JOB NO.: TCS00694/13

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

14th QUARTERLY ENVIRONMENTAL MONITORING & AUDIT SUMMARY REPORT – (November 2016 to January 2017)

PREPARED FOR

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Quality Index

Date	Reference No.	Prepared By	Certified By
6 June 2017	TCS00694/13/600/R0999v2		
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Version	Date	Description
1	26 May 2017	First Submission
2	6 June 2017	Amended according to the IEC's comments on 2 June 2017

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7 June 2017

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AECOM
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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
Quarterly EM&A Summary Report (No. 14) – November 2016 to January 2017

With reference to the Quarterly EM&A Report No. 14 for November 2016 to January 2017 (Version 2) certified by the ET Leader and received by us on 6 June 2017, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Section 13.4 of the EM&A Manual.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995-8120 or by email to antony.wong@smec.com; or our Mr Man Kit CHEUNG on tel. 3995 8132 or by email to man.cheung@smec.com.

Yours faithfully
for and on behalf of
SMEC Asia Limited

Antony WONG
Independent Environmental Checker

cc	CEDD/BCP	-	Mr Desmond LAM	by fax: 3547 1659
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	AUES	-	Mr TW TAM	by email

EXECUTIVE SUMMARY

ES.01. This is the **14th** Quarterly EM&A Summary Report for the "*Liantang/Heung Yuen Wai Boundary Control Point and Associated Works"* under Environmental Permit No. EP-404/2011/D (hereinafter "the EP"), covering the period from **1 November 2016 to 31 January 2017** (hereinafter "Reporting Period").

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. In the Reporting Period, the construction works under Liantang/Heung Yuen Wai Boundary Control Point and Associated Works of the Project included Contract 2, Contract 3, Contract 6, Contract 7 and Contract SS C505. Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Environmental Aspect	Monitoring Parameters / Inspection	Reporting Period	
		Monitoring Locations / Contracts	Total Occasions
Air Quality	1-hour TSP	9	432
	24-hour TSP	9	144
Construction Noise	$L_{eq(30min)}$ Daytime	10	130
Water Quality	Water in-situ measurement and/or sampling	WM1 & WM1-C,	38 scheduled and 0 extra of sampling day
		WM2A & WM2A-Cx	38 scheduled and 10 extra of sampling day
		WM2B & WM2B-C	38 scheduled and 1 extra of sampling day
		WM3 &WM3-C	38 scheduled and 8 extra of sampling day
		WM4, WM4-CA &WM4-CB	38 scheduled and 3 extra of sampling day
Ecology	Woodland compensation i) General Health condition of planted species ii) Survival of planted species	9 Quadrats	2
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 2	13
		Contract 3	12
		Contract 6	13
		Contract 7	13
		Contract SS C505	13

Note: Extra monitoring day was due to measurement results exceedance

BREACHES OF ACTION/LIMIT LEVELS

ES.03. In the Reporting Period, no air quality exceedances were recorded. However, one noise complaint which triggered Action Level was registered for construction noise. For water quality monitoring, a total of 55 of Action/ Limit Level exceedance were recorded. The summary of exceedance for the Reporting Period is shown below.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	$L_{eq(30min)}$ Daytime	**1**	0	0	IR revealed that the noise complaint was non-project related	--

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Water Quality	DO	0	0	0	--	--
	Turbidity	**1**	**24**	**25**	3 exceedances were Project related 22 exceedances were not Project related	The related Contractors shall implemented water quality mitigation measures in accordance with ISEMM of the EM&A Manual requirements
	SS	**2**	**28**	**30**	3 exceedances were Project related 27 exceedances were not Project related	

ENVIRONMENTAL COMPLAINT

ES.04. In this Reporting Period, seven (7) documented environmental complaints were received under the EM&A Programme. Investigation result revealed that 2 complaints regards wastewater issues were related to the works under Project and remedial actions had undertaken by Contractor. The rest of 5 complaints were not related to works under Project.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

REPORTING CHANGES

ES.06. In the Reporting period, no reporting changes were made.

FUTURE KEY ISSUES

ES.07. During dry season, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures.

ES.08. Preventive measures for muddy water or other water pollutants from site surface flow to local stream such as Kong Yiu Channel, Ma Wat Channel, Ping Yuen River or public area should be properly maintained. The Contractors should paid special attention on water quality mitigation measures and fully implement according ISEMM of the EM&A Manual, in particular for working areas near Ma Wat Channel and Ping Yuen River. Moreover, all effluent discharge shall be ensure to fulfill Technical Memorandum of Effluent Discharged into Drainage and Sewerage Systems, inland and Coastal Waters criteria or discharge permits stipulation.

ES.09. 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/C granted on 12 March 2015 and the latest Environmental Permit number EP-404/2011/D granted on 20 January 2017.

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

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

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

1.1.4. Action-United Environmental Services & Consulting has been commissioned as an Independent ET to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties.

1.1.5. This is the **14th** Quarterly EM&A Summary Report presenting the monitoring results and inspection findings for the Reporting Period from **1 November 2016 to 31 January 2017**.

1.2 REPORT STRUCTURE

1.2.1 The Quarterly Environmental Monitoring and Audit (EM&A) Summary 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 Ecology Monitoring
Section 8 Waste Management
Section 9 Site Inspection
Section 10 Non-compliance, Complaints, Notifications of Summons and Prosecutions
Section 11 Implementation Status of Mitigation Measures
Section 12 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 (NE/2014/02)
- Contract 5 (CV/2013/03)
- Contract 6 (CV/2013/08)
- Contract 7 (NE/2014/03)
- ArchSD Contract No. SS C505

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 (NE/2014/02)

2.1.5 Contract 4 has awarded in mid-April 2016. However, the major construction work still is not yet commenced. The scope of work of the Contract 4 includes:

- design, supply, delivery, installation, testing and commissioning of a traffic control and surveillance system for the connecting road linking up the Liantang / Heung Yuen Wai Boundary Control Point and the existing Fanling Highway.

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 was awarded in June 2015 and construction work was commenced on 23 October 2015. 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.

Contract 7 (NE/2014/03)

2.1.8 Contract 7 was awarded in December 2015 and the construction work was commenced 15 February 2016. Major Scope of Work of the Contract 7 would be included below:

- construction of the Hong Kong Special Administrative Region (HKSAR) portion of four vehicular bridge
- construction of one pedestrian bridge crossing Shenzhen (SZ) River (cross boundary bridges)

ArchSD Contract No. SS C505

2.1.9 SS C505 has been awarded in July 2015 and construction work was commenced on 1 September 2015. Major Scope of Work of the SS C505 would be included below:

- passenger-related facilities including processing kiosks and examination facilities for private cars and coaches, passenger clearance building and halls, the interior fitting works for the pedestrian bridge crossing Shenzhen River, etc.;
- cargo processing facilities including kiosks for clearance of goods vehicles, customs inspection platforms, X-ray building, etc.;
- accommodation for the facilities inside of the Government departments providing services in connection with the BCP;
- transport-related facilities inside the BCP including road networks, public transport interchange, transport drop-off and pick-up areas, vehicle holding areas and associated road furniture etc;
- a public carpark; and
- other ancillary facilities such as sewerage and drainage, building services provisions and electronic systems, associated environmental mitigation measure and landscape 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.

Architectural Services Department (ArchSD)

2.2.3 ArchSD acts as the works agent for Development Bureau (DEVB), for Contract SS C505 Liantang/ Heung Yuen Wai Boundary Control Point (BCP) – BCP Buildings and Associated Facilities.

Environmental Protection Department (EPD)

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

Ronald Lu & Partners (Hong Kong) Ltd (The Architect)

2.2.5 Ronald Lu & Partners (Hong Kong) Ltd is appointed by ArchSD as an Architect for Contract SS C505 Liantang/ Heung Yuen Wai Boundary Control Point (BCP) – BCP Buildings and Associated Facilities. It responsible for overseeing the construction works of Contract SS C505 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 Architect 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' and ET's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
- Facilitate ET's implementation of the EM&A programme
- Participate in joint site inspection by the ET and IEC
- Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
- Adhere to the procedures for carrying out complaint investigation
- Liaison with DSD, Engineer/Engineer's Representative, ET, IEC and the Contractor of the "Construction of the DSD's Regulation of Shenzhen River Stage 4 (RSR 4)" Project discussing regarding the cumulative impact issues.

Engineer or Engineers Representative (ER)

2.2.6 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)

2.2.7 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)

2.2.8 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)

2.2.9 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;

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

(c) 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, 6, 7 and SS C505 and they are summarized in below.

Contract 2 (CV/2012/08)

2.4.2 Construction work of Contract 2 was commenced on 19 May 2014, the following activities were conducted in the Reporting Period.

Mid-Vent Portal	• Stud tunnel and cavern excavation
	• Adit invert slab, waterproofing and lining
	• Connecting structure, ventilation building superstructure and backfilling
	• Preparation for Tunnel Boring Machine (TBM) south drive break out
North Portal	• Slope stabilization and retaining wall
	• Southbound Tunnel Boring Machine (TBM) excavation
	• Northbound bench excavation
	• Tunnel enlargement and construction of cross passage
	• Tunnel internal structure and cross passage
	• ventilation building foundation
South Portal	• Southbound and northbound Drill & Blast Excavation
	• South ventilation and building superstructure
	• Tunnel invert, waterproofing and lining
Admin Building	• Building superstructure and external wall

Contract 3 (CV/2012/09)

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

- Abutment construction
- Construction of boundary wall for DSD pumping station
- Cable detection and trial trenches
- Demolition of existing Vehicular Bridge
- Footbridge construction
- Storm drains laying
- Noise barrier construction
- Pier / pier table construction
- Pile cap works
- Portal beam construction
- Retaining wall construction
- Road works
- Sewer works
- Utilities Duct Laying
- Viaduct segment erection
- Water Main Laying
- Extended Podium construction
- Construction of remaining base Slab of Box Culvert ID4
- Slope reinstatement works near Bridge E
- Utilities duct laying
- Viaduct segment erection
- Demolition of existing WSD Telemetry House
- Roundabout modification works

Contract 4 (NE/2014/02)

2.4.4 The Contract was awarded in mid-April 2016 and the major construction work has not yet commenced.

Contract 5 (CV/2013/03)

2.4.5 As advised by the ER, the construction works under Contract 5 was substantially completed on 31 August 2016.

Contract 6 (CV/2013/08)

2.4.6 Contract 6 has awarded in June 2015 and construction work was commenced on 23 October 2015. In this Reporting Period, construction activities conducted are listed below:

- Bored Piling
- Pile Cap Construction
- Bridge Pier Construction
- Bridge Segment Erection
- Tunnel Excavation
- Sewage Treatment Plant Construction
- Road Construction

Contract 7 (NE/2014/03)

2.4.7 Contract 7 has awarded in December 2015 and construction work was commenced on 15 February 2015. In this Reporting Period, construction activities conducted are listed below:

- Piling Works at Bridges A and E
- Pile Caps Construction at Bridges A, B, D and E
- Column construction at Bridge C

- 2nd floor slab construction at Bridge C

Contract SS C505

2.4.8 Contract SS C505 has awarded in July 2015 and construction work was commenced on 1 September 2015. In this Reporting Period, construction activities conducted are listed below:

- General Site Set-up
- Building no.4, 5, 6, 7, 9, 10, 11 and 36 construction
- Excavation waterproofing works for Building no. 4, 6 & 11
- Excavation for drainage works for Building no. 4 & 5
- Pile cap construction for Building no. 4, 6 & 7
- Roof construction for Building no.36
- Tower crane operation
- Bridge construction works including construction of bridge column, retaining wall, pile cap and pier
- Underground drainage works
- Prototype "A" & "B" construction works
- Mock up for south entrance double curve cladding
- Formwork and falsework for PTB's slab construction
- Construction PTB M/F & 1/F flat slab
- Steel beam works for maintenance platform for PTB
- Pile cap construction for PTB, including excavation and backfilling works
- Bridge deck construction for Bridges 1 – 5
- Footing construction

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, 5, 6, 7 and SS C505
- 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 2, 3, 5, 6 and SS C505
- 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
- Woodland Compensation Plan
- Habitat Creation Management Plan
- Wetland Compensation Plan

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		
		Ref. no.	Effective Date	Expiry Date
Contract 2				
1	Air pollution Control (Construction Dust) Regulation	Ref No.: 368864	31 Dec 2013	Till Contract ends
2	Chemical Waste Producer Registration	***North Portal*** Waste Producers Number: No.5213-652-D2523-01	25 Mar 2014	Till Contract ends

