Record 22 Jan 2014



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

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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.8	5.8	11.6	1.639	56	56.75	Slope = 23.4751
13	4.6	4.6	9.2	1.460	50	50.67	Intercept = 17.5690
10	2.8	2.8	5.6	1.141	44	44.59	Corr. coeff. = 0.9966
8	1.6	1.6	3.2	0.865	38	38.51	
5	0.9	0.9	1.8	0.650	32	32.43	

Calculations :

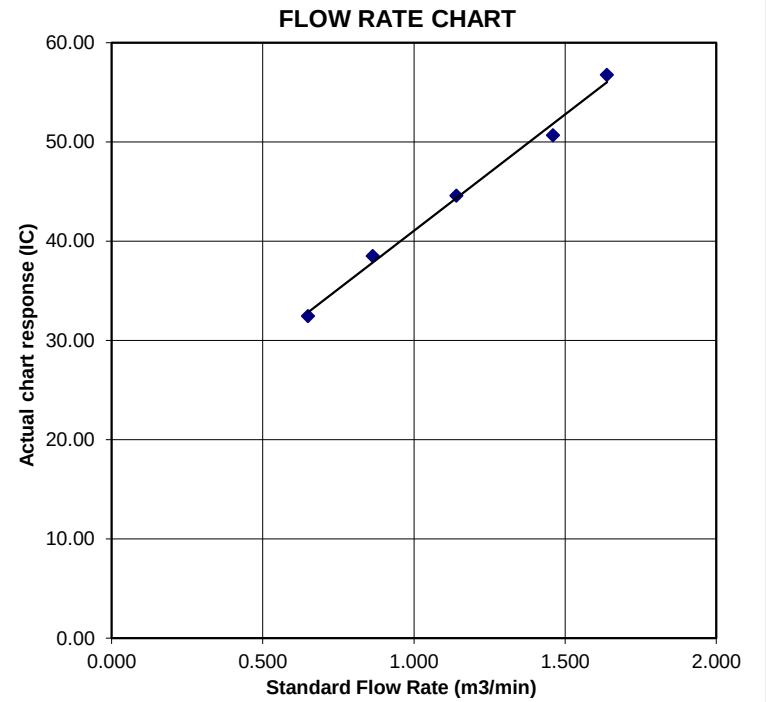
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

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



輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C142545
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 14 April 2014

Description / 儀器名稱 : Acoustical Calibrator (EQ081)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2326408
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 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

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 – 校正及檢測實驗所
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. : C142545
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

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

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

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

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

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

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 – 校正及檢測實驗所
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. : 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.

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 – 校正及檢測實驗所
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. : 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 ± 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 : 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

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 – 校正及檢測實驗所
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. : C142223
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

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 Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	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_A	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_A	A	Fast	94.00	1	93.9	Ref.
			Slow			93.9	± 0.3

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 – 校正及檢測實驗所
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

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_A	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_A	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.

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 – 校正及檢測實驗所
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. : 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 ± 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 : 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

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 - 校正及檢測實驗所
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

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 Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	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_A	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_A	A	Fast	94.00	1	93.7	Ref.
			Slow			93.7	± 0.3

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 - 校正及檢測實驗所
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

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_A	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_A	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.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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輝創工程有限公司 – 校正及檢測實驗所
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TEST REPORT
for
PRECISION
SOUND LEVEL METER
(NX-42EX installed)

Model : NL－52

Serial No. : 00142580

Microphone No. : 06011

Preamplifier No. : 32608

Condition : Temperature 25 ℃

Humidity 30 %RH

Date : March, 12, 2014

Signature :

RION CO., LTD.

1. Frequency weightings (Fig. 1) Pass

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

Indicated value / Frequency	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	Lcpeak		
31.5	1 cycle	137.0	136.5	137.3	0.8	±2.0
500	Positive half cycle	137.0	139.4	139.2	−0.2	±1.0
	Negative half cycle	137.0	139.4	139.2	−0.2	±1.0

6. Response to repeated to toneburst

Input signal level : 130.0 dB + 8 dB

Frequency weighting : A, Time-weighting : S

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

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

7. Inherent noise level (dB)

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

8. Instrumental error

84.0 dB ± 0.7 dB 0.0 dB

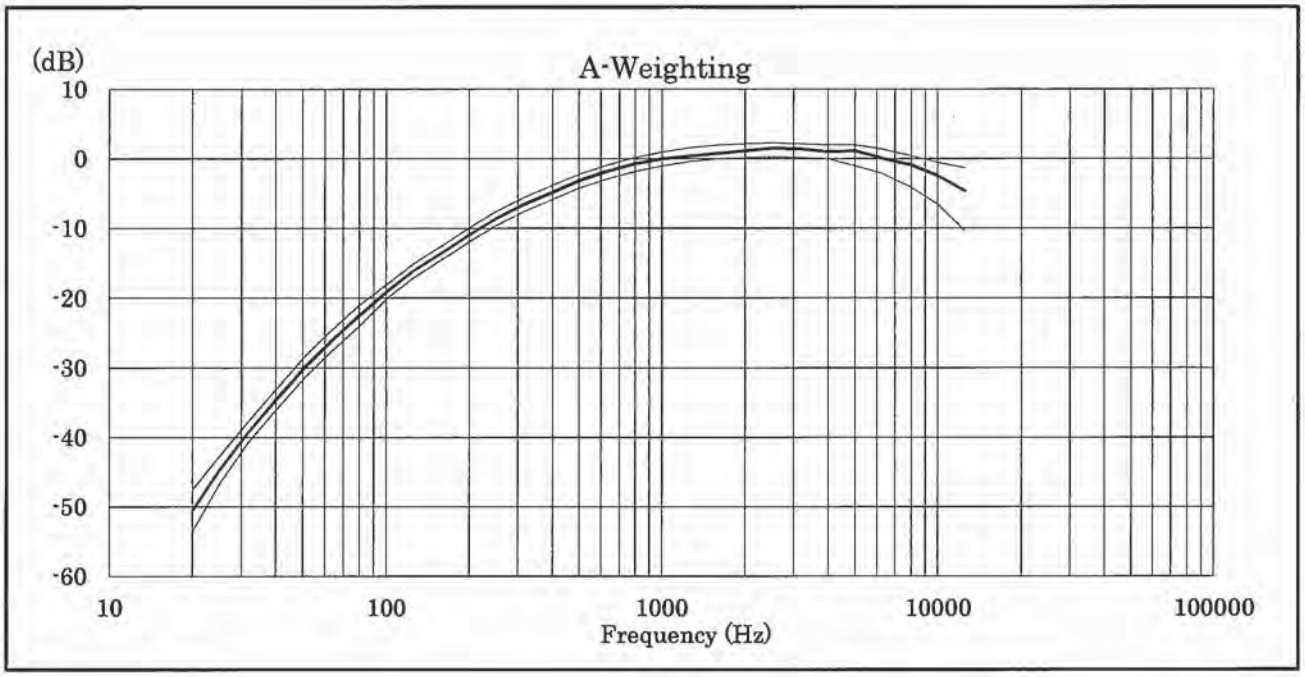
Applicable standards

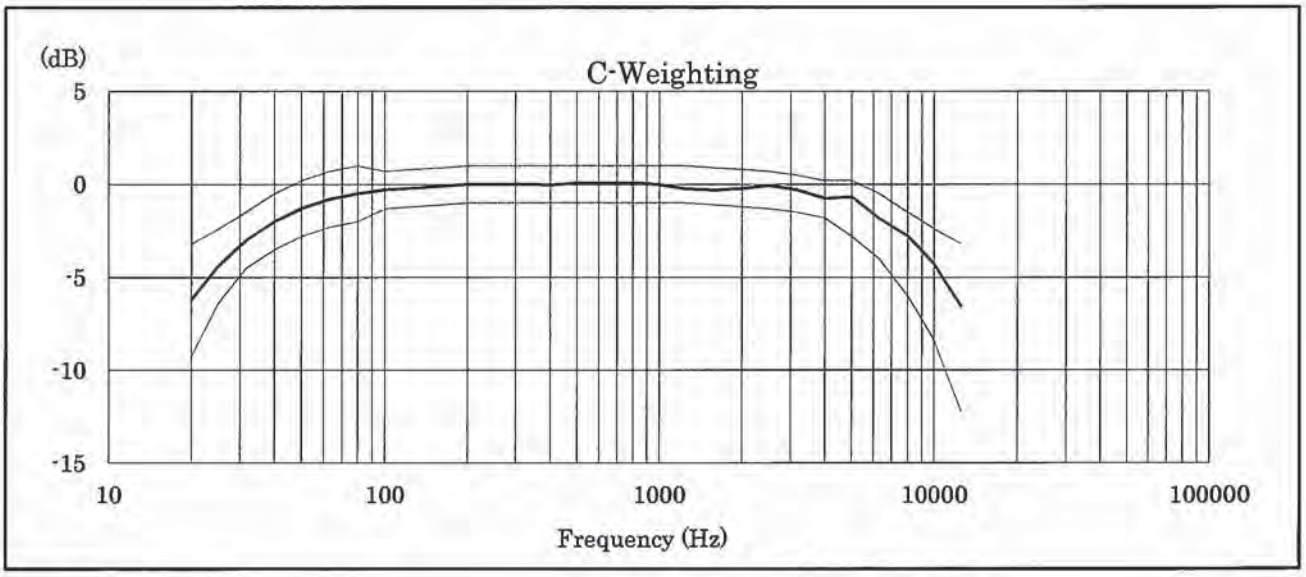
JIS C 1509-1 : 2005 Class 1
IEC 61672-1 : 2002 Class 1
ANSI S1.4-1983 Type 1
ANSI S1.43-1997 Type 1
CE marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC)
WEEE Directive (2002/96/EC)
Chinese RoHS

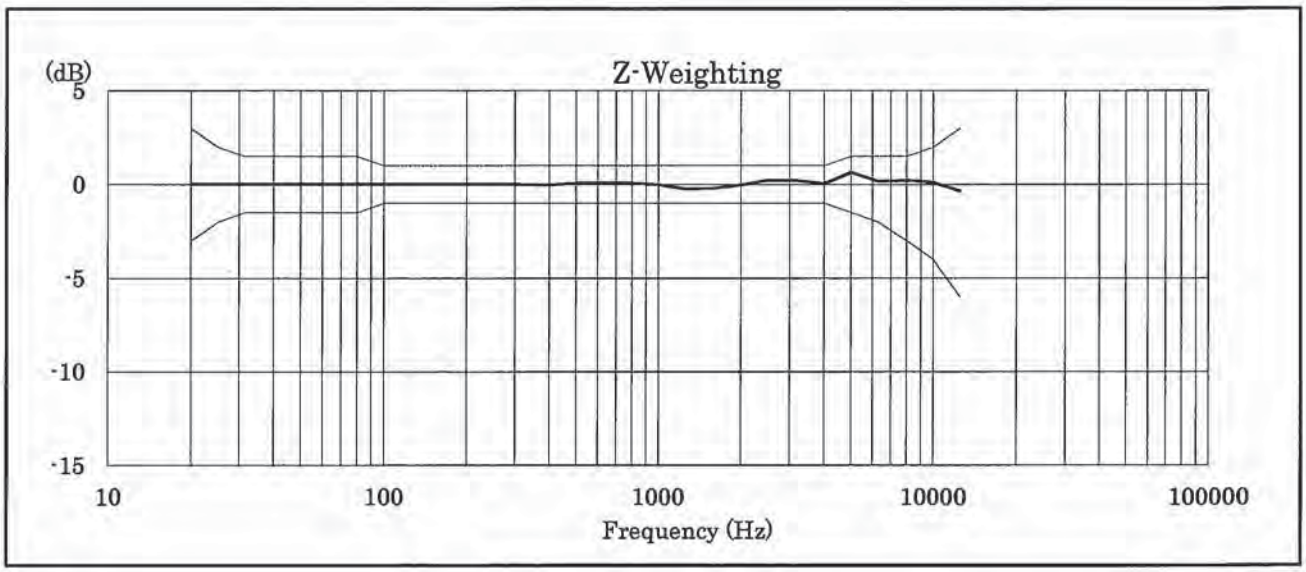
RION

NL-52 (Fig. 1) No. 00142580

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 簽發日期 : 29 April 2014

Sun Creation Engineering Limited – Calibration & Testing Laboratory
p/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 – 校正及檢測實驗所
p/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

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 Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.8	± 1.1

6.1.2 Linearity

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

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

6.2 Time Weighting

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

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 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	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 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	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)

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C142547
證書編號

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

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

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

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 – 校正及檢測實驗所
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. : C142873
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0853) Date of Receipt / 收件日期 : 8 May 2014

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

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C 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

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 – 校正及檢測實驗所
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. : C142873
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 using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.

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

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.2

6.1.1.2 After Self-calibration

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

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

Certificate of Calibration
校正證書

Certificate No. : C142873
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

6.3.1 A-Weighting

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

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Certificate of Calibration
校正證書

Certificate No. : C142873
證書編號

6.3.2 C-Weighting

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

6.4 Time Averaging

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

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

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

- Uncertainties of Applied Value :

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

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

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1421663
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	08/07/2014
		DATE OF ISSUE:	16/07/2014

COMMENTS

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

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

NOTES

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

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

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

Parameters:

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

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

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

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

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

Mr Fung Lim Chee, Richard
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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1434253
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	07/10/2014
		DATE OF ISSUE:	27/10/2014

COMMENTS

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

Scope of Test:	Dissolved Oxygen and Temperature
Description:	Multifunctional Meter
Brand Name:	YSI
Model No.:	550A
Serial No.:	05F2063AZ
Equipment No.:	--
Date of Calibration:	07 October, 2014

NOTES

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1434253
Date of Issue: 27/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Description: Multifunctional Meter
Brand Name: YSI
Model No.: 550A
Serial No.: 05F2063AZ
Equipment No.: --
Date of Calibration: 07 October, 2014 Date of next Calibration: 07 January, 2015

Parameters:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.00	2.99	-0.01
5.02	4.93	-0.09
8.05	8.01	-0.04
	Tolerance Limit (mg/L)	±0.20

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

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
11.0	11.8	+0.8
22.0	23.0	+1.0
38.0	38.5	+0.5
	Tolerance Limit (°C)	±2.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1421347
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG,	**DATE RECEIVED:**	07/07/2014
		DATE OF ISSUE:	21/07/2014
PROJECT:	N.T., HONG KONG		

COMMENTS

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

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

NOTES

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

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

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

Parameters:

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

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

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

Mr Fung Lim Chee, Richard
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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1432526
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG,	**DATE RECEIVED:**	07/10/2014
		DATE OF ISSUE:	16/10/2014
PROJECT:	N.T., HONG KONG		

COMMENTS

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

Scope of Test:	pH
Description:	pH meter
Brand Name:	--
Model No.:	8685
Serial No.:	212632
Equipment No.:	--
Date of Calibration:	07 October, 2014

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
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Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1432526
Date of Issue: 16/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Description: pH meter
Brand Name: --
Model No.: 8685
Serial No.: 212632
Equipment No.: --
Date of Calibration: 07 October, 2014 Date of next Calibration: 07 January, 2015

Parameters:

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.0	0.00
7.0	7.1	+0.10
10.0	10.1	+0.10
	Tolerance Limit (pH Unit)	±0.20

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1423285
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	21/07/2014
		DATE OF ISSUE:	29/07/2014
PROJECT:	--		

COMMENTS

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

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	--
Date of Calibration:	28 July, 2014

NOTES

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1423285
Date of Issue: 29/07/2014
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 28 July, 2014 Date of next Calibration: 28 October, 2014

Parameters:

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.09	--
4	4.30	+7.5
40	38.2	-4.5
80	80.5	+0.6
400	378	-5.5
800	804	+0.5
	Tolerance Limit (±%)	10.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1434245
CLIENT:	ACTION UNITED ENVIRO SERVICES	**LABORATORY:**	HONG KONG
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	21/10/2014
		DATE OF ISSUE:	27/10/2014

COMMENTS

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

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	--
Date of Calibration:	24 October, 2014

NOTES

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1434245
Date of Issue: 27/10/2014
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 24 October, 2014 Date of next Calibration: 24 January, 2015

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.02	--
4	3.67	-8.3
40	38.1	-4.8
80	74.2	-7.3
400	377	-5.8
800	830	+3.8
	Tolerance Limit (%)	±10

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

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

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

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

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

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

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作（見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報）。

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

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

Registration Number : HOKLAS 066
註冊號碼：

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

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L 000552

Appendix G

Event and Action Plan

Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Monitor theimplementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

Event	ET	IEC	ER	Action Contractor
Action Level	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures.	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Event and Action Plan for Water Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit Level.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or to stop all or part of the construction activities.

Appendix H

Impact Monitoring Schedule

Impact Monitoring Schedule for the Reporting Period – October 2014

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

 # 24-hour TSP monitoring for AM1a was rescheduled from 6 Sep to 10 Sep due to power failure of HVS.

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

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

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

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

Impact Monitoring Schedule for next Reporting Period – November 2014

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

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

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

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

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

Appendix I

Database of Monitoring Result

24-hour TSP Monitoring Data

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-HR TSP ($\mu g/m^3$)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m^3/min)	(std m^3)	INITIAL	FINAL	(g)	
AM1a - Garden Farm, Tsung Yuen Ha Village															
4-Oct-14	27235	9028.77	9052.77	1440.00	38	43	40.5	26.5	1010.9	1.42	2045	2.8381	2.9870	0.1489	73
10-Oct-14	27262	9052.77	9076.77	1440.00	40	44	42.0	27.1	1010.1	1.46	2106	2.7692	2.9436	0.1744	83
16-Oct-14	27274	9076.77	9100.77	1440.00	40	43	41.5	25.7	1014	1.45	2092	2.7610	3.0334	0.2724	130
22-Oct-14	27310	9100.77	9124.77	1440.00	42	43	42.5	24.8	1015	1.51	2179	2.7758	3.0025	0.2267	104
28-Oct-14	27322	9124.77	9148.77	1440.00	42	43	42.5	24	1015.8	1.52	2183	2.7498	2.9452	0.1954	90
AM2 - Village House near Lin Ma Hang Road															
4-Oct-14	27234	4514.51	4538.42	1434.60	34	37	35.5	26.5	1010.9	0.95	1363	2.8282	2.9957	0.1675	123
10-Oct-14	27265	4538.42	4562.28	1431.60	40	46	43.0	27.1	1010.1	1.24	1769	2.7596	3.0153	0.2557	145
16-Oct-14	27275	4562.28	4586.12	1430.40	42	46	44.0	25.7	1014	1.28	1833	2.7510	2.9973	0.2463	134
22-Oct-14	27311	4586.12	4610.03	1434.60	43	46	44.5	24.8	1015	1.30	1870	2.7861	3.1907	0.4046	216
28-Oct-14	27333	4610.03	4633.92	1433.40	38	42	40.0	24	1015.8	1.18	1684	2.7551	2.9962	0.2411	143
AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village															
4-Oct-14	27236	5558.10	5582.10	1440.00	34	38	36.0	26.5	1010.9	1.09	1566	2.8234	3.0128	0.1894	121
10-Oct-14	27266	5582.10	5606.10	1440.00	38	44	41.0	27.1	1010.1	1.24	1790	2.7496	3.0028	0.2532	141
16-Oct-14	27276	5606.13	5630.13	1440.00	38	39	38.5	25.7	1014	1.17	1684	2.7488	2.9482	0.1994	118
22-Oct-14	27312	5630.13	5654.13	1440.00	38	39	38.5	24.8	1015	1.22	1750	2.7594	3.1123	0.3529	202
28-Oct-14	27335	5654.13	5678.13	1440.00	38	39	38.5	24	1015.8	1.22	1753	2.7572	2.9385	0.1813	103
AM7b - Loi Tung Village House															
4-Oct-14	27233	13092.49	13116.49	1440.00	42	46	44.0	26.5	1010.9	1.18	1699	2.8241	3.0757	0.2516	148
10-Oct-14	27264	13116.49	13140.49	1440.00	42	46	44.0	27.1	1010.1	1.18	1697	2.7374	2.9376	0.2002	118
16-Oct-14	27270	13140.49	13164.49	1440.00	41	45	43.0	25.7	1014	1.16	1663	2.7515	3.0016	0.2501	150
22-Oct-14	27314	13164.49	13188.49	1440.00	40	44	42.0	24.8	1015	1.17	1682	2.7518	2.9328	0.1810	108
28-Oct-14	27331	13188.49	13212.49	1440.00	42	46	44.0	24	1015.8	1.23	1765	2.7466	3.0174	0.2708	153
AM8 - Po Kat Tsai Village No. 4															
4-Oct-14	27237	6963.03	6987.03	1440.00	38	39	38.5	26.5	1010.9	1.05	1514	2.8221	2.9371	0.1150	76
10-Oct-14	27267	6987.04	7011.04	1440.00	38	40	39.0	27.1	1010.1	1.07	1534	2.7506	2.8655	0.1149	75
16-Oct-14	27272	7011.04	7035.04	1440.00	40	41	40.5	25.7	1014	1.12	1612	2.7325	2.8821	0.1496	93
22-Oct-14	27315	7035.04	7059.04	1440.00	38	39	38.5	24.8	1015	1.09	1575	2.7818	2.9207	0.1389	88
28-Oct-14	27329	7059.04	7083.04	1440.00	39	41	40.0	24	1015.8	1.13	1634	2.7495	2.9002	0.1507	92
AM9b - Nam Wa Po Village House No. 80															
4-Oct-14	27232	14522.30	14546.30	1440.00	26	32	29.0	26.5	1010.9	1.03	1477	2.8173	2.9187	0.1014	69
10-Oct-14	27268	14546.30	14570.30	1440.00	28	30	29.0	27.1	1010.1	1.02	1476	2.7415	2.8684	0.1269	86
16-Oct-14	27277	14570.31	14594.31	1440.00	26	28	27.0	25.4	1017.9	0.98	1406	2.7380	2.8759	0.1379	98

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-HR TSP ($\mu g/m^3$)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m^3/min)	(std m^3)	INITIAL	FINAL	(g)	
22-Oct-14	27309	14594.31	14618.31	1440.00	33	36	34.5	24.8	1015	0.94	1354	2.7791	2.9358	0.1567	116
28-Oct-14	27328	14618.31	14642.31	1440.00	32	35	33.5	24	1015.8	0.91	1306	2.7528	2.8815	0.1287	99

Construction Noise Monitoring Results, dB(A)

Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3rd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq30	façade correction
NM1 - Tsung Yuen Ha Village House No. 63																					
3-Oct-14	10:21	55.0	53.0	48.4	54.6	52.6	48.2	58.3	57.2	48.0	51.9	51.9	46.8	51.6	50.8	46.5	48.0	49.1	45.9	54	NA
9-Oct-14	11:20	46.9	48.8	43.9	48.1	50.4	44.1	49.5	49.8	44.5	46.5	48.4	43.7	47.1	47.0	42.9	46.4	47.4	43.2	48	NA
15-Oct-14	13:15	61.0	62.4	53.3	62.8	64.8	60.1	61.1	63.2	57.9	61.2	63.0	58.9	58.2	61.3	51.9	58.4	59.9	55.9	61	NA
21-Oct-14	11:10	52.5	53.7	49.0	48.9	50.6	46.7	48.6	50.6	45.2	49.9	51.6	47.7	47.8	49.4	46.1	61.8	49.5	43.6	55	NA
27-Oct-14	10:52	51.3	52.1	43.6	48.6	52.3	43.3	48.8	52.2	43.7	48.1	50.6	44.9	47.4	49.1	43.2	49.3	51.0	42.9	49	NA
NM2 - Village House near Lin Ma Hang Road																					
3-Oct-14	10:20	62.1	66.0	53.8	61.9	66.2	53.8	61.7	65.7	48.9	63.6	68.2	47.1	65.0	67.4	47.2	63.8	68.2	51.0	63	NA
9-Oct-14	11:15	53.4	57.0	45.1	61.3	64.4	48.2	61.6	66.2	47.9	59.4	60.1	44.4	59.8	64.1	47.4	56.6	58.3	46.4	59	NA
15-Oct-14	11:12	63.5	66.5	51.4	62.2	65.6	49.9	63.9	66.5	49.1	61.4	64.6	48.4	61.2	64.0	45.9	59.3	60.8	46.5	62	NA
21-Oct-14	14:58	61.4	63.0	55.0	60.4	61.1	54.7	61.5	64.7	55.1	62.7	66.9	53.2	60.8	63.5	50.3	62.8	67.1	50.9	62	NA
27-Oct-14	11:30	60.0	64.1	47.2	66.0	70.1	44.2	60.7	65.0	44.1	57.4	59.0	42.9	62.0	62.7	46.1	58.5	59.6	52.7	62	NA
NM5– Ping Yeung Village House (façade facing northeast)																					
6-Oct-14	14:09	56.0	58.6	52.2	55.4	58.5	49.3	56.1	58.4	52.1	56.8	59.5	52.6	59.8	58.7	50.8	54.9	58.3	49.0	57	NA
11-Oct-14	14:17	57.2	61.0	51.1	55.7	59.1	49.3	55.8	58.7	51.3	54.8	57.7	50.6	56.0	58.7	51.6	56.3	59.0	51.8	56	NA
17-Oct-14	14:30	54.9	57.4	50.9	54.3	56.1	50.9	54.8	56.9	50.3	55.1	58.4	49.7	56.2	59.7	49.1	72.1	59.8	49.6	65	NA
23-Oct-14	14:23	53.6	55.6	49.9	54.2	57.3	49.9	53.5	56.4	49.6	55.2	58.3	49.7	54.6	57.7	49.7	54.3	57.2	49.3	54	NA
29-Oct-14	14:57	54.1	56.9	49.1	55.5	58.3	50.6	55.0	58.3	49.8	55.1	58.3	48.7	53.7	56.8	48.8	54.6	57.5	50.3	55	NA
NM6 – Tai Tong Wu Village House 2																					
6-Oct-14	11:40	62.1	66.3	52.4	62.5	66.1	51.0	62.8	66.4	51.0	62.5	66.3	54.4	60.9	64.8	53.5	62.3	65.8	53.7	62	NA
11-Oct-14	11:37	62.2	65.8	50.8	61.0	64.5	50.8	60.6	64.9	47.5	61.9	64.9	51.5	62.1	65.9	53.4	63.3	67.5	53.9	62	NA
17-Oct-14	11:26	61.7	65.8	52.4	63.2	66.8	53.2	64.6	66.2	55.1	62.3	66.3	57.4	64.0	67.4	51.7	62.3	66.6	50.2	63	NA
23-Oct-14	11:13	62.9	67.1	47.7	62.6	66.7	54.2	62.1	66.3	49.8	61.7	65.8	48.3	62.6	66.1	54.2	61.7	65.3	49.5	62	NA
29-Oct-14	11:19	60.6	65.0	51.1	61.6	65.4	52.0	62.1	66.1	52.3	61.1	65.2	49.2	60.7	64.9	49.5	62.7	66.7	54.2	62	NA
NM7 – Po Kat Tsai Village																					
6-Oct-14	10:57	65.4	70.1	53.9	61.4	63.4	54.3	63.9	67.0	55.3	62.0	62.9	54.4	54.4	56.0	52.8	56.4	57.4	53.4	62	NA
11-Oct-14	10:50	55.6	58.1	50.9	56.3	58.8	52.2	59.9	64.0	52.4	68.6	67.7	52.6	57.9	59.6	48.8	53.1	55.4	47.7	62	NA
17-Oct-14	10:40	70.0	71.1	66.6	71.3	72.4	65.8	70.2	85.4	64.3	73.6	87.3	67.9	71.5	85.4	66.0	73.2	87.6	66.5	72	NA
23-Oct-14	10:27	71.4	75.7	58.7	72.9	75.5	60.6	69.0	73.5	58.3	70.3	74.0	58.5	71.1	72.1	60.3	70.6	73.6	62.1	71	NA
29-Oct-14	10:38	70.0	65.5	55.0	57.2	59.2	54.2	57.1	58.2	55.0	64.7	62.4	55.1	59.3	60.5	55.6	59.8	61.3	54.9	64	NA
NM8 - Village House, Tong Hang																					
3-Oct-14	11:32	62.3	66.5	49.8	59.8	65.2	50.7	58.2	60.2	49.2	57.6	62.4	48.3	56.6	61.6	47.3	57.5	61.2	47.3	59	NA

Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3nd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq30	façade correction
9-Oct-14	14:56	59.5	65.1	49.1	56.9	59.4	48.1	56.9	52.6	47.2	60.2	65.9	49.1	58.9	62.3	47.5	59.2	60.6	49.5	59	NA
15-Oct-14	15:31	58.2	60.8	51.3	54.3	57.4	49.2	54.6	57.8	49.5	55.5	58.4	50.1	56.3	59.2	51.2	57.6	59.4	48.7	56	NA
21-Oct-14	11:29	61.3	62.4	49.4	59.1	65.3	48.3	62.0	62.6	48.8	62.8	64.8	49.4	60.2	66.0	48.9	62.9	66.9	47.8	62	NA
27-Oct-14	14:39	56.8	58.5	50.9	56.8	58.9	48.3	53.7	56.2	49.0	60.9	64.4	48.6	59.5	63.9	48.2	57.6	58.2	48.4	58	NA
NM9 - Village House, Kiu Tau Village																					
3-Oct-14	13:00	54.7	59.3	45.4	56.1	61.7	45.9	57.6	62.9	45.6	62.2	64.2	54.6	60.5	64.6	50.1	60.3	64.0	49.3	59	NA
9-Oct-14	15:43	60.3	62.9	56.4	57.8	59.8	53.0	59.7	61.3	53.6	78.7	81.8	55.4	62.4	65.7	56.9	59.3	60.9	55.7	71	NA
15-Oct-14	16:13	56.2	58.8	49.3	52.3	55.4	47.2	52.6	55.8	47.5	53.5	56.4	48.1	54.3	57.2	49.2	55.6	57.4	46.7	54	NA
21-Oct-14	10:44	77.8	74.5	50.4	75.8	77.2	49.0	55.5	57.8	49.9	55.2	58.4	50.4	55.4	57.7	49.9	55.6	60.0	50.2	72	NA
27-Oct-14	17:03	56.6	57.8	53.7	56.7	57.5	54.1	59.9	60.2	55.5	59.7	62.4	54.5	60.6	63.2	54.5	59.8	59.9	54.2	59	NA
NM10 - Nam Wa Po Village House No. 80																					
3-Oct-14	13:05	56.9	58.9	54.5	57.8	59.6	55.7	59.8	61.5	56.5	58.8	61.3	56.0	58.4	60.2	56.2	58.0	60.2	55.9	58	61
9-Oct-14	15:29	59.0	60.7	57.1	63.2	66.1	58.1	60.3	62.0	58.3	60.9	62.1	59.2	60.4	62.0	58.6	59.4	61.2	57.2	61	64
15-Oct-14	14:08	65.1	65.3	60.7	62.7	63.7	60.2	62.6	64.1	60.3	72.1	77.0	61.2	61.9	63.2	60.1	61.1	62.1	60.0	66	69
21-Oct-14	10:06	60.1	62.8	55.8	57.2	58.4	55.5	56.8	58.3	55.0	57.1	58.1	55.6	58.8	59.6	56.6	60.5	62.6	55.9	59	62
27-Oct-14	13:08	62.5	63.8	60.0	65.4	67.1	60.9	64.6	66.5	61.2	65.3	67.3	62.1	64.7	66.8	61.9	65.6	67.1	63.9	65	68

Water Quality Monitoring Data for Contract 5

Date	3-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:36	0.47	28.6	28.6	5.98	5.9	77.0	76.2	7.1	7.3	8.4	8.5	3	3.0
			28.6		5.84		75.4		7.5		8.5		3	
WM1	11:00	0.49	29.4	29.4	7.83	7.8	102.5	101.3	22.8	22.4	8.4	8.4	21	21.5
			29.3		7.68		100.1		22.0		8.4		22	