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
		Mid-Vent Portal Waste Producers Number: No.5213-634-D2524-01	25 Mar 2014	Till Contract ends
		South Portal Waste Producers Number: No.5213-634-D2526-01	9 Apr 2014	Till Contract ends
3	Water Pollution Control Ordinance - Discharge License	No.WT00018374-2014	8 Oct 2014	30 Sep 2019
		No.: W5/1I389	28 Mar 2014	31 Mar 2019
		No. WT00023063-2015	18 Dec 2015	31 Mar 2019
		No.: W5/1I392	28 Mar 2014	31 Mar 2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7019105	8 Jan 2014	Till Contract ends
5	Construction Noise Permit	GW-RN0457-16	22 Jun 2016	14 Dec 2016
		GW-RN0435-16	27 Jun 2016	26 Dec 2016
		GW-RN0543-16	18 Jul 2016	13 Jan 2017
		GW-RN0582-16	09 Aug 2016	08 Nov 2016
		GW-RN0590-16	09 Aug 2016	08 Nov 2016
		GW-RN0579-16	11 Aug 2016	07 Jan 2017
		GW-RN0604-16	11 Aug 2016	07 Jan 2017
		GW-RN0695-16	18 Sep 2016	17 Mar 2017
		GW-RN0700-16	20 Sep 2016	19 Feb 2017
		GW-RN0759-16	12 Oct 2016	11 Apr 2017
		GW-RN0780-16	27 Oct 2016	26 Dec 2016
		GW-RN0788-16	27 Oct 2016	26 Dec 2016
		GW-RN0800-16	01 Nov 2016	29 Apr 2017
		GW-RN0814-16	06 Nov 2016	27 Nov 2016
		GW-RN0822-16	09 Nov 2016	08 May 2017
		GW-RN0823-16	09 Nov 2016	08 May 2017
		GW-RN0839-16	20 Nov 2016	07 May 2017
		GW-RN0852-16	23 Nov 2016	2 May 2017
		GW-RN0895-16	20 Dec 2016	11 Jun 2017
		GW-RN0926-16	27 Dec 2016	26 Jun 2017
		GW-RN0928-16	27 Dec 2016	26 Jun 2017
		GW-RN0072-17	1 Feb 2017	31 Jul 2017
		GW-RN0073-17	1 Feb 2017	31 Jul 2017
6	Specified Process License **(**Mortar Plant	L-3-251(1)	12-Apr-2016	11-Apr-2021

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
	Operation)			
Contract 3				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 362101	17 Jul 2013	Till Contract ends
2	Chemical Waste Producer Registration	Waste Producers Number: No.:5113-634-C3817-01	7 Oct 2013	Till Contract ends
3	Water Pollution Control Ordinance - Discharge License	No.:WT00016832 – 2013	28 Aug 13	31 Aug 2018
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017914	2 Aug 13	Till Contract ends
5	Construction Noise Permit	GW-RN0414-16	18 Jun 2016	17 Dec 2016
		GW-RN0434-16	22 Jun 2016	21 Dec 2016
		GW-RN0525-16	20 Jul 2016	7 Jan 2017
		GW-RN0541-16	5 Aug 2016	4 Nov 2016
		GW-RN0549-16	30 Jul 2016	9 Jan 2017
		GW-RN0561-16	16 Aug 2016	11 Feb 2017
		GW-RN0580-16	25 Aug 2016	24 Feb 2017
		GW-RN0581-16	25 Aug 2016	24 Feb 2017
		GW-RN0596-16	17 Aug 2016	15 Feb 2017
		GW-RN0619-16	22 Aug 2016	14 Feb 2017
		GW-RN0646-16	10 Sep 2016	9 Mar 2017
		GW-RN0649-16	3 Sep 2016	7 Jan 2017
		GW-RN0653-16	11 Sep 2016	10 Mar 2017
		GW-RN0654-16	15 Sep 2016	14 Mar 2017
		GW-RN0708-16	8 Oct 2016	28 Jan 2017
		GW-RN0711-16	1 Oct 2016	13 Jan 2017
		GW-RN0720-16	4 Oct 2016	31 Mar 2017
		GW-RN0729-16	5 Oct 2016	31 Mar 2017
		GW-RN0756-16	18 Oct 2016	13 Apr 2017
		GW-RN0759-16	5 Nov 2016	29 Apr 2017
		GW-RN0816-16	13 Nov2016	27 Mar 2017
		GW-RN0833-16	13 Nov2016	10 May 2017
		GW-RN0836-16	15 Nov2016	31 Mar 2017
		GW-RN0843-16	18 Nov2016	17 May 2017
		GW-RN0856-16	17 Nov2016	7 Jan 2017
		GW-RN0870-16	30 Nov2016	13 May 2017

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
		GW-RN0871-16	29 Nov2016	20 May 2017
		GW-RN0872-16	29 Nov2016	20 May 2017
		GW-RN0901-16	11 Dec 2016	4 Jun 2017
		GW-RN0939-16	22 Dec 2016	21 Jun 2017
		GW-RN0947-16	24 Dec 2016	15 Jun 2017
		GW-RN0965-16	28 Dec 2016	13 Jun 2017
		GW-RN0002-17	8 Jan 2017	4 Jun 2017
		GW-RN0004-17	11 Jan 2017	18 Feb 2017
		GW-RN0021-17	19 Jan 2017	8 Jul 2017
		GW-RN0029-17	21 Jan 2017	8 Jul 2017
		GW-RN0032-17	25 Feb 2017	10 Jul 2017
		GW-RN0040-17	25 Jan 2017	24 Aug 2017
		GW-RN0048-17	3 Feb 2017	16 Jun 2017
		GW-RN0066-17	15 Feb 2017	15 Jul 2017
		GW-RN0069-17	15 Feb 2017	14 Aug 2017
		GW-RN0070-17	3 Feb 2017	15 Jul 2017
		GW-RN0071-17	16 Feb 2017	15 Aug 2017
Contract 5				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 359338	13 May 2013	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producers Number No.: 5213-642-S3735-01	8 Jun 2013	Till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	No.: W5/1G44/1	8 Jun 13	30 Jun 2018
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017351	29 Apr 13	Till the end of Contract
Contract 6				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 390614	29 Jun 2015	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producers Number No.: 5213-652-C3969-01	31 Aug 2015	Till the end of Contract
3	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7022707	9 Jul 2015	Till the end of Contract

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
4	Water Pollution Control Ordinance - Discharge License	No.:WT00024574-2016	31 May 2016	31 May 2021
		No.:WT00024576-2016	31 May 2016	31 May 2021
		No.:WT00024742-2016	14 June 2016	30 June 2021
		No.:WT00024746-2016	14 June 2016	30 June 2021
5	Construction Noise Permit	GW-RW0588-16	19 Oct 2016	18 Apr 2017
		GW-RN0766-16	21 Oct 2016	20 Jan 2017
		GW-RN0915-16	20 Dec 2016	14 Mar 2017
		GW-RN0937-16	3 Jan 2017	31 Mar 2017
		GW-RN0964-16	6 Jan 2017	5 Apr 2017
		GW-RW0003-17	16 Jan 20217	15 Jul 2017
		GW-RW0005-17	1 Apr 2017	30 Jun 2017
Contract SS C505				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 390974	13 Jul 2015	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producer No.: 5213-642-L1048-07	16 Sep 2015	Till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	No.: WT00024865-2016	8 Jul 2016	30 Nov 2020
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7022831	23 Jul 2015	Till the end of Contract
5	Construction Noise Permit	GW-RN0396-16	5 June 2016	4 Nov 2016
		GW-RN0806-16	5 Nov 2016	4 May 2017
		PP-RN0020-16	16 Jul 2016	14 Jan 2017
		GW-RN0520-16	23 Jul 2016	22 Jan 2017
		GW-RN0803-16	5 Nov 2016	4 May 2017
		GW-RN0065-17	7 Feb 2017	6 Aug 2017
Contract 7				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 397015	21 Dec 2015	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producer No.: 5214-641-K3202-01	24 Mar 2016	Till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	No.: WT00024422-2016	10 May 2016	31 May 2021
4	Waste Disposal Regulation - Billing Account for Disposal	Account No. 7024129	21 Jan 2016	Till the end of Contract

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
	of Construction Waste			
5	Construction Noise Permit	GW-RN0538-16	23 Jul 2016	4 Nov 2016
		GW-RN0799-16	5 Nov 2016	4 May 2017
Contract 4				
1	Air pollution Control (Construction Dust) Regulation	Form of Notification of Construction work has submitted to EPD in July 2016.		
2	Chemical Waste Producer Registration	Application is under preparation		
3	Water Pollution Control Ordinance - Discharge License	Application is under preparation		
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Application is under preparation		

3 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

3.1 GENERAL

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

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

3.2 MONITORING PARAMETERS

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

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

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

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 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 C***. 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 D***.

Table 3-2 Impact Monitoring Stations - Air Quality

Station ID	Description	Works Area	Related to the Work Contract
AM1b^	Open area at Tsung Yuen Ha Village	BCP	SS C505 Contract 5 Contract 7

Station ID	Description	Works Area	Related to the Work Contract
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
AM4b^	House no. 10B1 Nga Yiu Ha Village	LMH to Frontier Closed Area	Contract 6
AM5a^	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 Contract 6
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 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).
^ Proposal for change of air quality monitoring locations was enclosed in the updated EM&A Programme which approval by EPD on 29 Mar 2016.

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	ArchSD SS C505 Contract 5 Contract 7
NM2a#	Village House near Lin Ma Hang Road	Lin Ma Hang to Frontier Closed Area	Contract 5, Contract 6
NM3	Ping Yeung Village House (facade facing northeast)	Ping Yeung to Wo Keng Shan	Contract 6
NM4	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan	Contract 6
NM5	Village House, Loi Tung	Sha Tau Kok Road	Contract 2, Contract 6
NM6	Tai Tong Wu Village House 2	Sha Tau Kok Road	Contract 2, Contract 6
NM7	Po Kat Tsai Village	Po Kat Tsai	Contract 2
NM8	Village House, Tong Hang	Fanling	Contract 2 Contract 3
NM9	Village House, Kiu Tau Village	Fanling	Contract 3
NM10	Nam Wa Po Village House No. 80	Fanling	Contract 3

 # Proposal for the change of construction noise monitoring location from NM2 to NM2a was verified by the IEC on 6 May 2016 and was effective on 9 May 2016.

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	833 679	845 421	Alternative location located	ArchSD SS

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
	of Kong Yiu Channel			at upstream 51m of the designated location	C505 Contract 5
WM1-Control	Upstream of Kong Yiu Channel	834 185	845 917	NA	ArchSD SS C505 Contract 5
WM2A	Downstream of River Ganges	834 204	844 471	Alternative location located at downstream 81m of the designated location	Contract 6
WM2A(a)*	Downstream of River Ganges	834 191	844 474	Alternative location located at upstream 70m of the designated location	Contract 6
WM2A-Controlx#	Upstream of River Ganges	835 377	844 188	Alternative location located at upstream 160m 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
WM3x#	Downstream of River Indus	836 206	842 270	Alternative location located at downstream 180m of the designated location	Contract 2 Contract 6
WM3-Control	Upstream of River Indus	836 763	842 400	Alternative location located at downstream 26m of the designated location	Contract 2# Contract 6
WM4	Downstream of Ma Wat Channel	833 850	838 338	Alternative location located at upstream 11m of the designated location	Contract 2 Contract 3
WM4–Control A	Kau Lung Hang Stream	834 028	837 695	Alternative location located at downstream 28m of the designated location	Contract 2 Contract 3
WM4–Control B	Upstream of Ma Wat Channel	833760	837395	Alternative location located at upstream 15m of the designated location	Contract 2 Contract 3

 # EPD has approved the revised EM&A Programme on 29th March 2016. If the measured water depth of the monitoring station is lower than 150 mm, alternative location (WM3x and WM2A-Controlx) based on the criteria were selected to perform water monitoring in accordance with the updated EM&A Programme (Rev.05) (Section 4.1.4)
** Proposal for the change of water monitoring location from WM2A to WM2A(a) was verified by the IEC and it was approved by EPD. (EPD's ref. (10) in EP 2/N7/A/52 Pt.19)*

3.4 MONITORING FREQUENCY AND PERIOD

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

Air Quality Monitoring

3.4.2 Frequency of impact air quality monitoring is as follows:

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

Noise Monitoring

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

Water Quality Monitoring

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

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

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

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

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

Table 3-5 Air Quality Monitoring Equipment

Equipment	Model
24-Hour 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^{-1}.

3.5.8 Noise monitoring equipment to be used for monitoring is listed in ***Table 3-6***.

Table 3-6 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238 or Rion NL-52
Calibrator	B&K Type 4231 or Rion NC-74
Portable Wind Speed Indicator	Testo Anemometer

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

Water Quality Monitoring

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

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

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

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

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

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

3.5.15 Water samples for laboratory measurement of SS will be collected in high density polythene bottles, packed in ice (cooled to 4 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
Thermometer & DO meter	YSI PRO20 Handheld Dissolved Oxygen Instrument / YSI 550A Multifunctional Meter/
pH meter	AZ8685 pH pen-style meter
Turbidimeter	Hach 2100Q / YSI Professional DSS
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 Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The High Volume Air Sampler (HVS) consists of the following:

(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 were 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 were used as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $Leq_{(15min)}$ in three consecutive $Leq_{(5min)}$ measurements is used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.