Date	7-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	13:37	0.35	29.2	29.2	7.94	7.9	103.5	102.9	11.6	11.8	8.8	8.8	4	4.5
			29.2		7.85		102.2		12.0		8.8		5	
WM1	14:09	0.49	29	29.0	7.79	7.6	101.2	99.2	26.4	26.7	8.3	8.4	23	23.5
			28.9		7.48		97.1		26.9		8.4		24	

Date	9-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	12:35	0.39	27.8	27.8	7.2	7.2	91.7	91.9	7.7	7.8	8.7	8.8	3	3.0
			27.8		7.25		92.1		7.9		8.8		3	
WM1	13:05	0.43	29	29.0	8.09	8.1	104.4	104.8	35.5	35.9	8.4	8.4	35	35.0
			28.9		8.11		105.1		36.2		8.4		35	

Date	11-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	15:21	0.33	30.3	30.3	8.76	8.7	116.7	115.8	8.2	8.4	8.6	8.6	3	2.5
			30.3		8.65		114.9		8.5		8.6		2	
WM1	15:43	0.43	29.7	29.7	8.27	8.2	108.4	107.2	20.0	19.8	8.7	8.7	24	23.0
			29.6		8.08		106.0		19.6		8.7		22	

Date	13-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	14:27	0.41	28.9	28.9	10.14	10.1	129.9	129.8	25.0	25.0	8.7	8.7	8	8.0

			28.8		10.06		129.7		25.0		8.7		8	
WM1	14:51	0.47	29	29.0	9.91	9.9	127.2	126.8	23.8	24.0	8.3	8.3	23	23.0
			29		9.83		126.3		24.1		8.3		23	

Date	**15-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	13:27	0.43	27.3	27.3	9.03	9.0	113.6	112.6	11.7	11.4	8.8	8.8	4	4.0
			27.2		8.87		111.6		11.1		8.8		4	
WM1	14:08	0.47	27.5	27.5	9.59	9.6	122.4	123.0	20.7	20.9	8.8	8.8	20	20.5
			27.5		9.69		123.6		21.0		8.8		21	

Date	**17-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	15:26	0.42	28.8	28.8	9.53	9.6	123.3	124.0	9.6	9.5	8.6	8.6	7	6.5
			28.8		9.66		124.7		9.4		8.6		6	
WM1	15:49	0.43	28.5	28.5	8.52	8.6	109.8	110.5	27.3	27.1	8.6	8.6	26	26.0
			28.4		8.65		111.1		26.9		8.6		26	

Date	**21-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:25	0.42	26.8	26.8	7.41	7.4	92.2	92.6	8.3	8.4	8.1	8.1	4	4.5
			26.7		7.46		93.0		8.6		8.1		5	
WM1	11:47	0.40	28.6	28.6	7.33	7.4	94.8	95.2	13.4	13.2	7.9	7.9	15	14.5
			28.6		7.45		95.5		12.9		7.9		14	

Date	**23-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	12:10	0.36	24.6	24.6	6.65	6.6	79.4	79.0	9.4	9.3	7.6	7.6	7	6.5
			24.5		6.58		78.5		9.1		7.6		6	
WM1	12:37	0.34	25.8	25.7	6.84	6.9	83.6	84.3	19.4	20.1	7.1	7.1	19	19.5
			25.6		6.95		85.0		20.7		7		20	

Date	25-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	14:35	0.37	26.1	26.1	8.5	8.5	104.8	104.5	8.5	8.5	8.1	8.2	3	3.0
			26.1		8.45		104.1		8.5		8.2		3	
WM1	15:01	0.32	26.5	26.5	7.35	7.3	91.3	90.8	20.5	20.8	9.4	9.4	17	16.5
			26.4		7.27		90.2		21.0		9.4		16	

Date	27-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:11	0.37	26.6	26.6	7.53	7.4	93.6	91.8	7.6	7.7	6.8	6.8	4	4.0
			26.6		7.21		89.9		7.8		6.8		4	
WM1	12:07	0.31	29	29.0	8.86	8.7	111.4	110.5	15.6	15.7	6.5	6.5	18	19.0
			28.9		8.44		109.5		15.8		6.5		20	

Date	30-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:10	0.42	25.4	25.4	7.74	7.7	94.9	94.2	7.5	7.4	7.2	7.3	3	3.0
			25.4		7.61		93.4		7.4		7.3		3	
WM1	10:43	0.40	26.5	26.5	4.78	4.7	58.0	57.2	11.2	11.2	6.9	7.0	7	7.0
			26.5		4.66		56.3		11.1		7		7	

Water Quality Monitoring Data for Contract 2 and 3

Date	3-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	12:22	0.13	29.2	29.2	8.92	8.8	116.4	114.6	4.1	3.9	8.6	8.6	4	3.5
			29.2		8.65		112.8		3.8		8.6		3	
WM4-CB	12:39	0.20	31.1	31.1	6.67	6.7	90.1	90.3	11.1	11.2	8.1	8.1	12	12.0
			31.1		6.7		90.5		11.2		8.1		12	
WM4	11:49	0.25	29.8	29.8	7.72	7.8	101.7	102.1	12.8	12.5	8.3	8.4	14	13.5
			29.8		7.78		102.4		12.2		8.4		13	

Date	7-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	12:21	0.13	28.4	28.4	7.72	7.8	100.1	101.1	4.8	4.7	8.7	8.8	5	4.5
			28.3		7.95		102.0		4.7		8.8		4	
WM4-CB	11:29	0.20	29.1	29.1	7.44	7.3	96.7	95.0	445.0	449.0	8.3	8.3	269	266.0
			29		7.19		93.2		453.0		8.3		263	
WM4	11:55	0.27	28.6	28.6	8.41	7.9	108.3	108.5	17.4	17.3	8.6	8.6	16	15.5
			28.5		7.47		108.7		17.1		8.6		15	

Date	9-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	16:24	0.11	27.4	27.4	7.58	7.6	95.3	96.1	3.8	3.5	8.4	8.5	3	3.0
			27.4		7.67		96.9		3.3		8.5		3	
WM4-CB	15:45	0.17	29.4	29.4	6.2	6.2	80.4	80.1	28.3	28.0	8.2	8.2	19	20.0
			29.4		6.16		79.8		27.7		8.2		21	
WM4	15:05	0.23	28.8	28.8	6.65	6.7	85.1	86.6	18.4	18.4	8.4	8.4	9	10.0
			28.7		6.83		88.1		18.3		8.4		11	

Date	11-Oct-14															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	17:41	0.13	27	27.0	6.78	6.7	85.1	84.7	5.0	4.8	8.7	8.7	3	3.0
			27		6.71		84.2		4.7		8.7		3	

WM4-CB	17:59	0.18	27.6	27.6	3.37	3.4	42.5	42.7	7.6	7.7	8.2	8.2	5	5.5
			27.5		3.41		42.9		7.8		8.2		6	
WM4	17:13	0.23	28.2	28.2	5.31	5.3	68.2	67.9	10.0	9.8	8.4	8.4	7	7.0
			28.1		5.27		67.5		9.6		8.4		7	

Date	**13-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	11:58	0.13	27.7	27.8	8.32	8.2	105.9	104.2	7.6	7.5	8.9	8.9	<2	2.0
			27.8		8.03		102.4		7.5		8.8		<2	
WM4-CB	12:33	0.17	29.5	29.6	8.48	8.5	111.4	112.1	11.2	11.0	8.2	8.2	14	13.5
			29.6		8.59		112.8		10.7		8.2		13	
WM4	11:36	0.24	26.4	26.4	7.88	7.9	97.6	97.9	17.2	17.6	8.7	8.6	13	13.5
			26.3		7.83		98.1		17.9		8.5		14	

Date	**15-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	16:49	0.13	26.2	26.2	7.08	7.1	87.3	87.9	6.6	6.4	8.8	8.8	4	4.0
			26.1		7.17		88.4		6.3		8.8		4	
WM4-CB	17:05	0.18	27.1	27.1	5.11	5.2	63.9	64.8	14.5	14.4	8.4	8.4	15	15.5
			27		5.28		65.7		14.2		8.4		16	
WM4	16:20	0.24	27.4	27.4	6.42	6.4	81.0	80.6	18.5	18.7	8.3	8.3	13	14.0
			27.3		6.36		80.2		18.9		8.3		15	

Date	**17-Oct-14**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	17:44	0.13	25.3	25.3	7.43	7.5	90.4	90.7	3.0	2.9	8.2	8.2	5	4.5
			25.3		7.47		90.9		2.8		8.2		4	
WM4-CB	18:06	0.19	25.4	25.5	4.86	4.8	59.3	59.0	6.5	6.4	8	8.0	8	8.0
			25.5		4.75		58.7		6.3		8		8	
WM4	17:21	0.24	26	26.0	6.95	6.9	85.5	85.3	10.1	10.0	8	8.0	14	14.0
			26		6.91		85.1		9.9		8		14	

Date	**21-Oct-14**

Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	17:05	0.08	27.8	27.8	6.23	6.2	79.2	79.0	4.6	4.7	7.7	7.7	5	5.5
			27.8		6.19		78.7		4.7		7.7		6	
WM4-CB	17:27	0.17	28.5	28.5	3.13	3.1	40.1	39.3	6.9	7.1	7.8	7.9	11	11.5
			28.4		3.02		38.4		7.3		7.9		12	
WM4	16:50	0.28	29	29.0	4.6	4.6	59.9	60.5	34.7	34.7	7.8	7.8	37	36.0
			29		4.69		61.0		34.7		7.8		35	

Date	23-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	16:53	0.08	25.4	25.3	7.52	7.5	91.2	91.0	3.9	3.8	6.6	6.6	5	5.0
			25.2		7.48		90.8		3.8		6.6		5	
WM4-CB	17:12	0.17	26.3	26.3	4.29	4.3	53.1	53.3	9.3	9.2	6.3	6.4	8	8.0
			26.3		4.33		53.5		9.2		6.4		8	
WM4	16:37	0.23	26.2	26.2	6.12	6.1	75.7	75.0	27.8	27.6	6.6	6.6	21	20.0
			26.1		6		74.2		27.3		6.5		19	

Date	25-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	17:11	0.08	25.4	25.3	6.47	6.6	78.6	79.7	4.7	4.6	8.8	8.8	3	3.0
			25.2		6.66		80.8		4.6		8.8		3	
WM4-CB	17:25	0.17	26.2	26.2	3.88	3.8	48.0	47.3	8.5	8.5	8.3	8.3	11	10.5
			26.2		3.77		46.5		8.6		8.3		10	
WM4	16:50	0.23	26.3	26.3	5.02	5.1	61.9	62.3	17.9	17.6	8.6	8.6	17	16.5
			26.3		5.1		62.7		17.3		8.6		16	

Date	27-Oct-14													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:19	0.09	29.8	29.8	6.6	6.7	86.3	86.7	5.5	5.4	6.7	6.7	3	3.0
			29.8		6.71		87.0		5.4		6.7		3	
WM4-CB	14:47	0.17	29.7	29.5	5.53	5.5	73.2	72.4	9.3	9.2	6.4	6.4	14	13.5
			29.2		5.45		71.6		9.2		6.4		13	
WM4	13:53	0.24	30.3	30.3	6.23	6.2	82.5	81.4	12.1	11.8	6.4	6.4	15	15.0

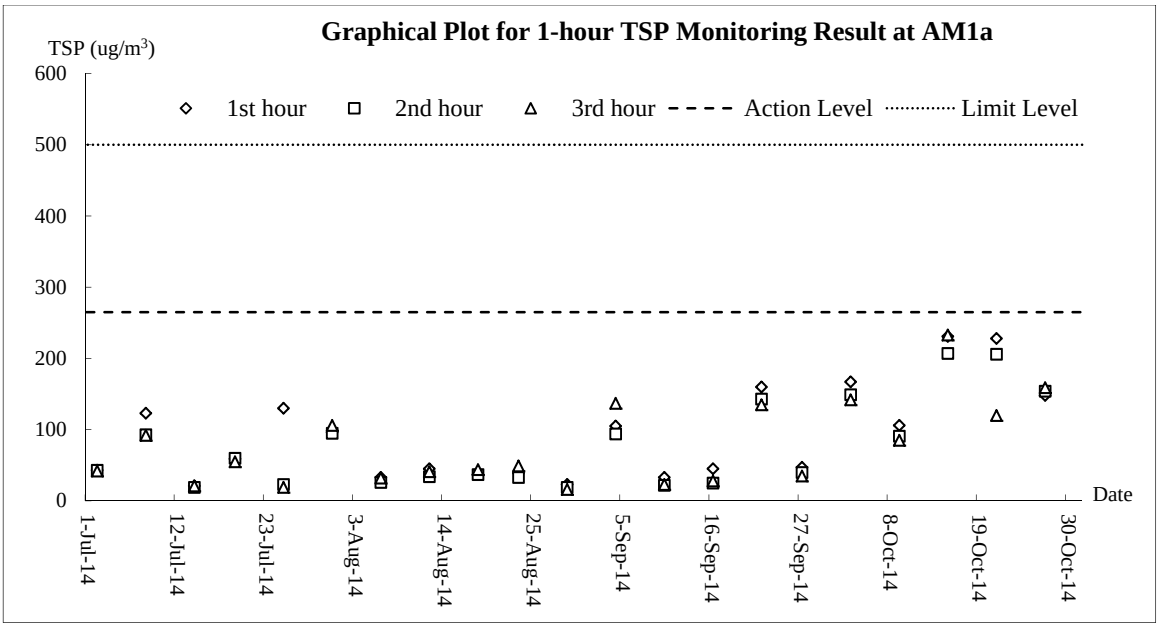
			30.2		6.08		80.2		11.5		6.4		15	

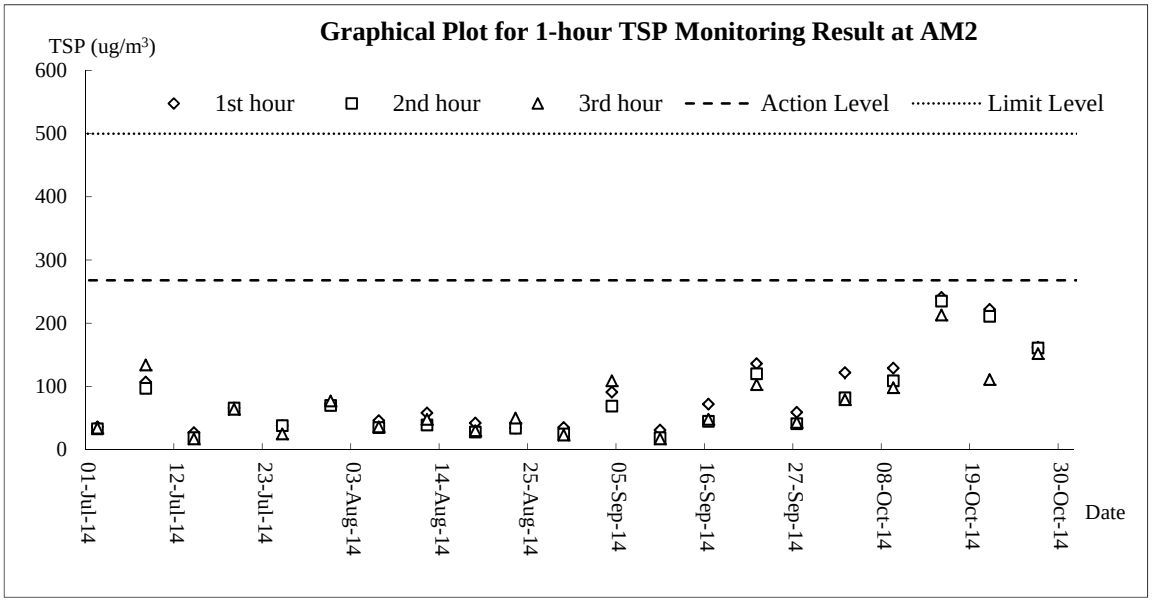
Date	30-Oct-14													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	14:02	0.08	29.4	29.4	7.96	7.9	104.0	103.8	4.5	4.5	6.7	6.7	3	3.0
			29.4		7.9		103.6		4.4		6.7		3	
WM4-CB	14:18	0.17	30.1	30.1	6.1	6.1	80.0	79.9	9.9	9.8	6.5	6.5	14	14.0
			30.1		6.05		79.8		9.7		6.5		14	
WM4	13:31	0.19	30.2	30.2	6.56	6.6	86.6	87.9	11.1	11.2	6.8	6.8	14	14.0
			30.1		6.71		89.1		11.3		6.8		14	