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

Water Quality

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

Sampling Procedure

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

3.6.11 The sample container will be rinsed with a portion of the water sample. The water sample then will be transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.

3.6.12 Before sampling, general information such as the date and time of sampling, weather condition as well as the personnel responsible for the monitoring would be recorded on the field data sheet.

3.6.13 A 'Willow' 33-liter plastic cool box packed with ice will be used to preserve the water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box is maintained at a temperature as close to 4^0C as possible without being frozen. Samples collected are delivered to the laboratory upon collection.

In-situ Measurement

3.6.14 Instrument including YSI PRO20 Handheld Dissolved Oxygen Instrument or YSI 550A Multifunctional Meter or YSI Professional DSS is used for water in-situ measures, which automates the measurements and data logging of temperature, dissolved oxygen and dissolved oxygen saturation. Before each round of monitoring, the dissolved oxygen probe would be calibrated by the wet bulb method.

3.6.15 A portable AZ8685 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 or YSI Professional DSS is used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU. StablCal® Standards of known NTU are used for calibration of the instrument before and after measurement.

3.6.17 All in-situ measurement equipment are calibrated by HOKLAS accredited laboratory of three

month interval.

Laboratory Analysis

3.6.18 All water samples are analyzed with Suspended Solids (SS) as specified in the *EM&A Manual* by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration no. 66). SS analysis is determined by the laboratory upon receipt of the water samples using *APHA Standard Methods 2540D* (namely ALS Method EA-025 as accredited HOKLAS Scheme) started within 48 hours of water sample receipt.

3.7 EQUIPMENT CALIBRATION

3.7.1 Calibration of the HVS is performed upon installation and thereafter at bimonthly intervals in accordance with the manufacturer's instruction using the certified standard calibrator (TISCH Model TE-5025A). Moreover, the Calibration Kit would be calibrated annually. The calibration data are properly documented and the records are maintained by ET for future reference.

3.7.2 The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment would be checked before and after each monitoring event. Annually calibration with the High Volume Sampler (HVS) in same condition would be undertaken by the Laboratory.

3.7.3 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

3.7.4 All water quality monitoring equipment is calibrated by HOKLAS accredited laboratory of three month intervals.

3.7.5 The calibration certificates of all monitoring equipment used for the impact monitoring program in the Reporting Period and the HOKLAS accredited certificate of laboratory are presented in the relevant monthly EM&A reports.

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

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

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

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1b	265	143	500	260
AM2	268	149		
AM3	269	145		
AM4b	267	148		
AM5a	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, NM2a, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A)[Note 1 & Note 2]

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and 65 dB(A) during examination period
Note 2: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

Table 3-10 Action and Limit Levels for Water Quality

Parameter	Performance criteria	Monitoring Location				
		WM1	**WM2A(a)**	**WM2B**	**WM3x**	**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 E.***

3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

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

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

4 AIR QUALITY MONITORING

4.1 GENERAL

4.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 2, 3, 6, 7 and Contract SS C505 and air quality monitoring was performed at all designated locations.

4.2 SUMMARY OF MONITORING RESULTS

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

Table 4-1 Summary of Air Quality Monitoring Results

Monitoring Location	1-hour TSP (μg/m^3)			24-hour TSP (μg/m^3)		
	Max	Min	Mean	Max	Min	Mean
AM1b	127	33	91	124	51	84
Record Date	29-Dec-16	26-Nov-16	48 events	20-Jan-17	24-Nov-16	16 events
AM2	146	42	102	147	33	115
Record Date	16-Jan-17	26-Nov-16	48 events	3-Jan-17	9-Jan-17	16 events
AM3	206	40	107	138	16	108
Record Date	16-Jan-17	26-Nov-16	48 events	6-Dec-16	24-Nov-16	16 events
AM4b	115	36	82	115	24	67
Record Date	21-Dec-16	22-Nov-16	48 events	8-Dec-16	26-Nov-16	16 events
AM5a	126	35	81	119	12	74
Record Date	17-Jan-17	22-Nov-16	48 events	20-Dec-16	26-Nov-16	16 events
AM6	130	39	84	146	43	98
Record Date	17-Jan-17	22-Nov-16	48 events	14-Dec-16	26-Nov-16	16 events
AM7b	124	43	84	139	19	88
Record Date	27-Jan-17	10-Nov-16	48 events	21-Jan-17	26-Nov-16	16 events
AM8	129	47	83	99	22	59
Record Date	23-Jan-17	10-Nov-16	48 events	8-Dec-16	16-Jan-17	16 events
AM9b	181	31	103	85	22	58
Record Date	2-Dec-16	26-Jan-17	48 events	6-Dec-16	12-Nov-16	16 events

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

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

Location	Exceedance	1-hour TSP	24- hour TSP	Total
AM1	Action Level	0	0	0
	Limit Level	0	0	0
AM2	Action Level	0	0	0
	Limit Level	0	0	0
AM3	Action Level	0	0	0
	Limit Level	0	0	0
AM4a	Action Level	0	0	0
	Limit Level	0	0	0
AM5a	Action Level	0	0	0
	Limit Level	0	0	0
AM6	Action Level	0	0	0
	Limit Level	0	0	0
AM7b	Action Level	0	0	0
	Limit Level	0	0	0
AM8	Action Level	0	0	0
	Limit Level	0	0	0

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

4.2.3 In the Reporting Period, all the 1-hour TSP and 24-hour TSP monitoring results were below the Action/Limit Levels. No Notification of Exceedance (NOE) was issued in this Reporting Period.

4.2.4 The summary of weather conditions during the Reporting Period is presented in ***Appendix G.***

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, 6, 7 and Contract SS C505 and noise monitoring was performed at all designated locations.

5.2 SUMMARY OF MONITORING RESULTS

5.2.1 The sound level meter was set in 1m from the exterior of the building façade including noise monitoring locations NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8 and NM9. No façade correction (+3 dB(A) is added according to acoustical principles and EPD guidelines. However, free-field status is performed at NM2a and NM10 and façade correction (+3 dB(A) has added according to the requirement.

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

Table 5-1 Summary of Construction Noise Monitoring Results

Monitoring Location	Leq, 30min (dB((A))	
	Max	**Min**
NM1	63	52
Record Date	20-Dec-16 & 26-Jan-17	21-Nov-16
NM2/ NM2a(*)	72	61
Record Date	20-Dec-16	3-Nov-16 8-Dec-16
NM3	65	57
Record Date	15-Dec-16	4-Nov-16 10-Nov-16
NM4	71	63
Record Date	4-Nov-16	28-Nov-16 17-Jan-17
NM5	62	49
Record Date	21-Dec-16	30-Dec-16
NM6	67	55
Record Date	21-Dec-16	28-Nov-16
NM7	71	59
Record Date	21-Dec-16	17-Jan-17
NM8	60	56
Record Date	3-Nov-16 14-Dec-16	21-Nov-16
NM9	64	61
Record Date	9-Nov-16	2-Dec-16 14-Dec-16
NM10(*)	68	61
Record Date	2-Dec-16 10-Jan-17	3-Nov-16

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

5.2.3 Breaches of construction noise A/L levels and statistical analysis of compliance for construction

noise monitoring results are summarized in ***Table 5-2***.

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

Station	Limit Level	Action Level	Received Date
NM1	0	1	2 November 2017
NM2/ NM2a	0		
NM3	0		
NM4	0		
NM5	0		
NM6	0		
NM7	0		
NM8	0		
NM9	0		
NM10	0		

5.2.4 In this Reporting Period, the noise level measured at all designated monitoring locations were below 75dB(A). No Limit Level exceedance was triggered and no corrective action was required.

5.2.5 However, there was a noise complaint which triggered the Action Level exceedance received in the period of 31 October to 2 November 2016. The investigation report for the complaint has completed by the ET which concluded that the complaint was not related to the project.

5.3 NOISE MONITORING RESULTS (RESTRICTED HOURS)

5.3.1 In the Reporting Period, CNPs were granted by Contracts 2, 3, 6, 7 and SS C505 for use of Powered Mechanical Equipment (PME) during restricted hour. As confirmed by both Contractors with their works schedules, construction works would be conducted at Contract 6 and 7 during restricted hours with the granted CNP. Noise monitoring was therefore conducted at the relevant noise monitoring locations during respective restricted hour periods.

5.3.2 Based on the works schedule by the Contractor of Contracts 2, 3, 6, 7 and SS C505 the involved noise monitoring locations included NM1, NM7, NM8, NM9 and NM10. Summary of noise monitoring results during the Reporting Period are tabulated in ***Table 5-3.*** The relevant graphical plots throughout the Reporting Period are presented in ***Appendix F***.

Table 5-3 Summary of Construction Noise Monitoring Results for Restricted Hours

Monitoring Location	Evening (Leq5min), dB(A)		Night time Leq (Leq5min), dB(A)	
	Max	Min	Max	Min
NM5	53	45	53	45
Record Date	18-Nov-16	25-Nov-16 20-Jan-17	6-Jan-17	4-Nov-16 26-Jan-17
NM7	60	44	57	43
Record Date	30-Dec-16	16-Dec-16	20-Dec-16	25-Nov-16
NM8	64	56	63	52
Record Date	13-Jan-17	11-Nov-16 9-Dec-16	4-Nov-16	2-Dec-16
NM9	NA	NA	66	59
Record Date	NA	NA	20-Jan-17	5-Nov-16
NM10(*)	NA	NA	59	55
Record Date	NA	NA	27-Jan-17	5-Nov-16
NM1	52	49	64	60

Monitoring Location	Evening (Leq5min), dB(A)		Night time Leq (Leq5min), dB(A)	
	Max	Min	Max	Min
Record Date	25-Nov-16	2-Dec-16	13-Oct-16	28-Oct-16
NM4	56	42	64	60
Record Date	20-Jan-17	6-Jan-17	13-Oct-16	28-Oct-16

Remarks: 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.

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

5.3.3 According to the site records by the monitoring team, no construction noise from the construction was noted during the course of monitoring at all locations. On the other hand, traffic noise was dominated at NM8 and NM9 since the monitoring locations were closed to the train tracks and very serious dogs barking were recorded at NM10. Therefore, it is considered that the measurement results were likely to be the background noise.

6 WATER QUALITY MONITORING

6.1 GENERAL

6.1.1 In the Reporting Period, construction works under the project has been commenced in Contracts 2, 3, 6, 7 and Contract SS C505 and water quality monitoring was performed at all designated locations.

6.2 SUMMARY OF MONITORING RESULTS

6.2.1 Summary of monitoring results during the Reporting Period are tabulated in ***Tables 6-1 and 6-4.*** The relevant graphical plots throughout the Reporting Period are presented in ***Appendix F***.

6.2.2 In accordance with "*Event and Action Plan*", the water quality monitoring frequency shall be increased to daily when exceedance recorded at the exceeded monitoring location. In the Reporting Period, 38 days of scheduled water monitoring were conducted. Moreover, 10, 1, 8 and 3 days of extra water sampling were conducted for WM2A(a), WM2B, WM3 and WM4 and all its control station.