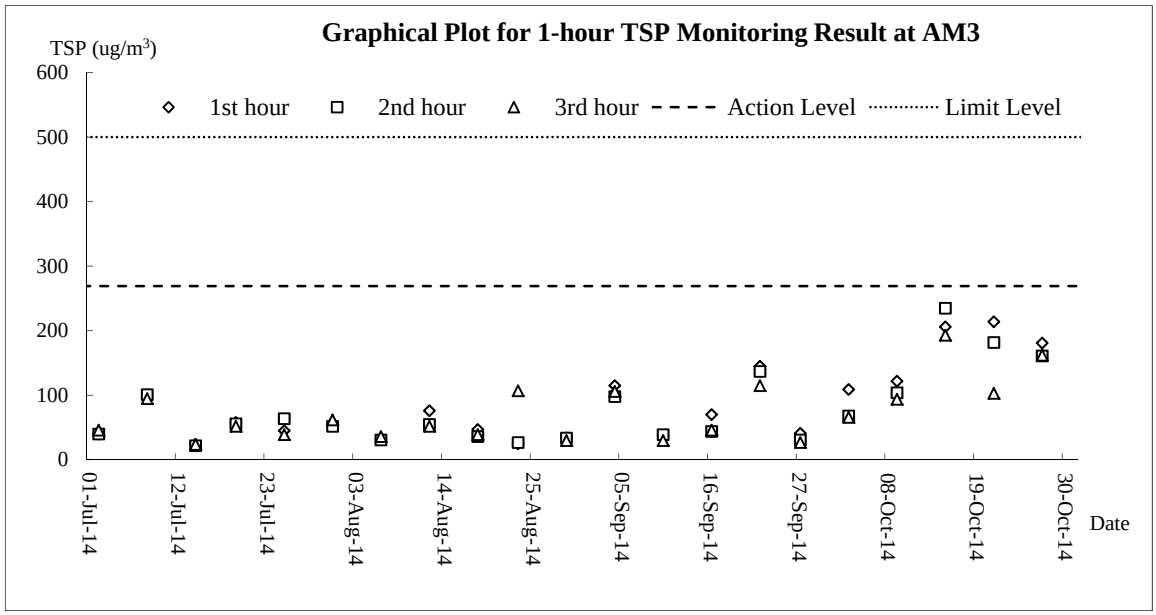
Appendix J

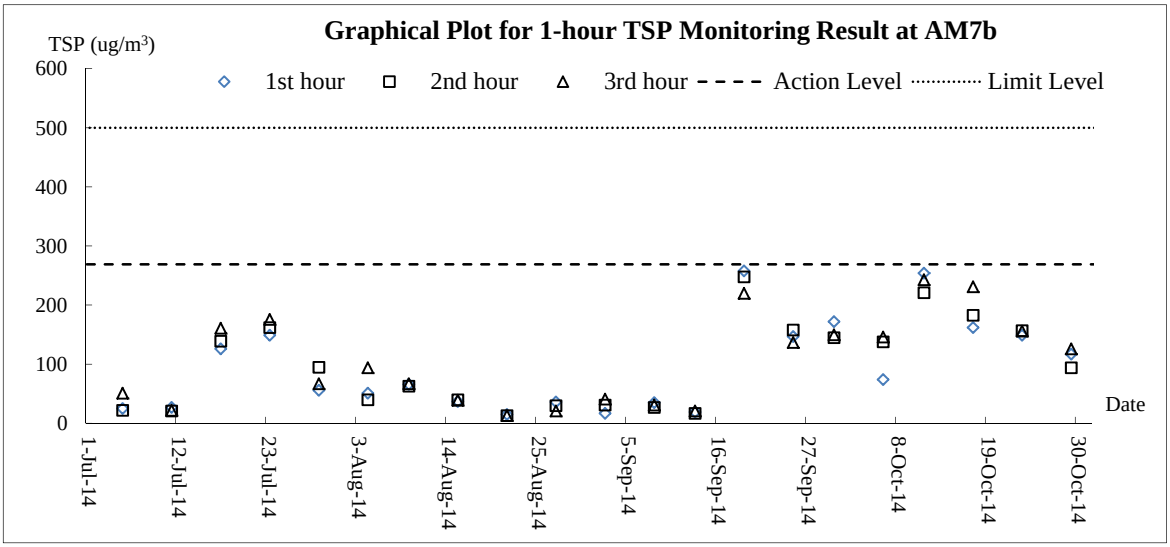
Graphical Plots for Monitoring Result

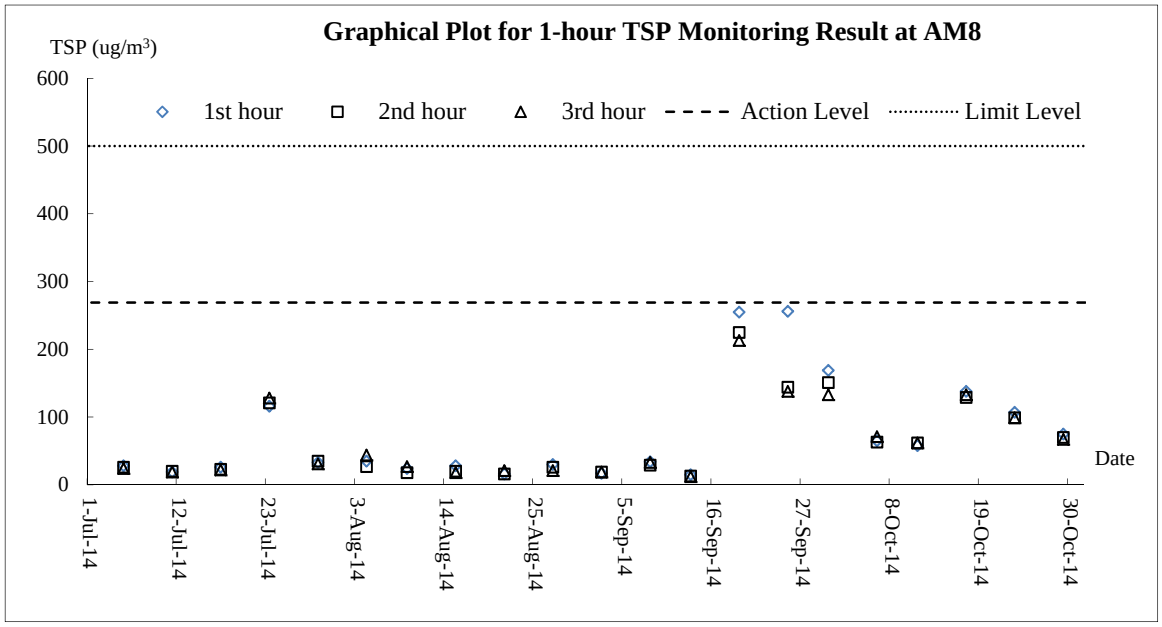
Air Quality – 1-hour TSP

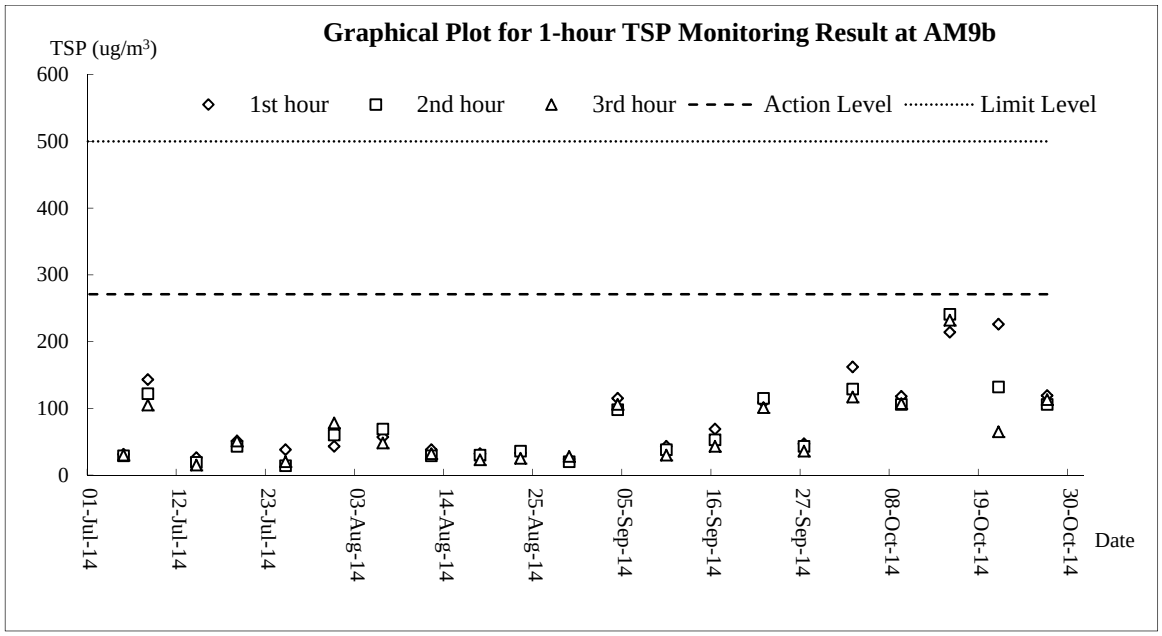




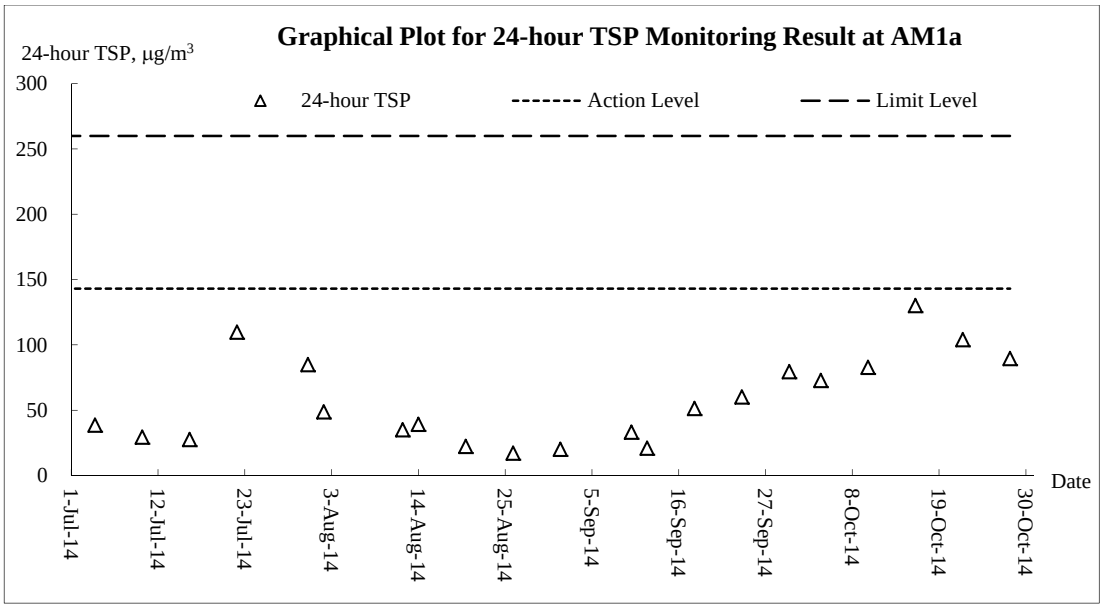


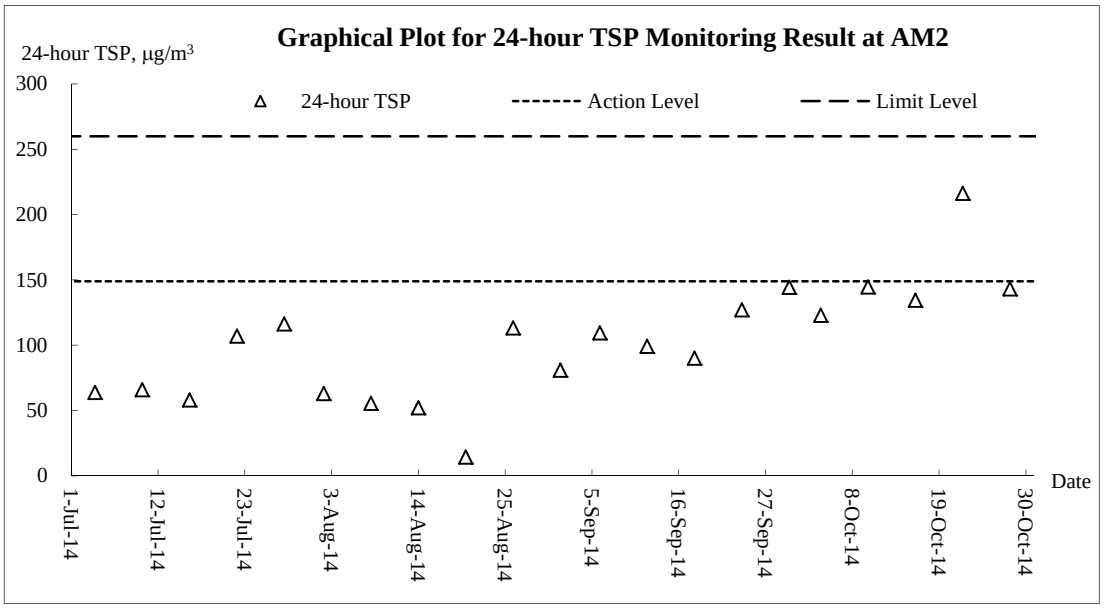

Graphical Plot for 1-hour TSP Monitoring Result at AM7b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14

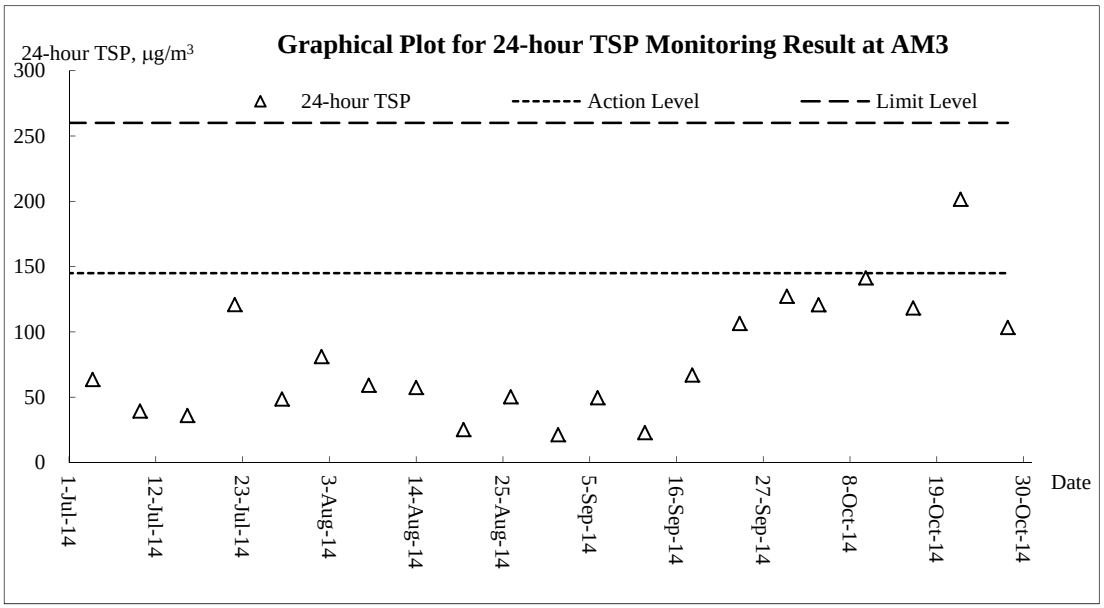

Graphical Plot for 1-hour TSP Monitoring Result at AM8
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14