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

Statistics	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
Min	6.0	5.8	9.8	3.8	4.0	<2
Max	9.8	9.7	50.8	41.4	50.5	23.0
Average	8.2	8.1	22.6	7.7	21.2	3.9

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

Statistics	DO (mg/L)			Turbidity (NTU)			SS (mg/L)		
	WM4	WM4 - CA	WM4 - CB	WM4	WM4 - CA	WM4 - CB	WM4	WM4 - CA	WM4 - CB
Min	6.57	7.14	4.40	6.15	2.22	4.54	5.50	<2	4.00
Max	9.34	10.04	7.73	242.50	215.00	107.50	126.50	690.50	98.00
Average	7.95	8.38	6.60	28.12	16.57	15.79	26.81	44.41	15.54

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

Statistics	DO (mg/L)				Turbidity (NTU)				SS (mg/L)			
	WM2A(a)	WM2A-C	WM2B	WM2B-C	WM2A(a)	WM2A-C	WM2B	WM2B-C	WM2A(a)	WM2A-C	WM2B	WM2B-C
Min	7.0	6.7	7.2	6.3	7.5	4.7	2.8	1.7	4.0	<2	<2	<2
Max	9.0	9.0	9.4	8.3	319.0	84.5	306.5	7.0	223.0	44.0	368.5	5.5
Average	8.1	8.1	8.5	7.2	45.9	12.4	14.7	3.3	35.0	6.9	15.8	2.8

Table 6-4 Summary of the Water Quality Monitoring Results – Contract 2 & 6

Statistics	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
	WM3	WM3-Control	WM3	WM3-Control	WM3	WM3-Control
Min	6.4	5.6	2.7	1.8	2.5	2.5
Max	8.9	8.6	531.5	28.9	826.0	37.0
Average	7.6	7.0	39.3	6.1	55.4	9.2

6.2.3 Breaches of water quality A/L levels and statistical analysis of compliance for the water quality monitoring results are summarized in ***Tables 6-5.***

Table 6-5 Summaries of Breaches of the Existing Water Quality A/L Levels

Reporting Period	No. of sampling day	Location	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
			Action	Limit	Action	Limit	Action	Limit
Nov-16	13	WM1	0	0	0	0	0	0
	21	WM2A(a)	0	0	**1**	**7**	**1**	**10**
	14	WM2B	0	0	0	**1**	0	**1**
	21	WM3x	0	0	0	**11**	0	**11**
	14	WM4	0	0	0	**1**	0	**1**
Dec-16	13	WM1	0	0	0	0	0	0
	15	WM2A(a)	0	0	0	**2**	**1**	**3**
	13	WM2B	0	0	0	0	0	0
	13	WM3x	0	0	0	0	0	0
	14	WM4	0	0	0	**1**	0	**1**
Jan-17	12	WM1	0	0	0	0	0	0
	12	WM2A(a)	0	0	0	0	0	0
	12	WM2B	0	0	0	0	0	0
	12	WM3x	0	0	0	0	0	0
	13	WM4	0	0	0	**1**	0	**1**
Total	38	WM1	0	0	0	**0**	0	**0**
	48	WM2A(a)	0	0	**1**	**9**	2	**13**
	39	WM2B	0	0	0	**1**	0	**1**
	46	WM3x	0	0	0	**11**	0	**11**
	41	WM4	0	0	0	3	0	**3**
Sum			0	0	**1**	**24**	**2**	**28**

6.2.4 In the Reporting Period, a total of 55 Action Level (AL)/ Limit Level (LL) exceedances namely 25 AL/LL exceedances of turbidity and 30 LL exceedances of SS were recorded. NOEs were issued to relevant parties upon confirmation of the results.

6.2.5 Investigation reports for the exceedance were conducted by the ET and the investigation results revealed that 6 out of 55 exceedances were related to the works under the project. The detailed investigation reports are summarized in ***Table 6-6*** and presented in the relevant monthly EM&A reports.

Table 6-6 Summary of Water Quality Exceedance in the Reporting Period

Date of Exceedance	Location	Exceeded Parameter	Cause of Water Quality Exceedance In Brief
2 and 4 Nov 2016	WM2A(a) (C6)	NTU &SS	The IR revealed the exceedances were related to the exposed slope adjacent to the river course. As remedial measures, CCKJV was immediately hard paved the exposed slope and erected sand bag barrier at the edge of slope. There were no exceedances recorded on the subsequent water quality monitoring 5 and 7 November 2016, thus it is considered that the remedial measures provided by CCKJV were effective.
9 and 10 Nov 2016	WM3x (C2 and C6)	NTU &SS	CCKJV reported that a pipe which carrying slurry from H-pipe works area to primary sedimentation tank at Wo Keng Shan was burst accidentally in the morning of 10 November 2016. The burst pipe was immediately

Date of Exceedance	Location	Exceeded Parameter	Cause of Water Quality Exceedance In Brief
			replaced but some slurry was flowing into the adjacent river channel. In our investigation, it is considered that the exceedances on 9 November 2016 were due to natural variation and unlikely caused by the works under the Project. For the exceedances on 10 November 2016, it is considered that the exceedances were related to the pipe burst incident. CCKJV was advised to regularly check up the condition of water pipe particularly carrying untreated water and ensure the wastewater treatment systems are well maintained.
15 Nov 2016	WM4 (C2 and C3)	NTU &SS	The IR revealed that muddy water was found in the river branch from Kiu Tau Road from an active construction site by other Contractor. In our investigation, it is considered that exceedances were due to the muddy water from the outside of site boundary and not likely related to the works under the Contract.
11, 12, 14 and 15 Nov 2016	WM2A(a) (C6)	NTU &SS	The IR revealed that the water mitigation measures implemented on site was in order and no adverse water impact was identified. Moreover, there were no rain recorded during the exceedance days and surface runoff generated from the site area was unlikely to occur. It is considered the exceedances were due to natural variation and unlikely caused by the works under the project.
15 and 16 Nov 2016	WM3x (C2 and C6)	NTU &SS	CCKJV reported that a portion of area Sha Tau Kok Road was handed over to other Contractor since 5 September 2016 and discharge of turbid water to the gully was observed in that portion area on 15 and 16 November 2016. In our investigation, it is considered that the exceedances were due to the discharge of muddy water by other Contractor and unlikely caused by the works under the Project.
22, 23 and 24 Nov 2016	WM2A(a) (C6)	NTU &SS	According to the rainfall record from the Hong Kong Observatory (HKO), there were rainstorms on 22 and 23 November 2016. Muddy water generated from runoff from the surrounding environment and turbid water was also found throughout Ping Yeung River. Thick sediment was cumulated at the river bed and more muddy water was generated under vigorous water flow and stir up sediment. In our investigation, the implementation of water mitigation measures on site was in order and no adverse water quality impact was observed. It is considered that the exceedances on 22 and 23 November 2016 were due to rainstorm and exceedances on 24 November 2016 was due to residual impact after rainstorm and not caused by the works under the Contract.
19, 21, 22 and 23, 25, 26 and 28 Nov 2016	WM3x (C2 and C6)	NTU &SS	The IR revealed that there was thick sediment cumulated at the channel bed of Ng Tung River and muddy turbulence was readily formed under water flow.

Date of Exceedance	Location	Exceeded Parameter	Cause of Water Quality Exceedance In Brief
			In our investigation, it is considered that the exceedances were likely due to the muddy turbulence formed by the loose sediment cumulated at the channel bed. Moreover, exceedances on 22, 23 and 26 November 2016 were also related to impact by rain.
26 Nov 2016	WM2B (C6)	NTU &SS	The IR revealed that there was heavy rain on 26 November 2016and runoff from public road and getting into the channel was observed. It is considered that the exceedance were due rainstorm and runoff from road and not likely caused by the Project
28 and 30 Nov 2016	WM2A(a) (C6)	NTU &SS	The IR revealed that the water mitigation measures implemented on site was in order and no adverse water impact was identified. Moreover, there were no rain recorded during the exceedance days and surface runoff generated from the site area was unlikely to occur. It is considered the exceedances were due to natural variation and unlikely caused by the works under the project.
6, 7 and 8 Dec 2016	WM2A(a) (C6)	NTU &SS	The IR revealed that the water mitigation measures implemented on site was in order and no adverse water impact was identified. Moreover, there were no rain recorded during the exceedance days and surface runoff generated from the site area was unlikely to occur. It is considered the exceedances were due to natural variation and unlikely caused by the works under the project.
17 Dec 2016	WM4 (C2 and C3)	NTU &SS	The IR revealed that suspected direct discharge of untreated water was observed from construction site by the utility contractor near Tai Wo Service Road West (TWSRW) and muddy water was found at the box culvert under its site area. In our investigation, it is considered that exceedances were not likely related to the works under both Contracts 2 and 6.
29 Dec 2016	WM2A(a) (C6)	NTU &SS	The IR revealed that the water mitigation measures implemented on site was in order and no adverse water impact was identified. Moreover, there were no rain recorded during the exceedance days and surface runoff generated from the site area was unlikely to occur. It is considered the exceedances were due to natural variation and unlikely caused by the works under the project.
21 Jan 2017	WM4 (C2 and C3)	NTU &SS	During weekly site inspection at South Portal of Contract 2, it was observed the wastewater treatment facility implemented on site was function properly and the treated water to be discharge was visually clear. The site condition was generally in order and no adverse water quality impacts and abnormal situation under the Contract were identified. Moreover, there was no rain recorded on 21 January 2017 and runoff from the site was unlikely to occur. In our investigation, it is considered that exceedances were due to natural

Date of Exceedance	Location	Exceeded Parameter	Cause of Water Quality Exceedance In Brief
			variation and unlikely related to the works under the Contract. During weekly site inspection by ET at Contracts 3 in January 2017, it was observed that no excessive wastewater was generated from the active construction works and the water quality in the existing river channel adjacent to the construction site was clear. The site condition was generally in order and no adverse water quality impacts and abnormal situation under the Contract were identified. Moreover, there was no rain recorded on 21 January 2017 and runoff from the site was unlikely to occur. In our investigation, it is considered that exceedances were due to natural variation and unlikely related to the works under the Contract 3.

7 ECOLOGY MONITORING

7.1 GENERAL

7.1.1 Ecology monitoring for woodland compensation was shall be conducted at bi-monthly interval. The ecological monitoring report (Nov-Dec 2016) was submitted to EPD in January 2017 and the ecological monitoring report (Jan-Feb 2017) was submitted to EPD in March 2017.

8 WASTE MANAGEMENT

8.1 GENERAL WASTE MANAGEMENT

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

8.2 RECORDS OF WASTE QUANTITIES

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

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse

8.2.2 Whenever possible, materials were reused on-site as far as practicable. The quantities of waste for disposal in the Reporting Period are summarized in ***Tables 8-1*** and ***8-2*** and the Waste Flow Table is presented in ***Appendix H***.

Table 8-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Contract No	Quantity				Disposal Location
		Nov 2016	Dec 2016	Jan 2017	Total	
C&D Materials (Inert) (in '000m^3)	**2**	**100.2462**	**75.9804**	**59.9685**	**357.589**	-
	3	**0.747**	**0.675**	**1.15**		
	6	**35.682**	**28.5**	**39.926**		-
	7	0	0	0		
	SS C505	**4.841**	**6.713**	**3.16**		-
Reused in this Project (Inert) (in '000m^3)	**2**	**0.4509**	**0.9293**	**0.4203**	**52.845**	-
	3	**0.201**	**0.12**	**0.15**		-
	6	**8.541**	**10.447**	**19.095**		-
	7	0	0	0		
	SS C505	**4.0475**	**6.44**	**2.003**		-
Reused in other Projects (Inert) (in '000m^3)	**2**	**45.5418**	**26.2843**	**26.9277**	**115.737**	C6/ NENT# & other projects approved by the ER
	3	0	0	0		
	6	**4.298**	**6.618**	**6.067**		C5 & other projects approved by the ER
	7	0	0	0		
	SS C505	0	0	0		
Disposal as Public Fill (Inert) (in '000m^3)	**2**	**54.2534**	**48.7668**	**32.6205**	**188.534**	Tuen Mun 38 TKO 137
	3	**0.407**	**0.425**	**0.796**		
	6	**22.843**	**11.435**	**14.764**		
	7	0	**0**	0		
	SS C505	**0.793**	**0.273**	**1.157**		

Remark:

(#)The C&D materials were delivered to NENT for reuse by laying cover of the landfilling area. Since major construction activities under Contractor 5 have been substantially completed on 31 August 2016, no data was presented for Sep 2016 and Oct 2016.

Table 8-2 Summary of Quantities of C&D Wastes

Type of Waste	Contract No	Quantity				Disposal Location
		Nov 2016	Dec 2016	Jan 2017	Total	
Recycled Metal ('000kg) #	**2**	**65.172**	**21.791**	**9.687**	**1121.332 +0.002#**	By licensed collector
	3	**0.001**	**0.001**	0		
	6	0	0	0		
	7	**0.1**	**0.1**	**0.1**		
	SS C505	**268.18**	**298.052**	**458.15**		
Recycled Paper / Cardboard Packing ('000kg) #	**2**	**0.45**	**0.32**	**0.3**	**2.78**	By licensed collector
	3	0	0	0		
	6	**0.252**	**0.228**	0		
	7	**0.04**	**0.04**	**0.05**		
	SS C505	**0.54**	**0**	**0.56**		
Recycled Plastic ('000kg) #	**2**	**2.5623**	**2.5**	**2.3**	**7.5633+ 0.002#**	By licensed collector
	3	**0.001**	**0**	**0.001**		
	6	0	0	0		
	7	**0.001**	**0.001**	**0.001**		
	SS C505	**0.087**	**0.053**	**0.058**		
Chemical Wastes ('000kg) #	**2**	**2.464**	**3.3**	**1.76**	**7.524**	By licensed collector
	3	0	0	0		
	6	0	0	0		
	7	0	0	0		
	SS C505	0	0	0		
General Refuses ('000m^3)	**2**	**0.3216**	**0.2052**	**0.1931**	**2.6939**	NENT
	3	**0.125**	**0.12**	**0.17**		
	6	**0.115**	**0.065**	**0.065**		
	7	**0.005**	**0.005**	**0.01**		
	SS C505	**0.423**	**0.39**	**0.481**		

Remark:

(#) Unit of recycled metal, recycled paper/ cardboard packing, recycled plastic and chemical waste for Contractor 3 was in ('000m^3).