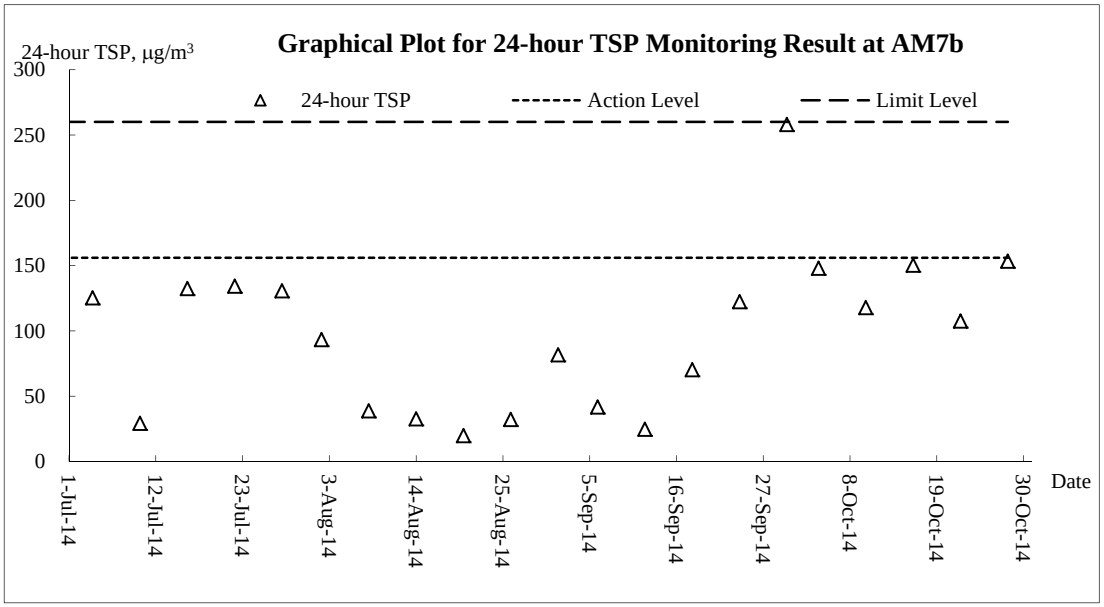

Graphical Plot for 1-hour TSP Monitoring Result at AM9b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
01-Jul-14
12-Jul-14
23-Jul-14
03-Aug-14
14-Aug-14
25-Aug-14
05-Sep-14
16-Sep-14
27-Sep-14
08-Oct-14
19-Oct-14
30-Oct-14

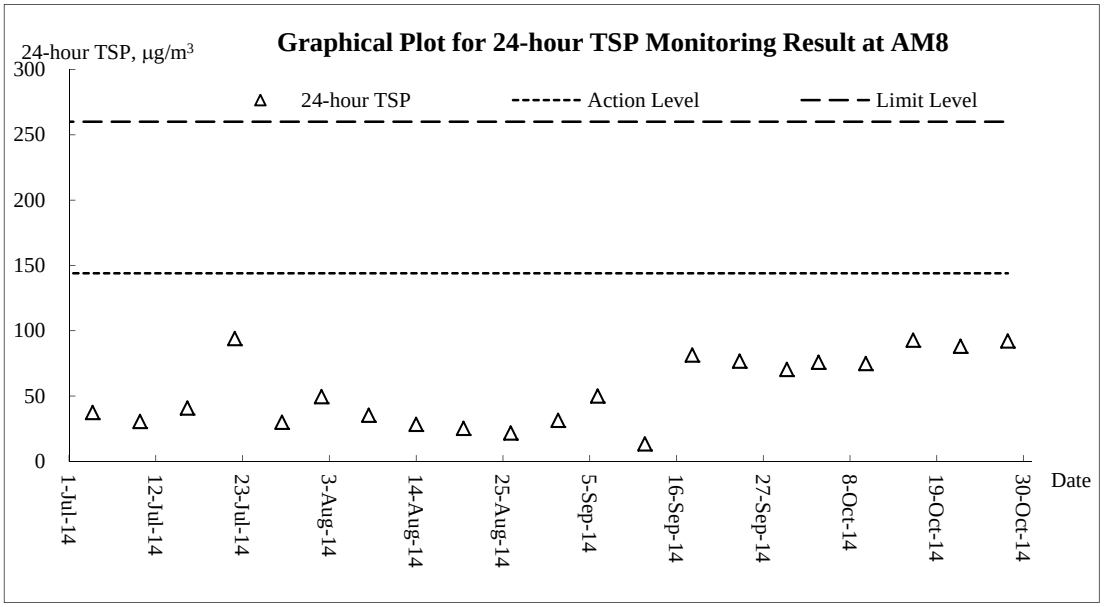
Air Quality – 24-hour TSP

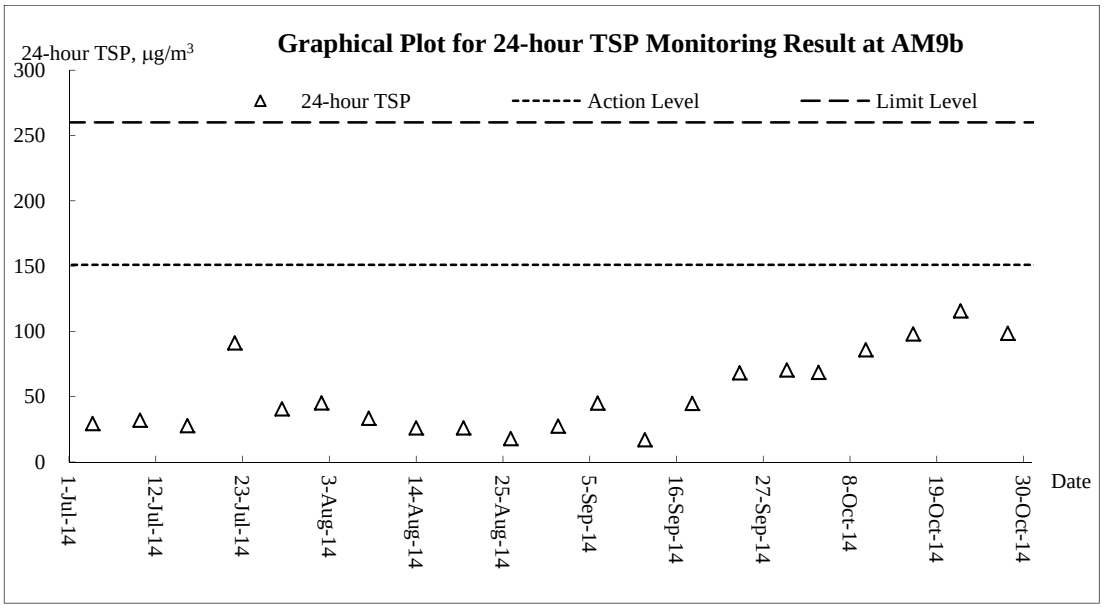




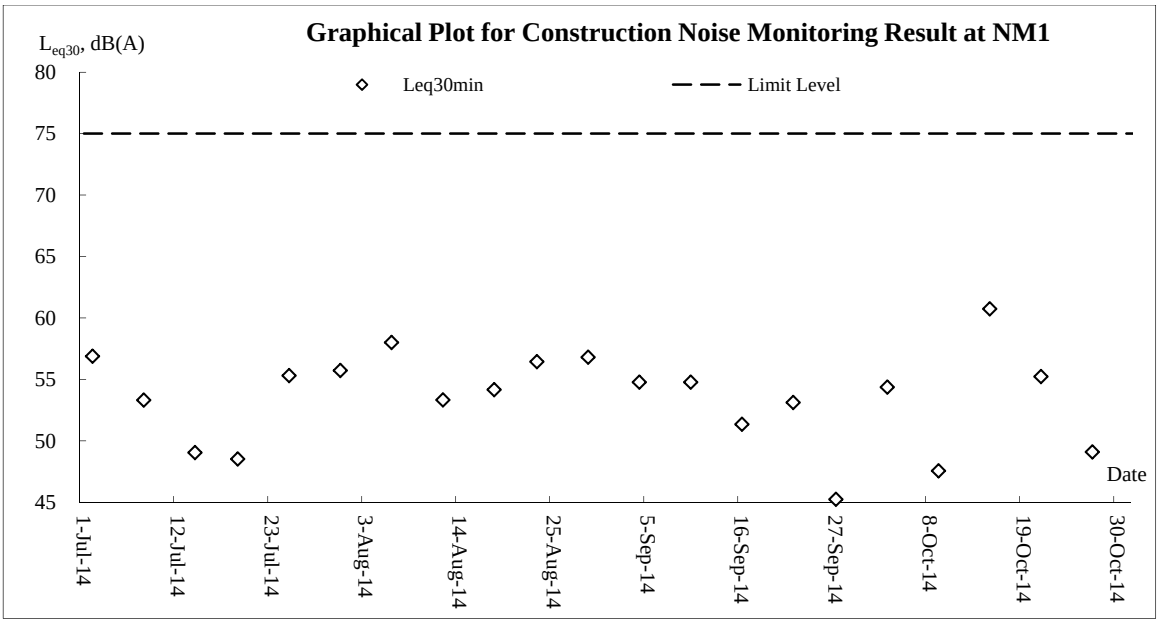



Graphical Plot for 24-hour TSP Monitoring Result at AM7b
24-hour TSP, µg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14
Date


Graphical Plot for 24-hour TSP Monitoring Result at AM8
24-hour TSP, µg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14
Date


Graphical Plot for 24-hour TSP Monitoring Result at AM9b
24-hour TSP, µg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14
Date

Noise


Graphical Plot for Construction Noise Monitoring Result at NM1
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
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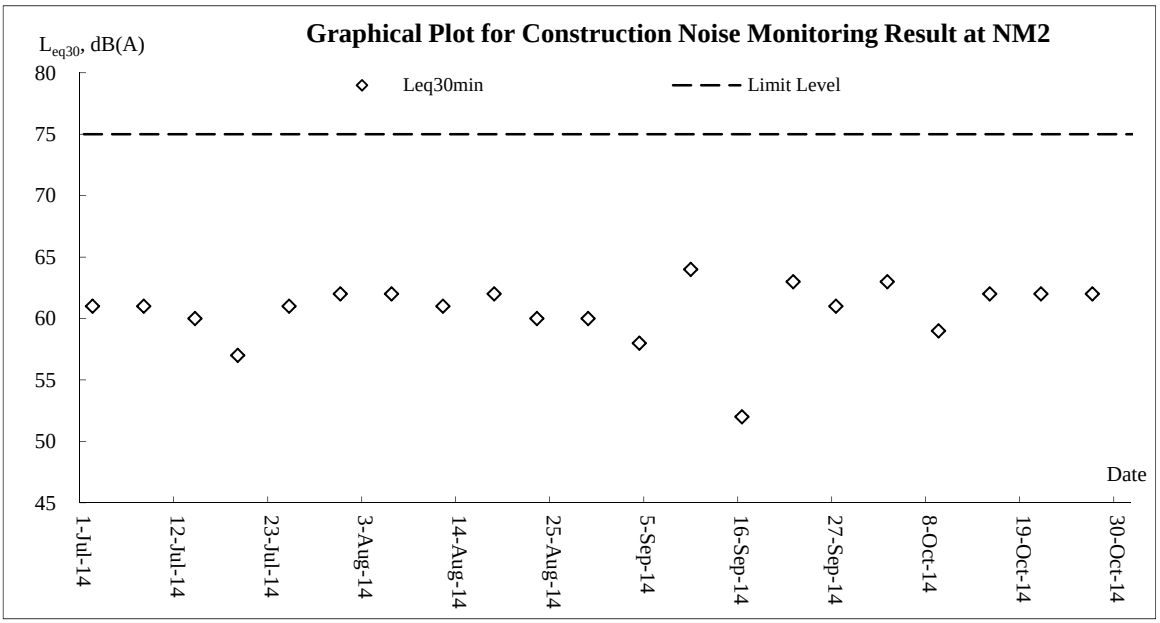
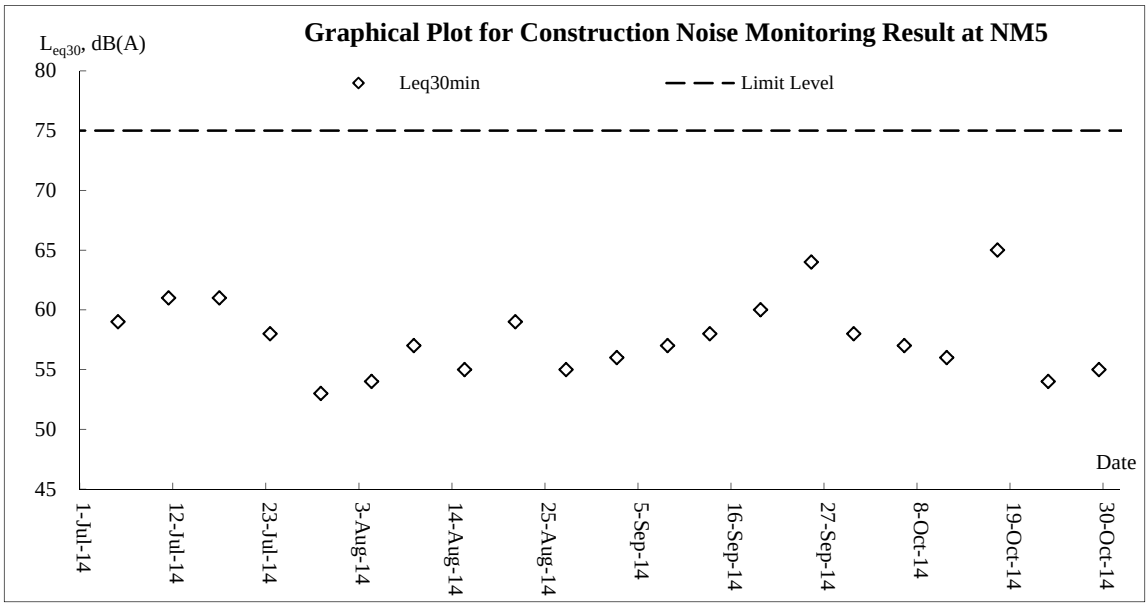
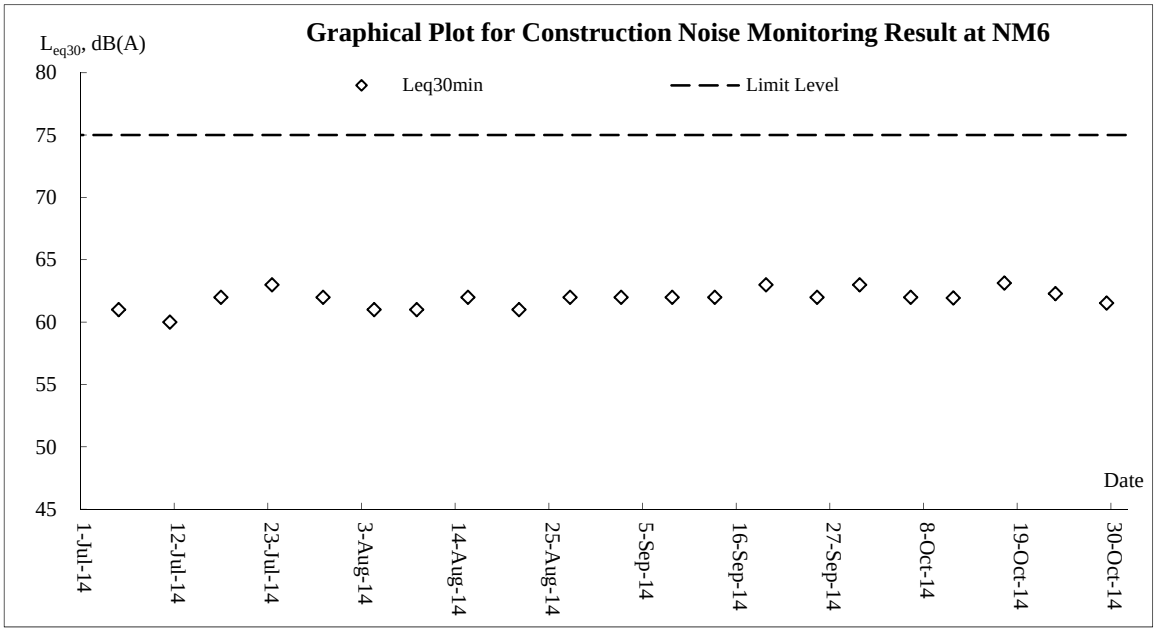
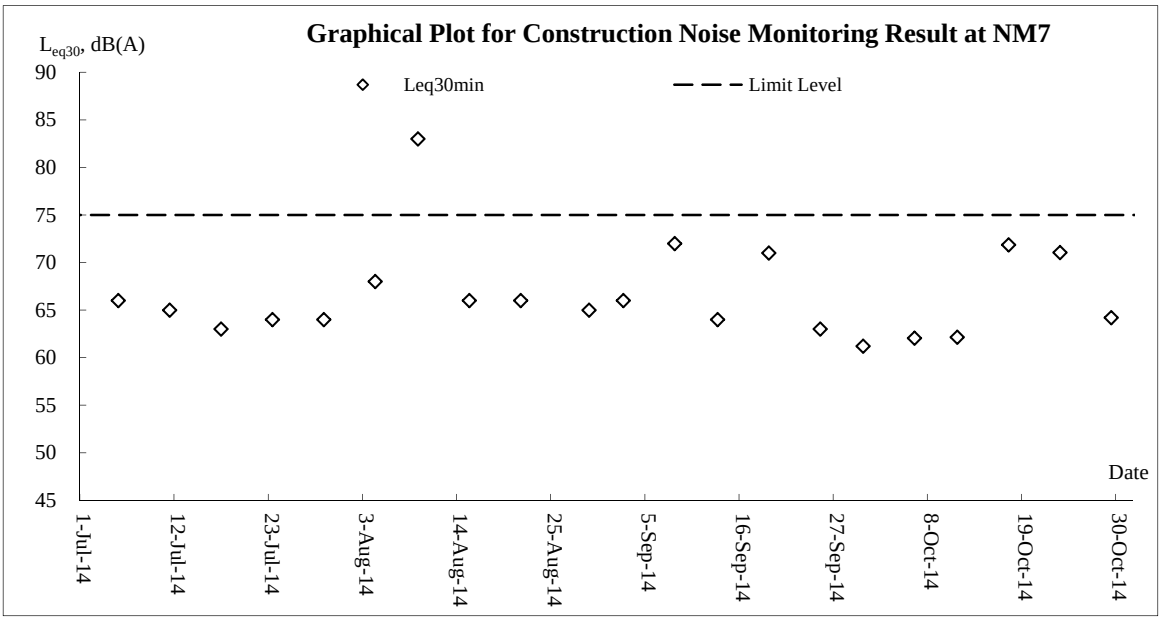
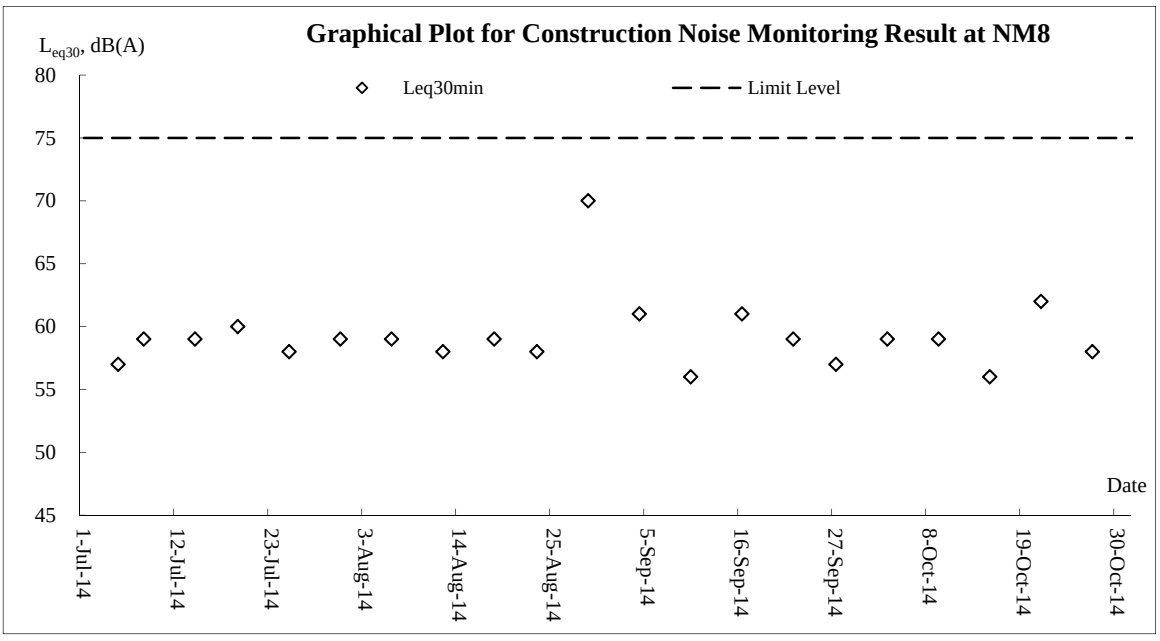
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14

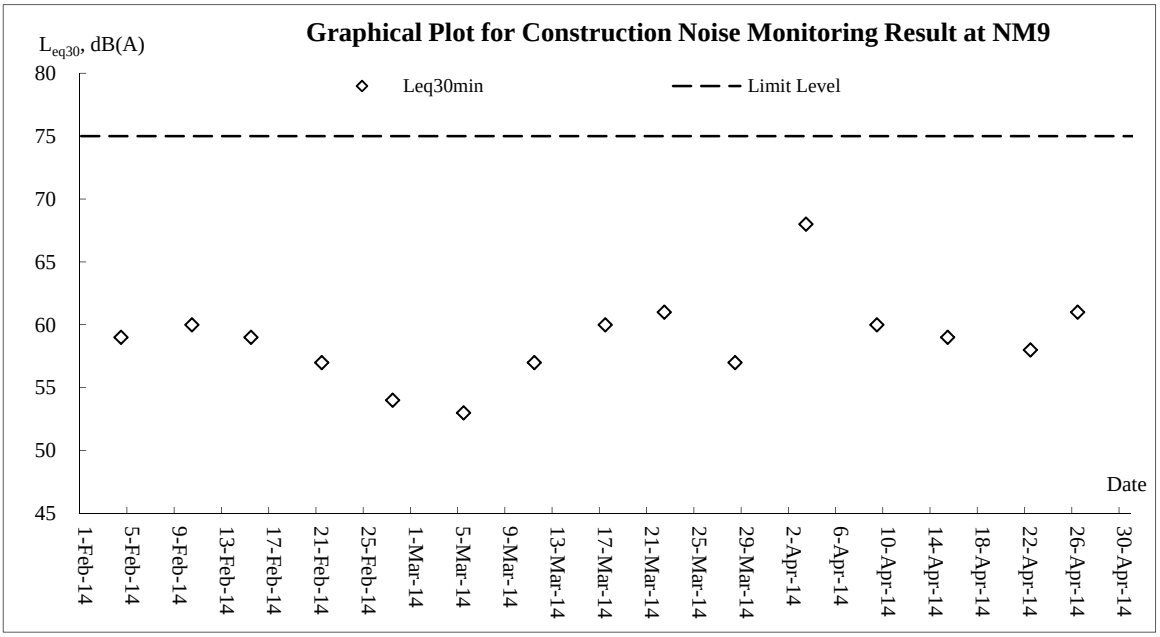

Graphical Plot for Construction Noise Monitoring Result at NM2
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Construction Noise Monitoring Result at NM5
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Construction Noise Monitoring Result at NM6
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Construction Noise Monitoring Result at NM7
L_{eq30}, dB(A)
Leq30min
Limit Level
90
85
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Construction Noise Monitoring Result at NM8
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Construction Noise Monitoring Result at NM9
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Feb-14
5-Feb-14
9-Feb-14
13-Feb-14
17-Feb-14
21-Feb-14
25-Feb-14
1-Mar-14
5-Mar-14
9-Mar-14
13-Mar-14
17-Mar-14
21-Mar-14
25-Mar-14
29-Mar-14
2-Apr-14
6-Apr-14
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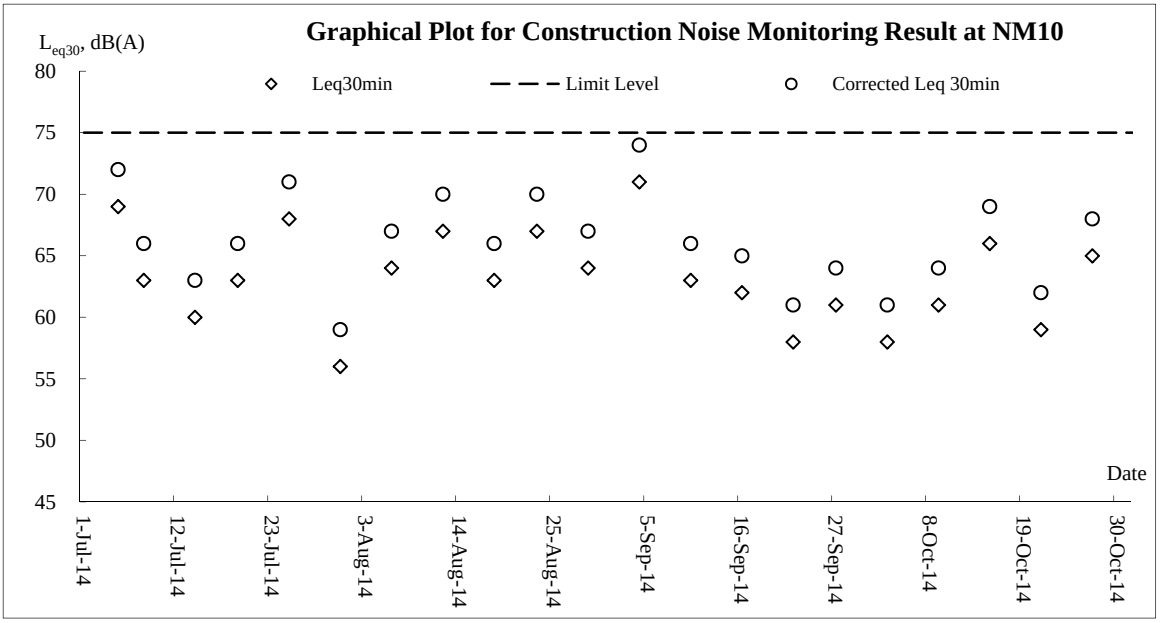
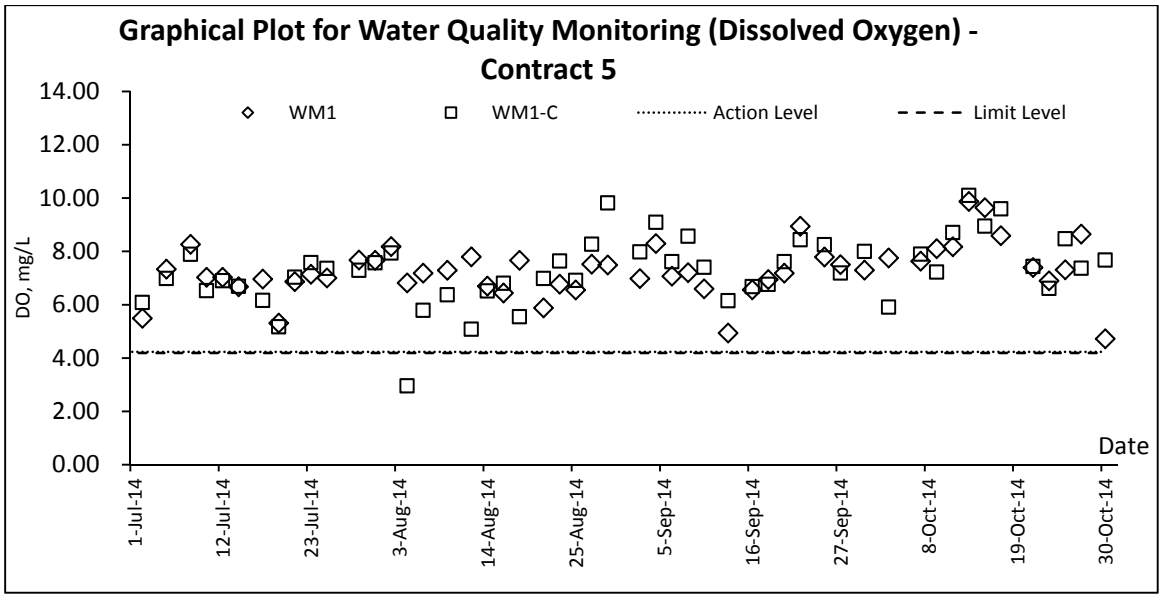
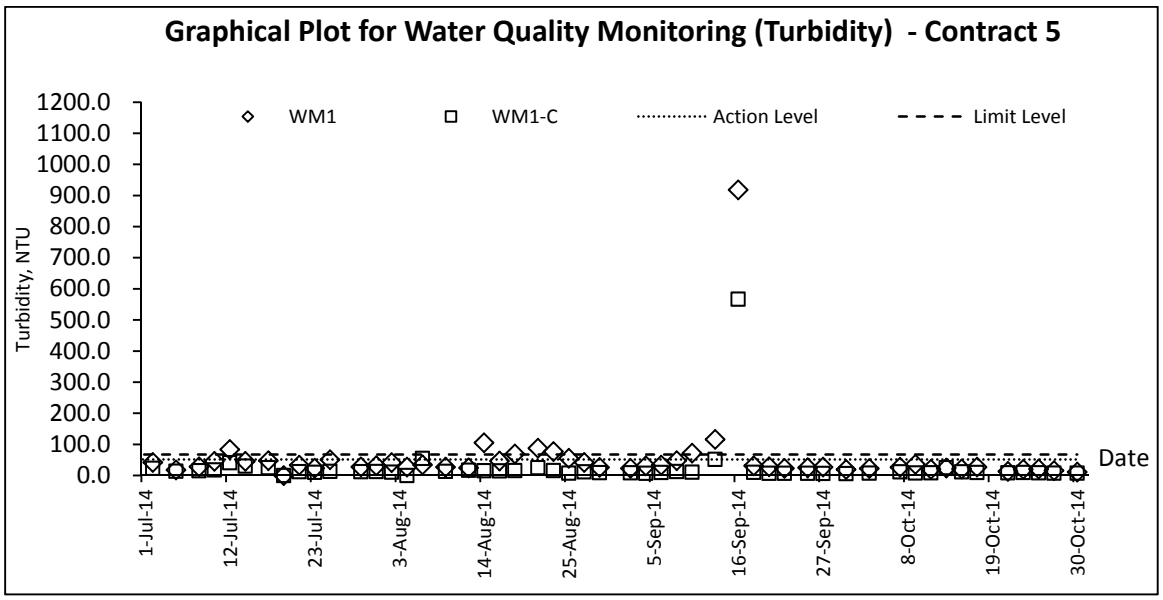
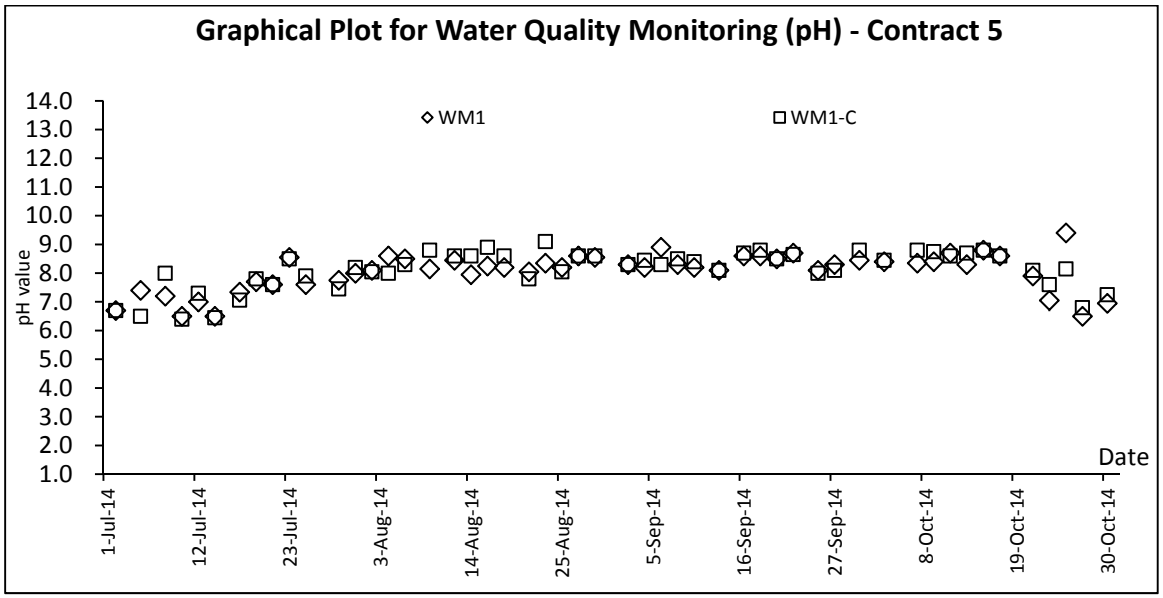
14-Apr-14
18-Apr-14
22-Apr-14
26-Apr-14
30-Apr-14