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

9 SITE INSPECTIONS

9.1 REQUIREMENTS

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

Contract 2

9.1.2 During the Reporting Period, ***13*** events of the joint site inspections were undertaken at Contract 2 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in ***Table 9-1*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 9-1 Summary of Reminders/Observations of Site Inspection – Contract 2

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
November 2016	4, 11, 18 and 25 November 2016	3	Completed
December 2016	2, 9, 16, 19 and 30 December 2016	2	Completed
January 2017	6, 13, 20 and 27 January 2017	3	Completed

9.1.3 In the Reporting Period, no non-compliance was recorded; however, ***8*** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Contract 3

9.1.4 During the Reporting Period, ***12*** events of the joint site inspections were undertaken at Contract 3 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in ***Table 9-2*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 9-2 Summary of Reminders/Observations of Site Inspection – Contract 3

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
November 2016	7, 6, 21 and 28 November 2016	4	Completed
December 2016	5, 12, 21 and 29 December 2016	1	Completed
January 2017	3, 9, 18 and 23 January 2017	5	Completed

9.1.5 In the Reporting Period, no non-compliance was recorded; however, ***10*** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Contract 6

9.1.6 During the Reporting Period, ***13*** events of the joint site inspections were undertaken at Contract 6 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in ***Table 9-4*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 9-4 Summary of Reminders/Observations of Site Inspection – Contract 6

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status

November 2016	3, 10, 17 and 24 November 2016.	8	Completed
December 2016	1, 8, 15, 22 and 29 December 2016	3	Completed
January 2017	5, 12, 19 and 26 January 2017	3	Completed

9.1.7 In the Reporting Period, no non-compliance was recorded; however, ***14*** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Contract SS C505

9.1.8 During the Reporting Period, ***13*** events of the joint site inspections were undertaken at Contract SS C505 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in ***Table 9-5*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 9-5 Summary of Reminders/Observations of Site Inspection – Contract SS C505

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
November 2016	2, 9, 17, 23 and 30 November 2016	8	Completed
December 2016	7, 14, 20 and 28 December 2016	10	Completed
January 2017	5, 11, 18 and 23 January 2017	6	Completed

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

Contract 7

9.1.10 During the Reporting Period, ***13*** events of the joint site inspections were undertaken at Contract SS C505 to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in ***Table 9-6*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 9-6 Summary of Reminders/Observations of Site Inspection – Contract 7

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
November 2016	1, 8, 15, 22 and 29 November 2016	5	Completed
December 2016	6, 13, 20 and 28 December 2016	1	Completed
January 2017	3, 10, 17 and 24 January 2017	4	Completed

9.1.11 In the Reporting Period, no non-compliance was recorded; however, ***10*** observations/ reminder were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Other Contracts

9.1.12 Since the construction work of Contract 5 has substantially completed and Contract 4 has not commenced, no site inspection was performed.

10 NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND PROSECUTIONS

10.1 STATUS OF NON-COMPLIANCE ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

10.1.1 In the Reporting Period, no non-compliance, no summons and prosecution under the EM&A Programme was recorded and lodged for the Project. However, seven (7) documented environmental complaints were received and the summary of complaint received in the Reporting Period is listed below.

- 4 November 2016 (Contracts 2 and 6) – A complaint was received from 1823 on 4 November 2016 regarding muddy water discharged out of the construction sites near the traffic light post at the junction of Sha Tau Kok Road and Wo Keng Shan Road. The suspected muddy water from the construction site affecting the environment and causing inconvenience to the pedestrian and public. In our investigation, the site exits near the complaint location under the project were satisfactory. Even though the inspection was carried out in rainy day, no muddy water discharge out of the construction site to the public roads was observed. It is considered that the suspected muddy water discharge from the works area out to Sha Tau Kok Road and Wo Keng Shan Road was unlikely due to the project. As advised by both contractors, road washing/ cleaning by water bowsers was provided along Wo Keng Shan Road to Sha Tau Kok Road in every normal working day (Mon-Sat), except for rainy day. Moreover, road sweeping would be provided for the concerned roads twice a week. To address the complainant's concern, the ET will keep closely inspection on the cleanliness situation on both roads during weekly site inspection.

- 31 October and 2 November 2017 (Contract 7) – A complaint was received from 1823 regarding noise nuisance generated from the piling works for the cross-boundary bridges under CEDD's works contract at 10pm on 31 October 2016. On 2 November 2016, the same complainant contact 1823 again and complained the same issue and a photo showing the concerned piling works was provided by the complainant. According to the complaint details, it is considered that the concerned period of the complainant would be 31 October to 2 November 2016. As discussed with the Contractor of Contract 7 (KRSJV), the machinery appeared in Photo provided by the complainant was pre-bored socketed pile in Bridge A. According to the site diary provided by KRSJV 7 during 31 October to 2 November 2016, apart from the operation of generator for lighting and some material preparation works without use of any PME carried out at Portion G till 22:00, there were no piling works undertaken within the construction site after 19:00 on 31 October and 1 to 2 November 2016. Since there were no piling works undertaken by KRSJV during the concerned period, it is considered that the complaint was not valid to the Contract. Nevertheless, KRSJV is reminded to strictly comply with CNP requirement when there would be works undertaken during restricted hours and noise mitigation measures as recommended in the EM&A Programme should be adopted as far as practicable.

- 16 November 2016 (Contract 6) - A complaint was received from 1823 on 16 November 2016 regarding construction of road bridge at higher ground level near Nga Yiu Ha Village caused water flowing to the complainant's water well and led to flooding. Moreover, the complainant pointed out that severe noise impact was generated and uneven presidential road were formed due to the construction. According to the complaint description, the related site area should be Bridge D and Ping Yeung Interchange under Contract 6. In our investigation, no deficiencies due to construction under the Contract were identified and affecting Nga Yiu Ha Village. Since the complaint location could not be found, it is considered the complaint was not evident due to the Contract and no remedial action was taken by CCKJV. Nevertheless, ET will keep closely monitor the site condition and status of implemented mitigation measures by CCKJV. Also, CCKJV is reminded to fully implement the mitigation measures as recommended in the EM&A Programme.

- 19 December 2016 (Contract 6) - A complaint was received from the project hotline on 19

December 2016 regarding the complainant dissatisfied with the construction noise and vibration generated by the construction works which affecting her residence. She requested immediate follow up and associated improvement from relevant department. The Contractor of Contract 6 (CCKJV) has immediately liaised with the complainant and it was figured out that the main concern of the complainant was the vibration generated by the sheet piling work. Therefore, it was not considered as a noise complaint and no Action level was triggered. Besides, vibration is not an environmental aspect under EM&A programme for this complaint location. In our investigation, CCKJV has implemented noise mitigation measures to further reduce the noise impact to the nearby resident. To eliminate the inconvenience caused to the nearby resident, CCKJV agreed to start the sheetpile work after 9:00am every day and the concerned piling works is expected to be completed in early January 2017. The complainant was satisfactory with the arrangement undertaken by CCKJV. Since the most construction areas under the Contract are close to the resident of village, CCKJV was reminded to implement the mitigation measures as far as practicable as recommended in the EM&A Programme.

- 16 January 2017 (Contracts 2 & 6) - A complaint was received from 1823 on 16 January 2017 regarding muddy water found on the ground near the traffic light post at the junction of Sha Tau Kok (STK) Road and Wo Keng Shan (WKS) Road and it was suspected the muddy water was come from the construction site. The cumulated muddy water splashed on the pedestrian when vehicle passing by which causing inconvenience to the public and the complainant requested the related department to follow up. Joint site inspection was carried out by RE, IEC, Contractors and ET on 19 and 20 January 2017 at the suspected four (4) site exits along the Sha Tau Kok Road and Wo Keng Shan Road and the traffic light post for the complaint investigation. As advised by both contractors, road washing/ cleaning by water bowsers was provided along Wo Keng Shan Road to Sha Tau Kok Road in every normal working day (Mon-Sat), except for rainy day. Moreover, road sweeping would be provided for the concerned roads twice a week to maintain cleanliness of the roads. In our investigation, no cumulated muddy water and mud trails were observed and the site exits near the complaint location were satisfactory. It is considered that the complaint was unlikely due to the project. To address the complainant's concern, the ET will keep closely inspection on the cleanliness situation on both roads during weekly site inspection.

- 3 January 2017 (Contract 2) - DSD conducted site inspection on 3 January 2017 at Kwan Tei River near Po Kak Tsai and suspected construction foul water was found in the branch of Kwan Tei River. Subsequent site inspection in Kwan Tei River was conducted by DSD and EPD on 6 and 10 January 2017 respectively for further investigation. According to DSD's inspection report, a discharge of slurry had smothered Kwan Tei River and wiped out the Firefly trial site which was meant to be a showcase of river health and the return of diverse freshwater life in the region. On EPD's inspection on 10 January 2017, it revealed that the open channel which received discharge from the construction site was accumulated with slurry. According to the inspection records from DSD and EPD, the source of foul water was suspected to be construction site of Mid-Vent under Contract 2. Joint site inspection among the RE, IEC, Contractor of Contract 2 (DHK) and ET was carried out on 13 January 2017 in Mid-vent and Kwan Tei River for the complaint investigation. In our investigation, it is considered that the complaint was caused by the inadvertent and unintentional emergency discharge by DHK in their consideration of safety of the people working inside the Adit. To maintain the wastewater water system, DHK has already increased to the frequency of sludge removal of the wastewater treatment facility to 3-5 times daily to reduce the load of the water pump. In our response to the complaint, DHK was advised that replacement by spare water pump should be made immediately when any malfunction event is alerted. Moreover, additional measures for flood control such as additional retention tanks or flood gates were recommended. In case of any emergence discharge, DHK should immediately clean up the deposition at the downstream channel to avoid water contamination spreading further downstream.

- 25 January 2017 (Contract 2) - EPD received a complaint from the public who provided photos and video showing grey slurry was discharging to Kwan Tei River. According to the photo and video provided, the river was polluted by the grey slurry and part of the harden slurry was deposited at the river side which seriously affecting the ecology of the river course. The complainant requested the related department to follow up and promptly clean up the slurry. Joint site inspection among the RE, IEC, Contractor of Contract 2 (DHK) and ET was carried out on 27 January 2017, 3 and 10 February 2017 in Mid-Vent Portal works and its downstream channel for the complaint investigation. In our investigation, the suspected complaint location was where the cleansing work was in progress, so the public might see muddy water flowing along the stream. Nevertheless, DHK has installed silt screens and sand trap at the downstream area of the cleansing work to avoid the muddy water being washed downstream. As advised by DHK, they have cleared the sludge and DSD has no further comment during the joint inspection with DSD and AECOM on 8 February 2017.

10.1.2 Upon receipt of the complaint, follow up action has been undertaken by both Contractor promptly to resolve the complaints and deficiencies. Investigation for the complaint was carried out by ET independently and the associated investigation reports were submitted to relevant parties. In the Reporting Period, two (2) out of seven (7) complaints was considered as project related and remedial action have been undertaken by the relevant Contractor.

10.1.3 The statistical summary table of environmental complaint, summons and prosecution are presented in **Tables 10-1, 10-2** and **10-3**.

Table 10-1 Statistical Summary of Environmental Complaints

Contract No	Reporting Period	Environmental Complaint Statistics			
		Frequency (Project related complaint)	Cumulative since commencement of project	Complaint Nature	Project related complaint
2	Nov 2016	1	26	• (16)Water Quality • (7) Dust • (2) Noise • (1) dust & noise	(5) water (2) dust (1) noise
	Dec 2016	0			
	Jan 2017	3			
3	Nov 2016	0	4	• (1) Dust • (2) Water quality • (1) Noise	0
	Dec 2016	0			
	Jan 2017	0			
5	Nov 2016	0	4	• (3) Dust • (1) Noise	0
	Dec 2016	0			
	Jan 2017	0			
6	Nov 2016	2	30	• (22) Water Quality • (6) Dust • (1) Noise • (1) Nuisance	(6) water (2) dust (1) Nuisance
	Dec 2016	1			
	Jan 2017	1			
7	Nov 2016	1	1	• (1) Noise	0
	Dec 2016	0			
	Jan 2017	0			
SS C505	Nov 2016	0	2	• (1) Dust • (1) Noise	0
	Dec 2016	0			
	Jan 2017	0			

Table 10-2 Statistical Summary of Environmental Summons

Contract No	Reporting Period	Environmental Summons Statistics				
		Frequency	Cumulative since commencement of project	Complaint Nature		
				Water	Air	Noise
2	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
3	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
5	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
6	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
7	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
SS C505	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0

Table 10-3 Statistical Summary of Environmental Prosecution

Contract No	Reporting Period	Environmental Prosecution Statistics				
		Frequency	Cumulative since commencement of project	Complaint Nature		
				Water	Air	Noise
2	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
3	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
5	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
6	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
7	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0
SS C505	Nov 2016	0	**0**	0	0	0
	Dec 2016	0		0	0	0
	Jan 2017	0		0	0	0

10.1.4 Since the construction works at the Contract 5 was substantially completed and Contract 4 has not yet commenced, no environmental complaint, summons and prosecution under the EM&A Programme are registered in the Reporting Period.

11 IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.1 GENERAL REQUIREMENTS

11.1.1 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 I.***

11.1.2 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, 5, 6 and SS C505 in this Reporting Period are summarized in ***Table 11-1***.

Table 11-1 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.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 CONCLUSIONS

12.1.1 This is the **14th** Quarterly EM&A Summary Report presenting the monitoring results and inspection findings for the Reporting Period from **1 November 2016 to 31 January 2017**.

12.1.2 For air quality monitoring, no 1-hour and 24-hour TSP monitoring results triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.

12.1.3 In the Reporting Period, no construction noise exceedances were recorded and no complaints (which triggered the Action Level exceedances) were received which triggered the Action Level exceedances.

12.1.4 For water quality monitoring, a total of 55 Action Level (AL)/ Limit Level (LL) exceedances namely 25 AL/LL exceedances of turbidity and 30 LL exceedances of SS were recorded. The investigation reports for cause of exceedances were conducted by ET and submitted to relevant parties. In the Reporting Period, 6 out of 55 exceedances were considered as project related and remedial action had undertaken by the Contractor.

12.1.5 Ecology monitoring for woodland compensation for the period of November to December 2016 was submitted to EPD in January 2017. The Monitoring Report for Woodland Compensation was prepared and submitted as a stand-alone report as supplementary for the EM&A Report.

12.1.6 During the Reporting Period, weekly joint site inspections for Contract 2, Contract 3, Contract 6, Contract 7 and Contract SS C505 were undertaken to evaluate the site environmental performance. No non-compliances were observed during the weekly site inspection and environmental audit of the Reporting Period, indicating the implemented mitigation measures for air quality, construction noise and water quality were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

12.1.7 In this Reporting Period, seven (7) documented environmental complaints were received for the Project. Upon receipt of the complaint, follow up action has been undertaken by both Contractor promptly to resolve the complaints and deficiencies. Investigation for the complaint was carried out by ET independently and the associated investigation reports were submitted to relevant parties. In the Reporting Period, two (2) out of seven (7) complaints were considered as project related and remedial action had undertaken by the Contractor.

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

12.2 RECOMMENDATIONS

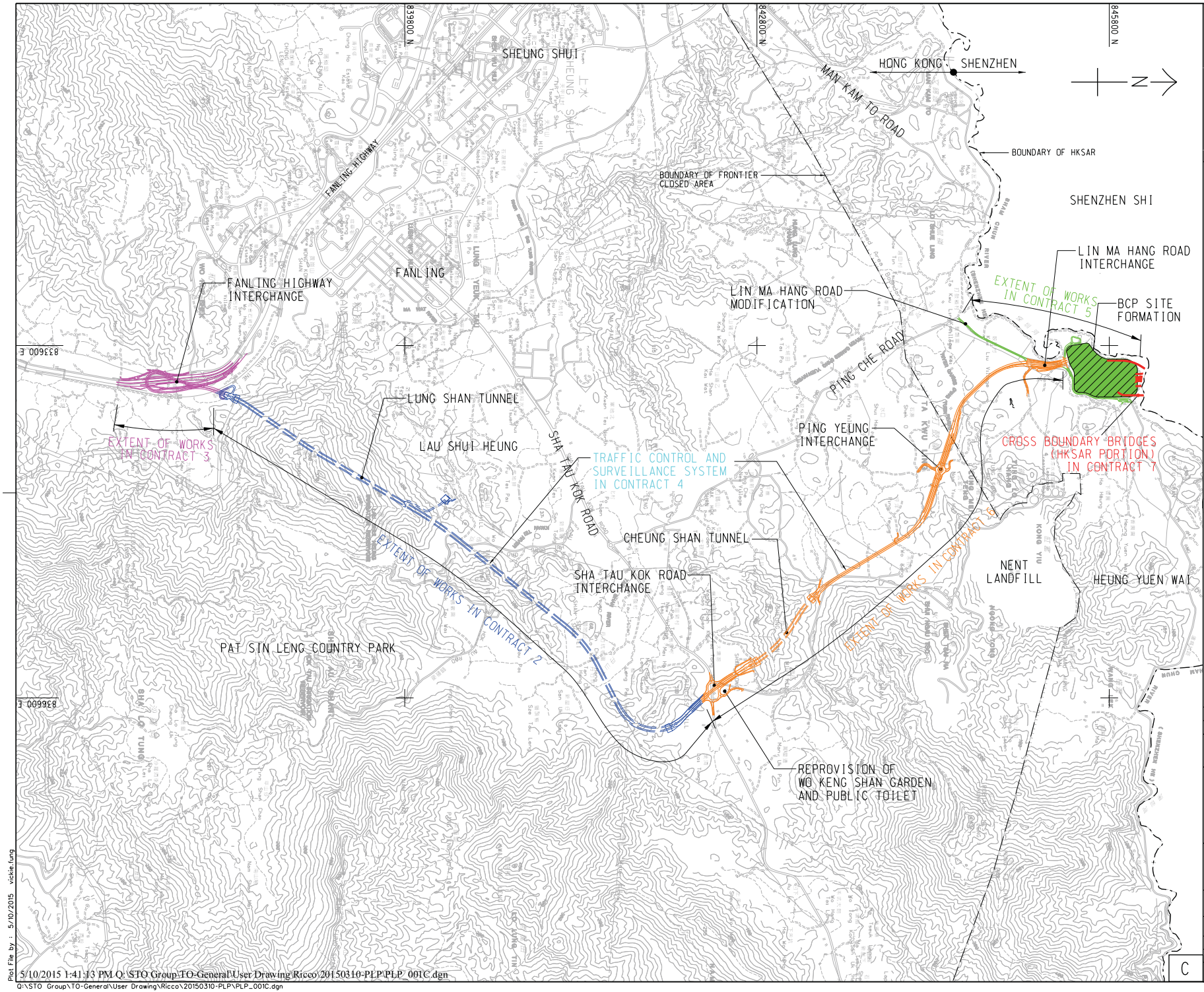
12.2.1 During dry season, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures.

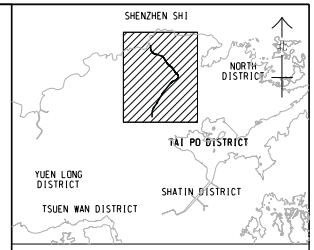
12.2.2 Preventive measures for muddy water or other water pollutants from site surface flow to local stream such as Kong Yiu Channel, Ma Wat Channel, Ping Yuen River or public area should be properly maintained. The Contractors should paid special attention on water quality mitigation measures and fully implement according ISEMM of the EM&A Manual, in particular for working areas near Ma Wat Channel and Ping Yuen River. Moreover, all effluent discharge shall be ensure to fulfill Technical Memorandum of Effluent Discharged into Drainage and Sewerage Systems, inland and Coastal Waters criteria or discharge permits stipulation.

12.2.3 Construction noise is also a key environmental issue during construction of the Project. Noise mitigation measures should be implemented in accordance with the EM&A requirement.

Appendix A

Layout plan of the Project





LOCATION PLAN
SCALE 1 : 30000

LEGEND:

UNDERGROUND WORKS

REV. 修訂	DESCRIPTION 內容摘要	D.E.	P.E. CHECKED 審核	DATE 日期

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. DIV. APPROVED 批准人	-
DRAWN BY 繪圖	ZJ	STATUS 階段			
SCALE 比例	A1 1 : 15000 A3 1 : 30000				
DIMENSIONS ARE IN 尺寸單位	METRES	© COPYRIGHT RESERVED 版權所有			

C

Plot File by : 5/10/2015 vickie.fung

5/10/2015 1:41:13 PM Q:\STO Group\TO-General\User Drawing\Ricco\20150310-PLP\PLP_001C.dgn

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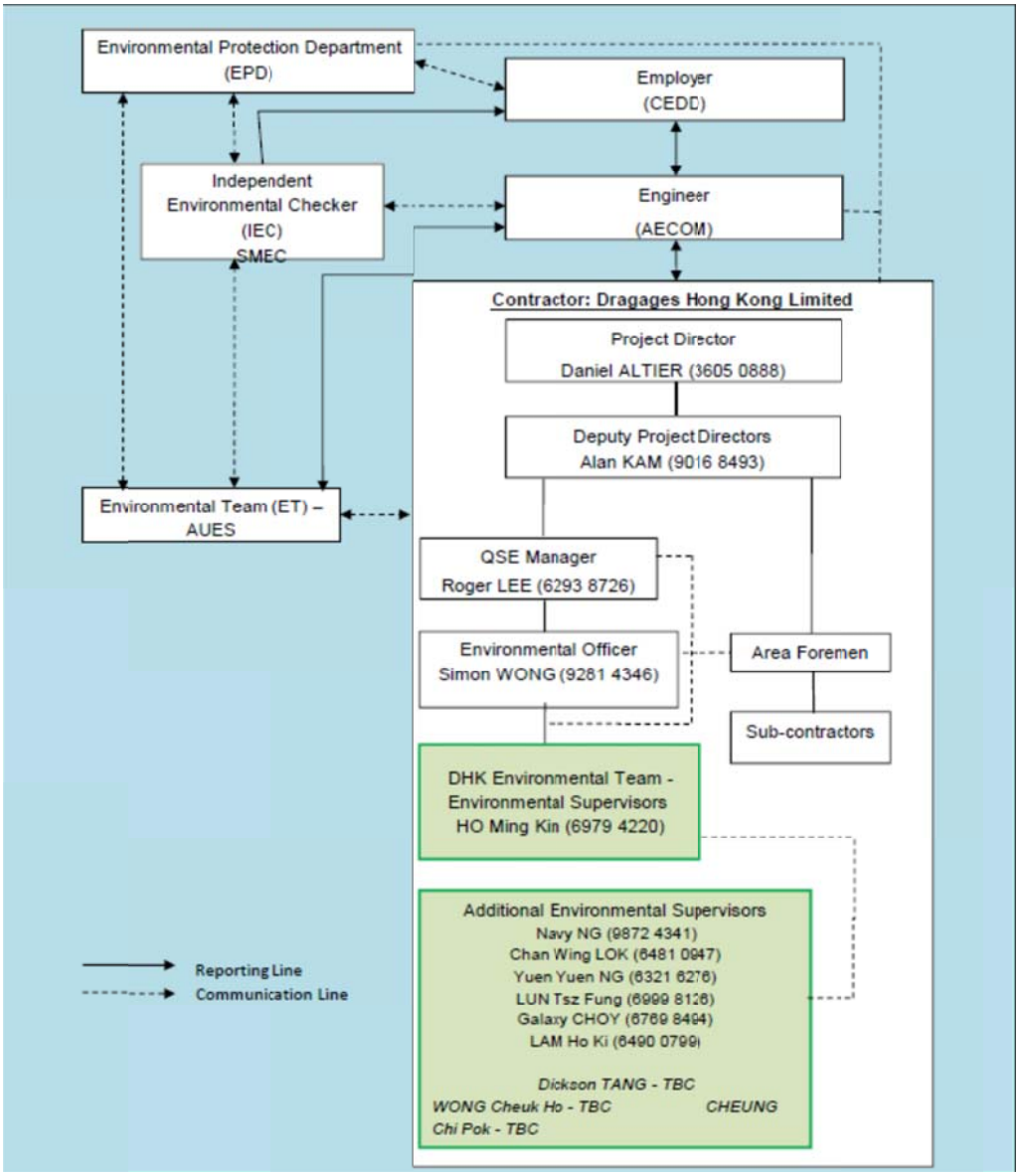
Appendix B

Environmental Management Organization Chart

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



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	CT Wong	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	Alan Kam	9016 8493	2171 3299
DHK	QSE Manager	Roger Lee	6293 8726	2171 3299
DHK	Environmental Officer	Simon Wong	2171 3004	2171 3299
DHK	Environmental Supervisor	Ho Ming Kin	6979 4220	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