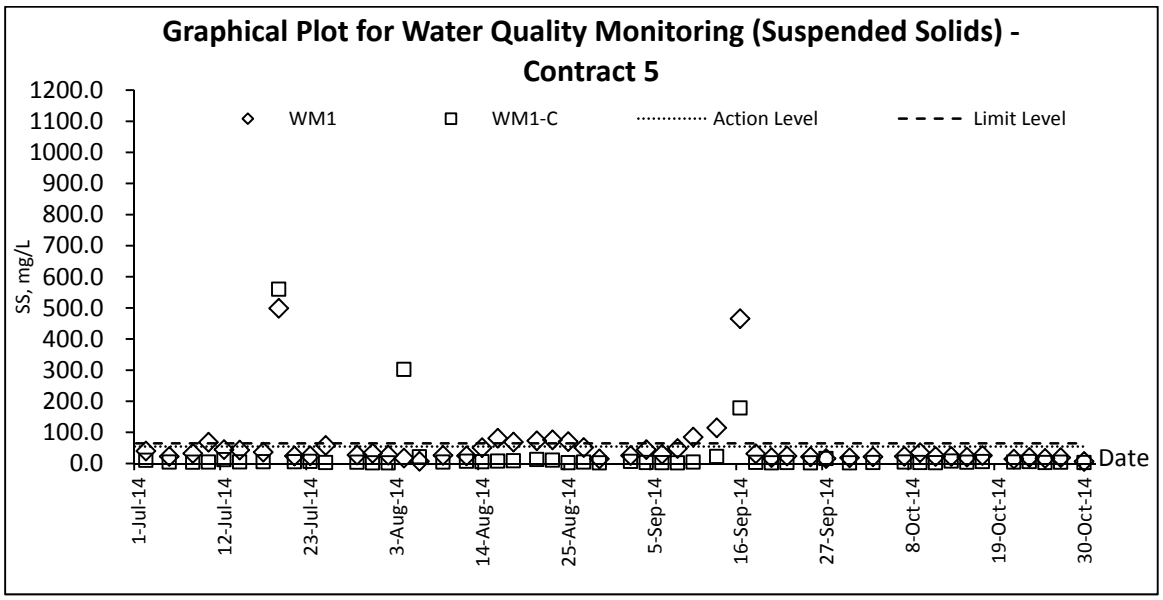

Graphical Plot for Construction Noise Monitoring Result at NM10
L_{eq30}, dB(A)
Leq30min
Limit Level
Corrected Leq 30min
80
75
70
65
60
55
50
45
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14

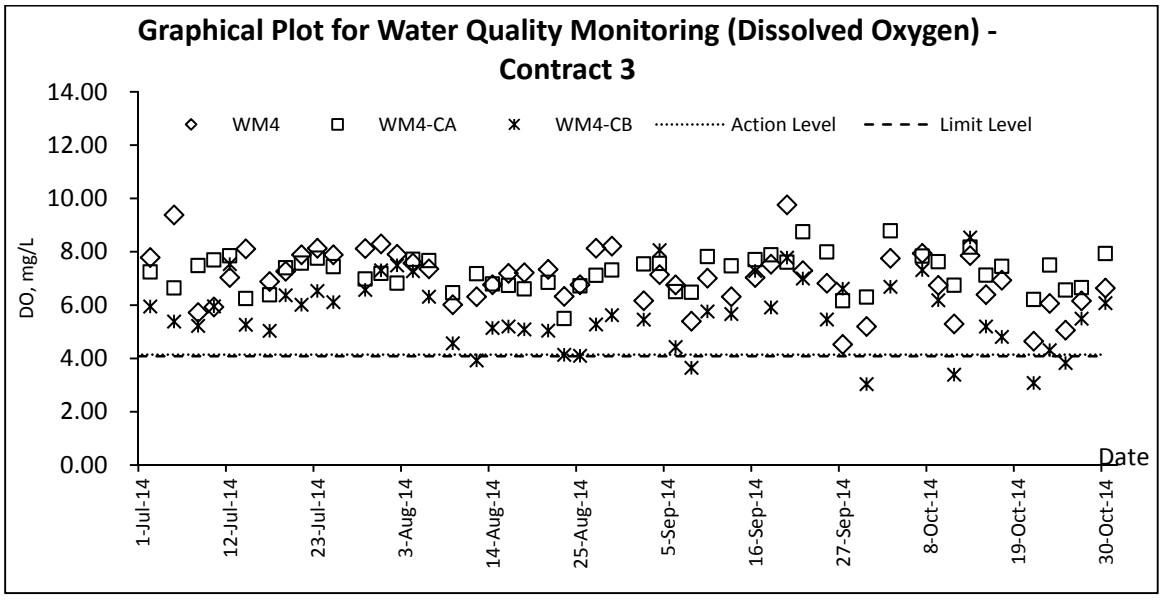
Water Quality

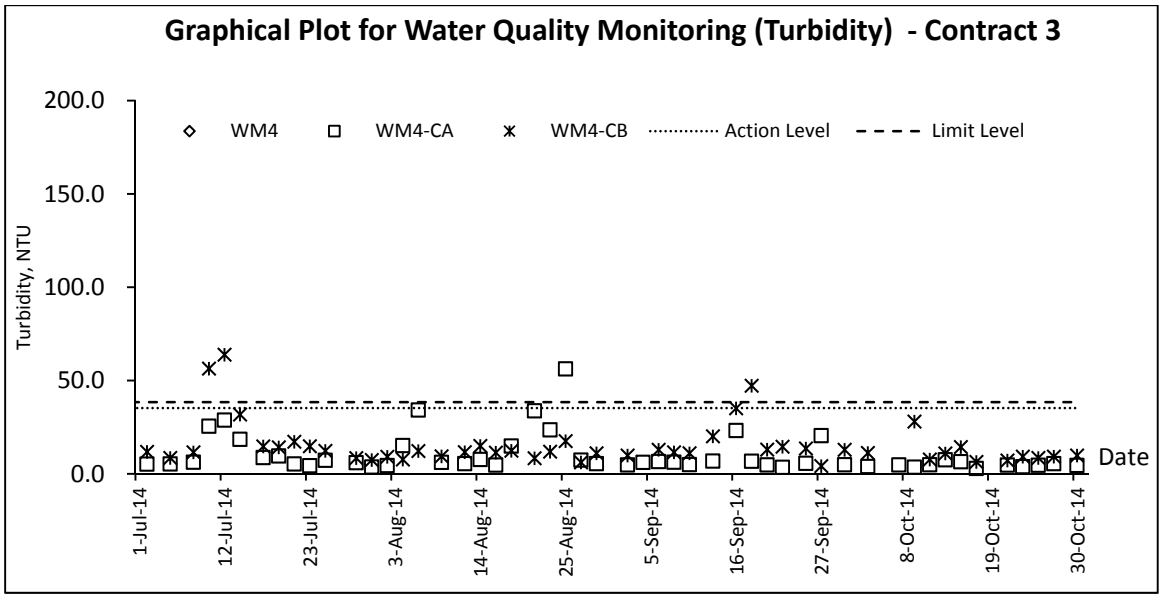


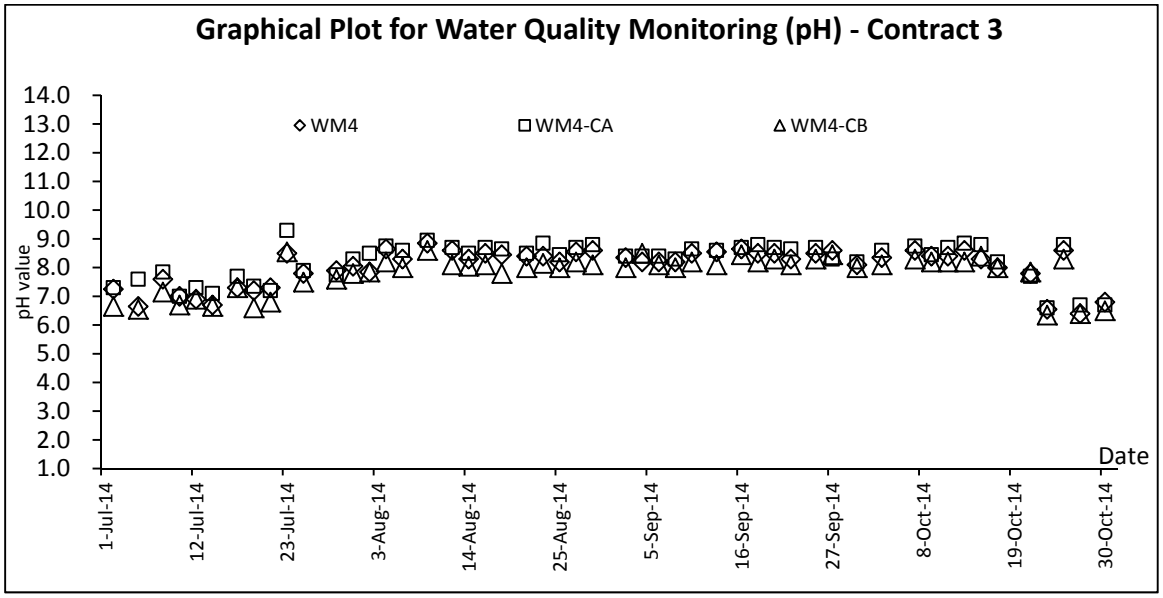





Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract 5
WM1
WM1-C
Action Level
Limit Level
SS, mg/L
1200.0
1100.0
1000.0
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
DO, mg/L
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Water Quality Monitoring (Turbidity) - Contract 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
Turbidity, NTU
200.0
150.0
100.0
50.0
0.0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Water Quality Monitoring (pH) - Contract 3
WM4
WM4-CA
WM4-CB
pH value
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
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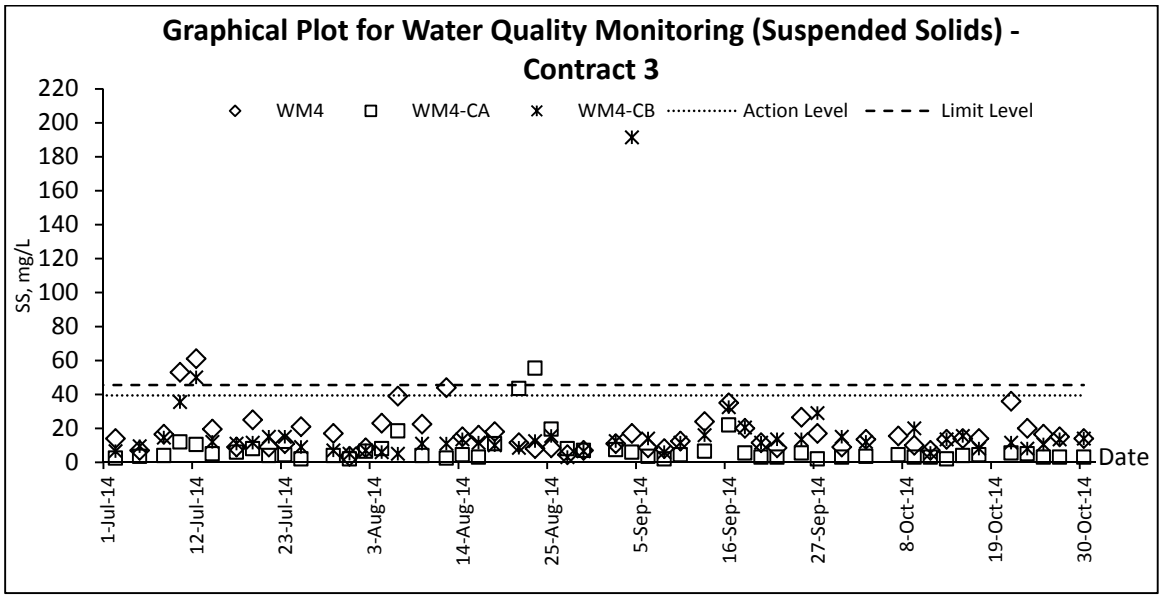
8-Oct-14
19-Oct-14
30-Oct-14


Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
SS, mg/L
220
200
180
160
140
120
100
80
60
40
20
0
Date
1-Jul-14
12-Jul-14
23-Jul-14
3-Aug-14
14-Aug-14
25-Aug-14
5-Sep-14
16-Sep-14
27-Sep-14
8-Oct-14
19-Oct-14
30-Oct-14

Appendix K

Meteorological Data

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Oct-14	Wed	Fine and dry. Moderate east to northeasterly winds, fresh at times.	26.7	28.2	6.1	79	E
2-Oct-14	Thu	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh offshore.	Trace	28.6	3.7	78	S/SE
3-Oct-14	Fri	Fine and dry. Moderate east to northeasterly winds, fresh at times.	23.7	28.4	5.6	75	N
4-Oct-14	Sat	Fine and dry. Moderate east to northeasterly winds, fresh at times.	2.6	27.5	5.3	75.7	E/SE
5-Oct-14	Sun	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh offshore.	0.1	26.7	7.2	64.5	N
6-Oct-14	Mon	Fine and dry. Moderate to fresh east to northeasterly winds.	0	25	8.7	66.2	E
7-Oct-14	Tue	Cloudy. Mainly fine and dry. Moderate east to northeasterly winds.	Trace	25.1	6.8	60	E
8-Oct-14	Wed	Mainly fine. Dry in the afternoon. Moderate east to northeasterly winds.	0	24.3	7.5	65.5	N
9-Oct-14	Thu	Mainly cloudy. Dry with sunny intervals in the afternoon. Moderate northeasterly winds.	0	25.4	6.5	64.5	N/NE
10-Oct-14	Fri	Mainly cloudy. Dry with sunny intervals in the afternoon. Moderate northeasterly winds.	0	24.9	7.6	66	N
11-Oct-14	Sat	Fine. Very dry in the afternoon. Moderate to fresh northerly winds.	0	25.7	6.8	66.7	N
12-Oct-14	Sun	Fine. Very dry in the afternoon. Moderate to fresh northerly winds.	0	26.5	9.9	63.2	N/NE
13-Oct-14	Mon	Fine. Very dry in the afternoon. Moderate to fresh northerly winds.	0	25.6	10.2	50.7	N
14-Oct-14	Tue	Mainly fine and dry apart from some haze. Moderate east to northeasterly winds, fresh at times later.	Trace	24.5	8.2	53.2	N/NE
15-Oct-14	Wed	Mainly fine. Dry in the afternoon. Moderate to fresh easterly winds.	0	23.2	5	67	E
16-Oct-14	Thu	Mainly fine. Dry in the afternoon. Moderate to fresh easterly winds.	Trace	24.8	6.7	69.7	E/SE
17-Oct-14	Fri	Fine and dry. Moderate to fresh easterly winds.	0	25.7	7.6	60.5	E/NE
18-Oct-14	Sat	Mainly cloudy. Sunny periods in the afternoon. Moderate easterly winds.	0	25.6	6.8	61.5	E
19-Oct-14	Sun	Mainly cloudy. Sunny periods in the afternoon. Moderate easterly winds.	Trace	25.8	6.4	68.5	E/NE
20-Oct-14	Mon	Mainly cloudy. Sunny periods in the afternoon. Moderate easterly winds.	0	26.9	6.5	72.2	E/NE
21-Oct-14	Tue	Fine and dry. Moderate to fresh easterly winds.	Trace	26.8	4	70.5	W/SW
22-Oct-14	Wed	Mainly cloudy. Sunny periods in the afternoon. Moderate easterly winds.	26.4	26.5	9.7	69.2	N/NE
23-Oct-14	Thu	Cloudy with one or two rain patches. Moderate to fresh easterly winds.	0.2	24.2	4.8	75	E/NE
24-Oct-14	Fri	Mainly cloudy. Sunny periods. Moderate to fresh easterly winds, strengthening gradually.	0	24.1	6.5	76.2	E/NE
25-Oct-14	Sat	Cloudy with one or two rain patches. Moderate to fresh easterly winds.	0	24.7	7.2	76	E/NE
26-Oct-14	Sun	Fine and dry. Moderate to fresh easterly winds.	0.1	26.6	4.9	66	E/NE
27-Oct-14	Mon	Mainly cloudy. Sunny periods. Moderate to fresh easterly winds, strengthening gradually.	0	26.5	8.5	70	E
28-Oct-14	Tue	Mainly fine. Dry in the afternoon. Fresh to strong easterly winds.	Trace	26	9.8	55.2	E/NE
29-Oct-14	Wed	Mainly fine. Dry in the afternoon. Fresh to strong easterly winds.	Trace	26.7	8.6	62	E
30-Oct-14	Thu	Fine and dry. Moderate to fresh easterly winds.	0	26.1	12.8	68	E
31-Oct-14	Fri	Fine and dry. Moderate to fresh easterly winds.	0	26.7	5.1	70	E/SE

Appendix L

Waste Flow Table

Name of Department : CEDD **Contract No./ Work Order No. :** CV/2012/08

Appendix I - Monthly Summary Waste Flow Table for 2014

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

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m3)						Actual Quantities of Other C&D Materials / Wastes Generated				
	Total Quantities Generated [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates) (a)	Reused in the Contract (b)	Reused in Other Projects (c)	Disposed as Public Fill (d)	Imported C&D Material	Metal (in '000kg)	Paper/ Cardboard Packaging (in '000kg)	Plastic (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m3)
January	0.0045	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1773
February	0.9869	0.0000	0.9869	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1102
March	0.1366	0.0000	0.1366	0.0000	0.0000	0.2282	0.0000	0.0000	0.0000	3.2400	0.1825
April	0.2063	0.0000	0.1217	0.0269	0.0577	0.5536	0.0000	0.0000	0.0000	4.2800	0.2069
May	14.5769	0.0000	0.0643	14.4032	0.1094	2.0126	0.0000	0.0000	0.0000	0.0000	0.0887
June	26.0821	0.0000	0.0348	22.1289	3.9183	0.6915	0.0000	0.0000	0.0000	0.0000	1.1851
Half-year total	41.9932	0.0000	1.3487	36.5590	4.0855	3.4859	0.0000	0.0000	0.0000	7.5200	1.9508
July	49.4606	0.0000	0.0069	37.1170	12.3368	0.4385	0.0000	0.0000	0.0000	0.0000	0.0558
August	56.4391	0.0000	0.7325	51.3053	4.4013	0.8477	0.0000	0.0000	0.0000	0.0000	0.0774
September	56.6142	0.0000	1.3762	44.4922	10.7458	0.5819	0.0000	0.0000	0.0000	0.0000	0.0301
October	82.0549	0.0000	0.0896	68.2828	13.6825	0.2305	0.0000	0.0000	0.0000	0.0000	0.0645
November	0.0000										
December	0.0000										
Yearly Total	286.5620	0.0000	3.5539	237.7563	45.2518	5.5846	0.0000	0.0000	0.0000	7.5200	2.1786

Remark:

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

Name of Department: CEDD

Contract No.: CV/2012/09

Monthly Summary Waste Flow Table for 2014 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Jan	0.409	0.084	0	0	0.409	0.200	0	0	0.010	0	0.110
Feb	1.697	0.356	0.380	0	1.473	0	0.002	0	0	0.019	0.040
Mar	3.954	0.506	1.092	0	2.862	0	0	0	0	0	0.265
Apr	1.600	0.054	0.672	0	0.928	0.200	0	0	0	0.020	0.135
May	2.740	0.450	0.192	0	2.548	0.500	0	0	0	0.020	0.195
Jun	2.215	0.258	0.675	0	1.540	1.075	0	0	0	0.001	0.180
Sub-total	12.615	1.708	3.011	0.000	9.760	1.975	0.002	0.000	0.010	0.060	0.925
Jul	3.596	0.233	0.502	0	3.094	0.747	0	0	0.005	0	0.165
Aug	5.504	0.649	0.732	0	4.772	1.200	0	0	0.005	0.009	0.220
Sep	2.604	0.176	1.176	0	1.428	0.750	0	0	0.005	0	0.085
Oct	6.404	0.090	2.160	0	4.244	1.501	0	0	0.005	0	0.085
Nov											
Dec											
Total	30.723	2.856	7.581	0.000	23.298	6.173	0.002	0.000	0.030	0.069	1.480

Note:

1. Assume the density of soil fill is 2 ton/m^3.
2. Assume the density of rock and broken concrete is 2.5 ton/m^3.
3. Assume each truck of C&D wastes is 5m^3.
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^3.

Name of Department: CEDD

Monthly Summary Waste Flow Table for 2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
JAN	0	0	0	0	0	16.571	0	0	0	0	0.85
FEB	0	0	0	0	0	18.672	0	0	0	0	0.005
MAR	0	0	0	0	0	2.968	0	0	0	6	0.01
APRIL	0	0	0	0	0	1.664	0.87	0.051	0	0	0.245
MAY	0	0	0	0	0	18.352	0	0	0	0	0.23
JUN	0	0	0	0	0	33.381	0	0.14	0	0	0
Sub Total	0	0	0	0	0	91.608	0.87	0.191	0	6	1.34
JUL	0	0	0	0	0	16.04	2.01	0.241	0	0	0.11
AUG	0	0	0	0	0	55.082	0	0	0	0	0.03
SEP	0	0	0	0	0	61.674	0	0	0	0	0.015
OCT	0	0	0	0	0	65.327	0.274	0	0	0	0.490
NOV											
DEC											
Total	0	0	0	0	0	289.73	3.154	0.432	0	6	1.985

Notes:

Name of Department: CEDD

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

Notes:

(1) The performance targets are given in PS clause 6(14) above.

(2) The waste flow table shall also include C&D materials that are specified in the Contractor to be imported for use at the Site.

(3) Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature

- Hard Rocks and Large Broken Concrete = Cannot be defined at this stage
- Imported Fill = Estimated by the Contractor = 1 loading = 8m 3
- Metal = Estimated by the Contractor
- Paper/cardboard packaging = Estimated by the Contractor
- Plastics = Estimated by the Contractor
- Chemical Waste = Estimated by the Contractor (Spent lubricating oil, assume density 0.9kg/L)
- Other, e.g. general refuse = Estimated by the Contractor

Appendix M

Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Air Quality Impact (Construction)							
3.6.1.1	2.1	**General Dust Control Measures** The following dust suppression measures should be implemented: ■ Frequent water spraying for active construction areas (4 times per day for active areas in Po Kak Tsai and 8 times per day for all other active areas), including areas with heavy construction and slope cutting activities ■ 80% of stockpile areas should be covered by impervious sheets ■ Speed of trucks within the site should be controlled to about 10 km/hr ■ All haul roads within the site should be paved to avoid dust emission due to vehicular movement	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation
3.6.1.2	2.1	**Best Practice for Dust Control** 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: *Good site management* ■ The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. ■ Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimize the release of visible dust emission. ■ Any piles of materials accumulated on or around the work areas should be cleaned up regularly. ■ Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimizing generation of fugitive dust emissions. ■ The material should be handled properly to prevent fugitive dust emission before cleaning. *Disturbed Parts of the Roads* ■ Each and every main temporary access should be paved with	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or ■ Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. *Exposed Earth* ■ Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating 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. *Loading, Unloading or Transfer of Dusty Materials* ■ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet. *Debris Handling* ■ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. ■ Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped. *Transport of Dusty Materials* ■ 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. *Wheel washing* ■ 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. *Use of vehicles* ■ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. ■ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.				

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		Site hoarding ■ 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. *Blasting* ■ The areas within 30m from the blasting area should be wetted with water prior to blasting.					
Air Quality Impact (Operation)							
3.5.2.2	2.2	The following odour containment and control measures will be provided for the proposed sewage treatment work at the BCP site: ■ The treatment work will be totally enclosed. Negative pressure ventilation will be provided within the enclosure to avoid any fugitive odorous emission from the treatment work. ■ Further odour containment will be achieved by covering or confining the sewage channels, sewage tanks, and equipment with potential odour emission. ■ Proper mixing will be provided at the equalization and sludge holding tanks to prevent sewage septicity. ■ Chemical or biological deodorisation facilities with a minimum odour removal efficiency of 90% will be provided to treat potential odorous emissions from the treatment plant including sewage channels / tanks, filter press and screening facilities so as to minimize any potential odour impact to the nearby ASRs.	To minimize potential odour impact from operation of the proposed sewage treatment work at BCP	DSD	BCP	Operation Phase	EIA recommendation
Noise Impact (Construction)							
4.4.1.4	3.1	**Adoption of Quieter PME** Use of the recommended quieter PME such as those given in the BS5228: Part 1:2009 and presented in **Table 4.14**, which can be found in Hong Kong.	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	**Use of Movable Noise Barrier** 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^2 is recommended to achieve the predicted screening effect.	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	**Use of Noise Enclosure/ Acoustic Shed** 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.	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	**Use of Noise Insulating Fabric** 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.	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	**Good Site Practice** The good site practices listed below should be followed during each phase of construction: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
Noise Impact (Operation)							
		Road Traffic Noise					
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
		Fixed Plant Noise					
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	The following noise reduction measures shall be considered as far as practicable during operation: • Choose quieter plant such as those which have been effectively silenced; • Include noise levels specification when ordering new plant (including chillier and E/M equipment); • Locate fixed plant/louver away from any NSRs as far as practicable; • Locate fixed plant in walled plant rooms or in specially designed enclosures; • Locate noisy machines in a basement or a completely separate building; • Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and • Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise.	To minimize the fixed plant noise impact	Managing Authority of the buildings / Contractor	BCP, Administration Building and all ventilation buildings	Before Operation	EIAO and NCO
Water Quality Impact (Construction)							
5.6.1.1	4.1	**Construction site runoff and drainage** 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: ▪ At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractor prior to the commencement of construction. ▪ The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas.	To control site runoff and drainage; prevent high sediment loading from reaching the nearby watercourses	Contractor	Construction Works Sites	Construction Phase	Practice Note for Professional Persons on Construction Site Drainage (ProPECC Note PN 1/94)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		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. ▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction. ▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. ▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities. ▪ If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Interception channels should be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC Note PN 1/94. ▪ The overall slope of the site should be kept to a minimum to reduce					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		the erosive potential of surface water flows. ▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. ▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. ▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers. ▪ Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. ▪ Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.					
5.6.1.1	4.1	**Good site practices for works within water gathering grounds** The following conditions should be complied, if there is any works to be carried out within the water gathering grounds:	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?
		▪ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments. ▪ No earth, building materials, oil or fuel, soil, toxic materials or any materials that may possibly cause contamination to water gathering grounds are allowed to be stockpiled on site. ▪ All surplus spoil should be removed from water gathering grounds as soon as possible. ▪ Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks. ▪ Regular cleaning of silt traps should be carried out to ensure proper operation at all time. ▪ All excavated or filled surfaces which have the risk of erosion should always be protected form erosion. ▪ Facilities for washing the wheels of vehicles before leaving the site should be provided. ▪ Any construction plant which causes pollution to catchwaters or catchments due to the leakage of oil or fuel should be removed off site immediately. ▪ No maintenance activities which may generate chemical wastes should be undertaken in the water gathering grounds. Vehicle maintenance should be confined to designated paved areas only and any spillages should be cleared up immediately using absorbents and waste oils should be collected in designated tanks prior to disposal off site. All storm water run-off from these areas should be discharged via oil/petrol separators and sand/silt removal traps. ▪ Any soil contaminated with fuel leaked from plant should be removed off site and the voids arising from removal of contaminated soil should be replaced by suitable material approved by the Director of Water Supplies. ▪ Provision of temporary toilet facilities and use of chemicals or insecticide of any kind are subject to the approval of the Director of Water Supplies. ▪ Drainage plans should be submitted for approval by the Director of			grounds		

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		Water Supplies. ▪ An unimpeded access through the waterworks access road should always be maintained. ▪ Earthworks near catchwaters or streamcourses should only be carried out in dry season between October and March, ▪ Advance notice must be given before the commencement of works on site quoting WSD's approval letter reference.					
5.6.1.2	4.1	**Good site practices of general construction activities** 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. 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.	To minimize water quality impacts	Contractor	All construction works sites	Construction phase	EIA Recommendation
5.6.1.3	4.1	**Sewage effluent from construction workforce** 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.	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	**Hydrogeological Impact** 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.	To minimize water quality impacts	Contractor	Construction works sites of the drill and blast tunnel	Construction phase	EIA Recommendation and WPCO
Water Quality Impact (Operation)							
		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?
Sewage and Sewerage Treatment Impact (Construction)							
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
Sewage and Sewerage Treatment Impact (Operation)							
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
Waste Management Implication (Construction)							
7.6.1.1	6	**Good Site Practices** 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: ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site ▪ Training of site personnel in proper waste management and chemical handling procedures ▪ Provision of sufficient waste disposal points and regular collection of waste ▪ Dust suppression measures as required under the Air Pollution Control (Construction Dust) Regulation should be followed as far as practicable. Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by covering trucks or in enclosed containers ▪ General refuse shall be removed away immediately for disposal. As	To minimize adverse environmental impact	Contractor	Construction works sites (general)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; Waste Disposal (Chemical Wastes) (General) Regulation; and ETWB TC(W) No. 19/2005, Environmental Management on Construction Site

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		such odour is not anticipated to be an issue to distant sensitive receivers ▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road ▪ Covers and water spraying system should be provided for the stockpiled C&D material to prevent dust impact or being washed away ▪ Designate different locations for storage of C&D material to enhance reuse ▪ Well planned programme for transportation of C&D material to lessen the off-site traffic impact. Well planned delivery programme for offsite disposal and imported filling material such that adverse noise impact from transporting of C&D material is not anticipated ▪ Site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be adopted as far as practicable, such as cleaning and maintenance of drainage systems regularly ▪ Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains					
7.6.1.2	6	**Waste Reduction Measures** 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: ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal ▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force ▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials ▪ Plan and stock construction materials carefully to minimise amount	To reduce the quantity of wastes	Contractor	Construction works sites (General)	Construction Phase	EIA recommendation and Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		of waste generated and avoid unnecessary generation of waste ▪ In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.					
7.6.1.3	6	**C&D Materials** In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials should be reused on-site as backfilling material as far as practicable. The surplus rock and other inert C&D material would be disposed of at the Government's Public Fill Reception Facilities (PFRFs) at Tuen Mun Area 38 for beneficial use by other projects in the HKSAR as the last resort. C&D waste generated from general site clearance and tree felling works would require disposal to the designated landfill site. Other mitigation requirements are listed below: ▪ A Waste Management Plan should be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction Site; and ▪ In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system (e.g. ETWB TCW No. 31/2004) should be included.	To minimize impacts resulting from C&D material	Contractor	Construction Works Sites (General)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; and ETWB TCW No. 31/2004
7.6.1.4	6	**General refuse** General refuse should be stored in enclosed bins or compaction units separated from other C&D material. A reputable waste collector is to be employed by the Contractor to remove general refuse from the site separately. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' litter.	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	**Chemical waste** 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 *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. 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	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