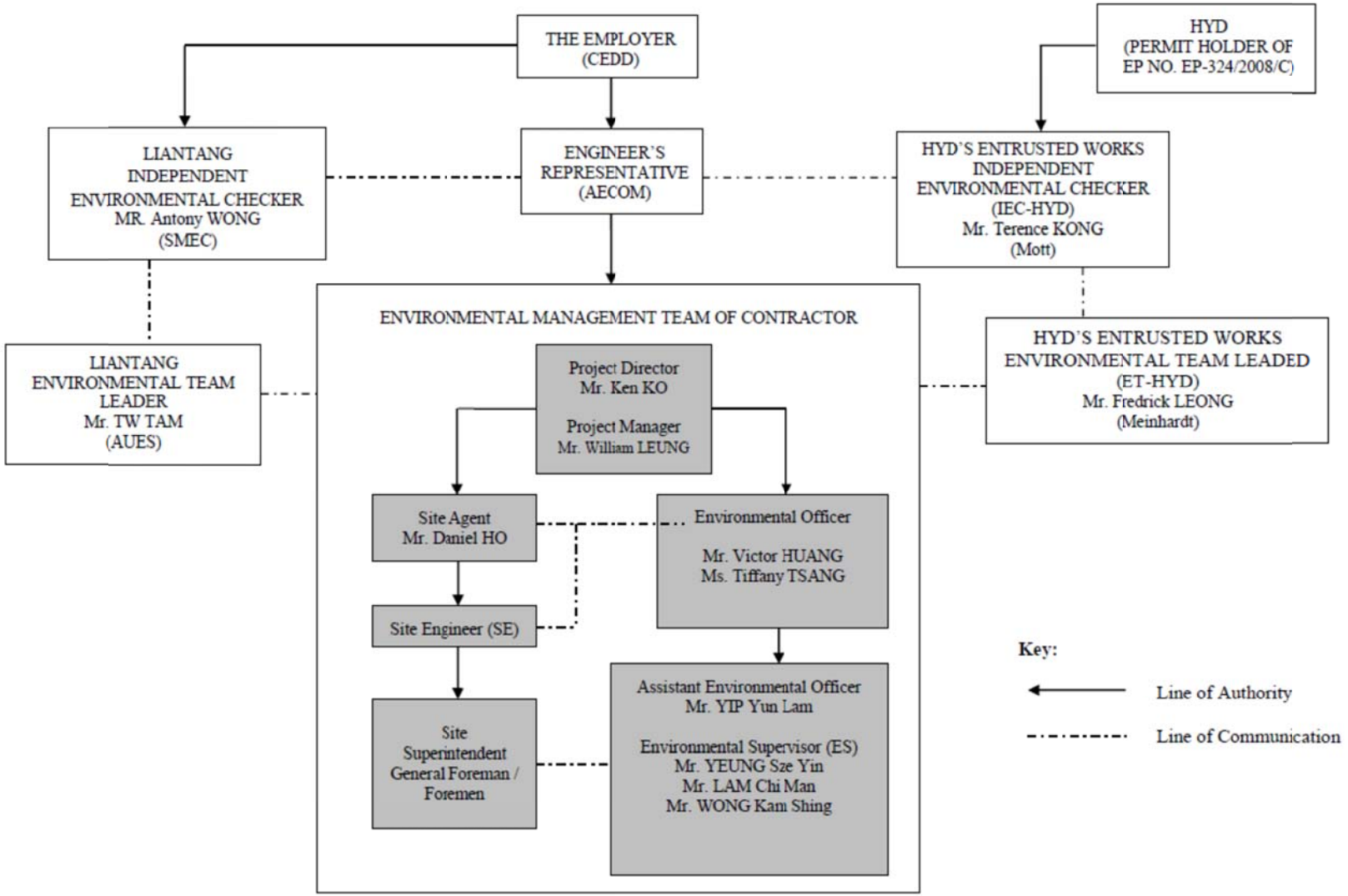
AECOM (Engineer) – AECOM Asia Co. Ltd.

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	Bobby Hung	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
Chun Wo	Project Director	Ken Ko	3758 8735	2638 7077
Chun Wo	Project Manager	William Leung	2638 6136	2638 7077
Chun Wo	Site Agent	Daniel Ho	2638 6144	2638 7077
Chun Wo	Environmental Officer	Victor Huang Tiffany Tsang	2638 6115	2638 7077
Chun Wo	Assistant Environmental Officer	Yip Yun Lam	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:

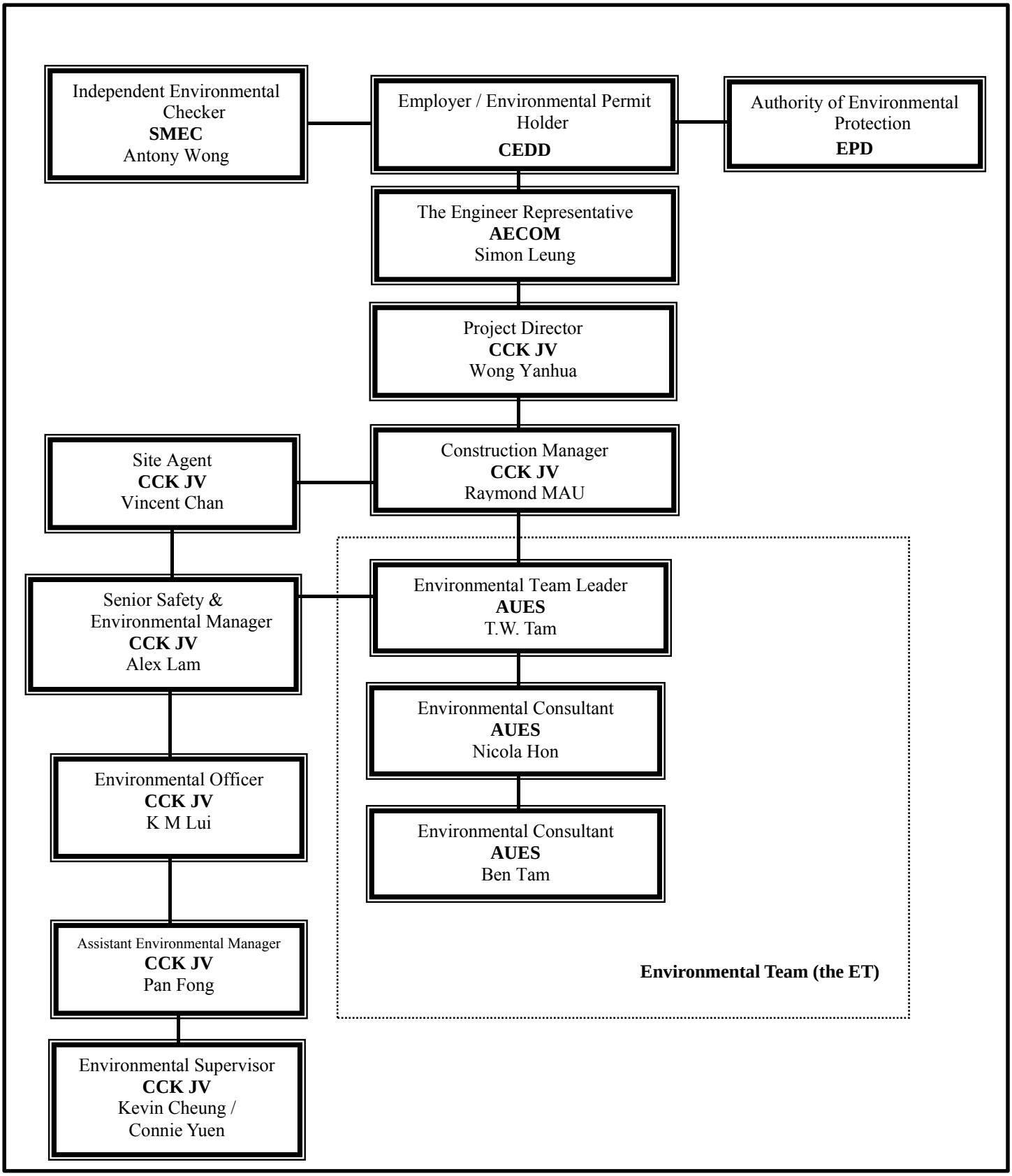
CEDD (Employer) – Civil Engineering and Development Department

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/2013/08

Contact Details of Key Personnel for Contract 6 - CV/2013/08

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
CCK JV	Project Director	Wang Yanhua	6190 4212	2108 9595
CCK JV	Construction Manager	Raymond Mau Sai-Wai	9011 5340	2108 9595
CCK JV	Site Agent	Vincent Chan	9655 9404	2108 9595
CCK JV	Senior Safety & Environmental Manager	Alex Lam	5547 0181	2108 9595
CCK JV	Environmental Officer	K M Lui	5113 8223	2108 9595
CCK JV	Assistant Environmental Officer	Pan Fong	9436 9432	2108 9595
CCK JV	Environmental Supervisor	Kevin Cheung/ Connie Yuen	6316 6931 6117 1344	2108 9595
AUES	Environmental Team Leader	TW Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079

Legend:

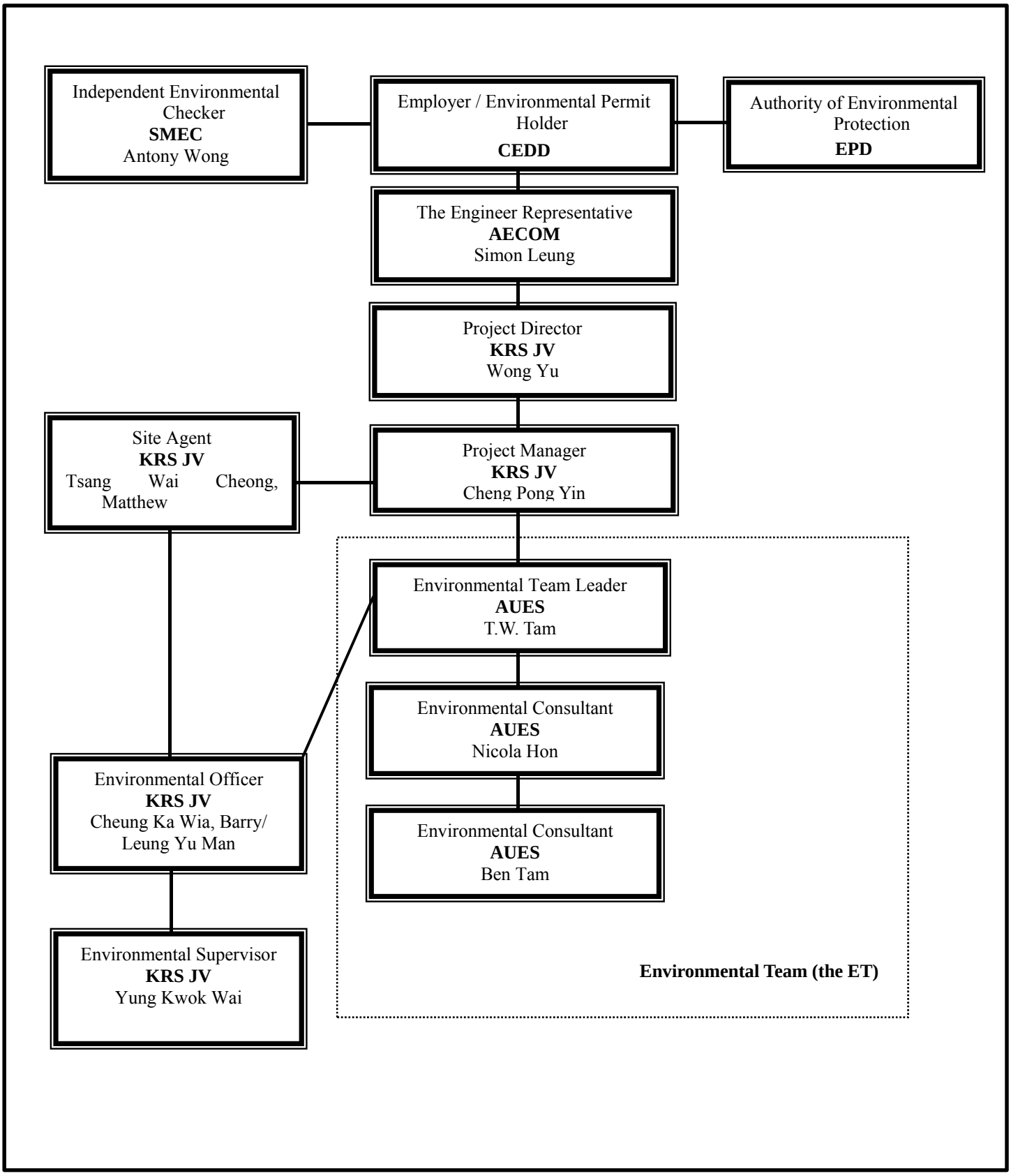
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CCK JV (Main Contractor) – CRBE-CEC-Kaden Joint Venture

SMEC (IEC) – SMEC Asia Limited

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



Environmental Management Organization –NE/2014/03

Contact Details of Key Personnel for Contract 7 – NE/2014/03

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
KRSJV	Project Director	Wong Yu	2682 6691	2682 2783
KRSJV	Project Manager	Cheng Pong Yin	9023 4821	2682 2783
KRSJV	Site Agent	Tsang Wai Cheong, Matthew	9705 7536	2682 2783
KRSJV	Environmental Officer	Cheung Ka Wia, Barry	6117 2339	2682 2783
KRSJV	Environmental Officer	Leung Yu Man	6592 3084	2682 2783
KRSJV	Environmental Supervisor	Yung Kwok Wai	6592 3084	2682 2783
AUES	Environmental Team Leader	TW Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079

Legend:

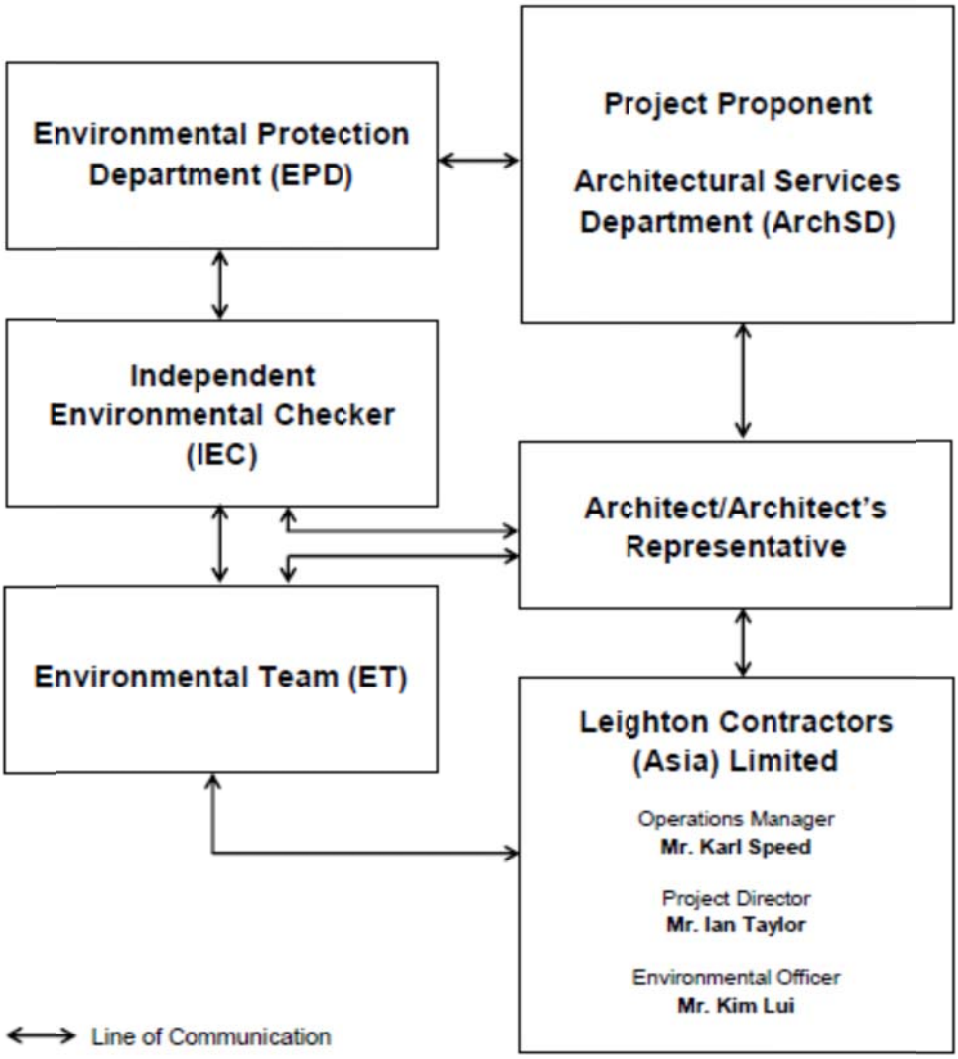
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

KRS JV (Main Contractor) –Kwan On-Richwell-SCG Joint Venture

SMEC (IEC) – SMEC Asia Limited

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



Environmental Management Organigram

Environmental Management Organization for Contract SS C505

Contact Details of Key Personnel for Contract SS C505

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
ArchSD	Works agent for the Development Bureau (DEVB)	Mr. William Cheng	2867 3904	2804 6805
Ronald Lu & Partners	Architect/ Architect's Representative	Mr. Justin Cheng	3189 9272	2834 5442
SMEC	Independent Environmental Checker	Mr. Antony Wong	3995 8120	3995 8101
Leighton	Operation Manager	Mr. Karl Speed	2823 1433	25298784
Leighton	Project Director	Mr. Ian Taylor	2858 1519	2858 1899
Leighton	Environmental Officer	Mr. Kim Lui	3973 1069	-
Leighton	Assistant Environmental Officer	Ms. Penny Yiu	3973 0818	-
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079

Legend:

ArchSD (Project Proponent) –Architectural Services Department

Ronald Lu & Partners (Architect/ Architect's Representative) –Ronald Lu & Partners (Hong Kong) Ltd

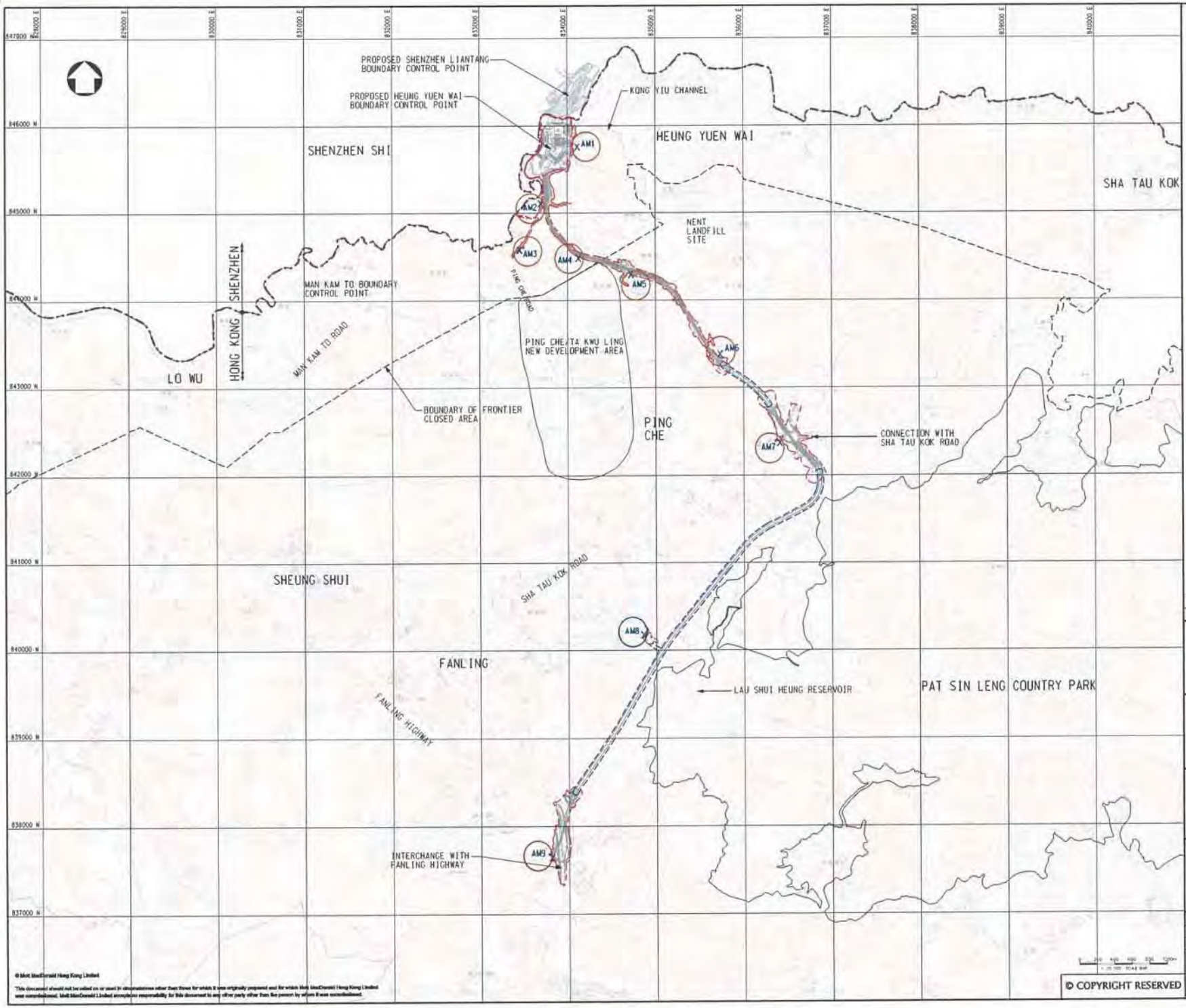
Leighton (Main Contractor) – Leighton Contractors (Asia) Limited

SMEC (IEC) – SMEC Asia Limited

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

Appendix C

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



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

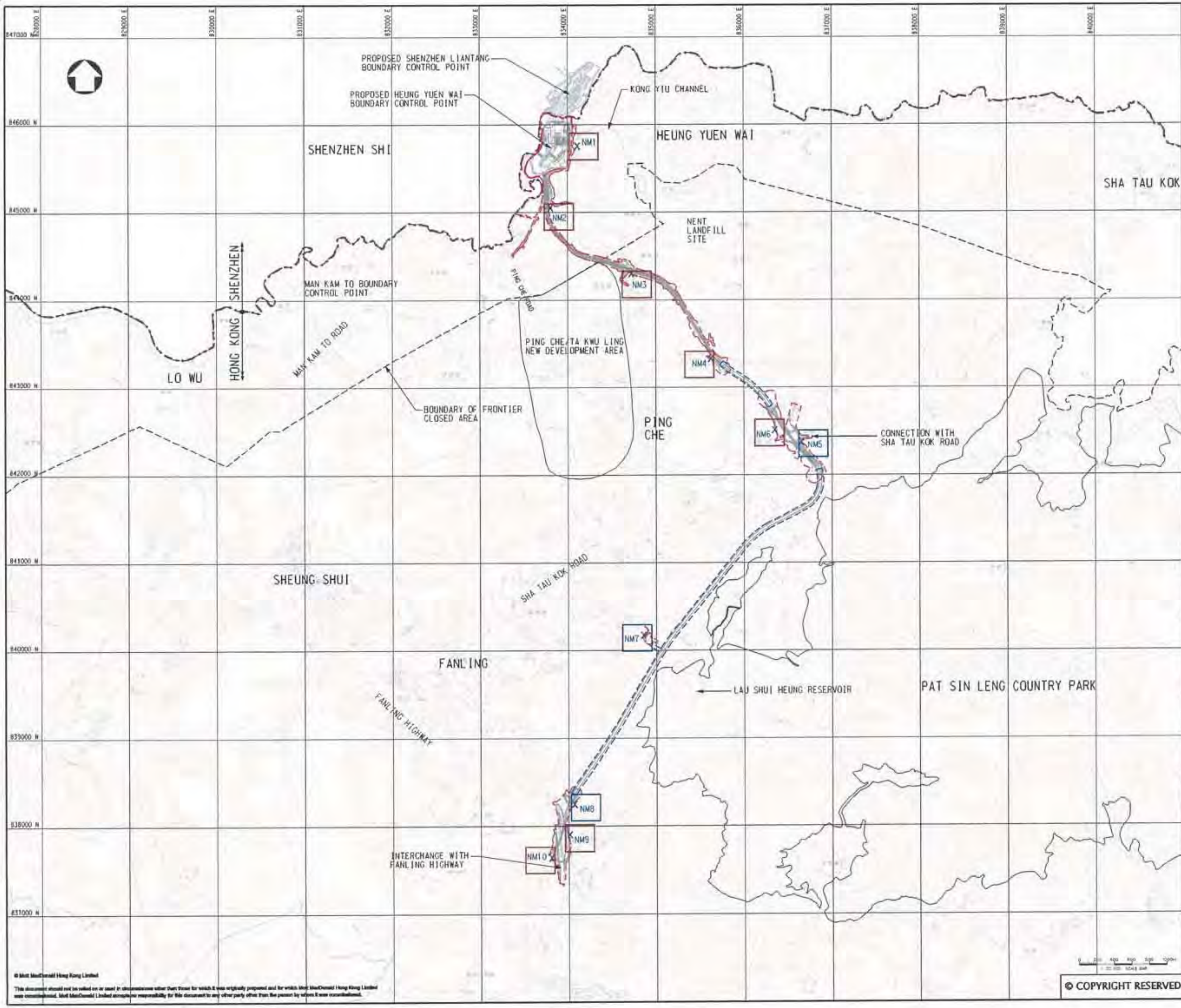
Mott MacDonald

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 AIR QUALITY MONITORING STATIONS

Designed	DC		Eng.Chk.	EC	
Drawn	MENG		Coordination	EC	
Eng.Chk.	DC		Approved	HT	
Scale at A1	1:20000	Project	255228		Status PRE
Drawing No	FIGURE 2.1				Rev P1



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

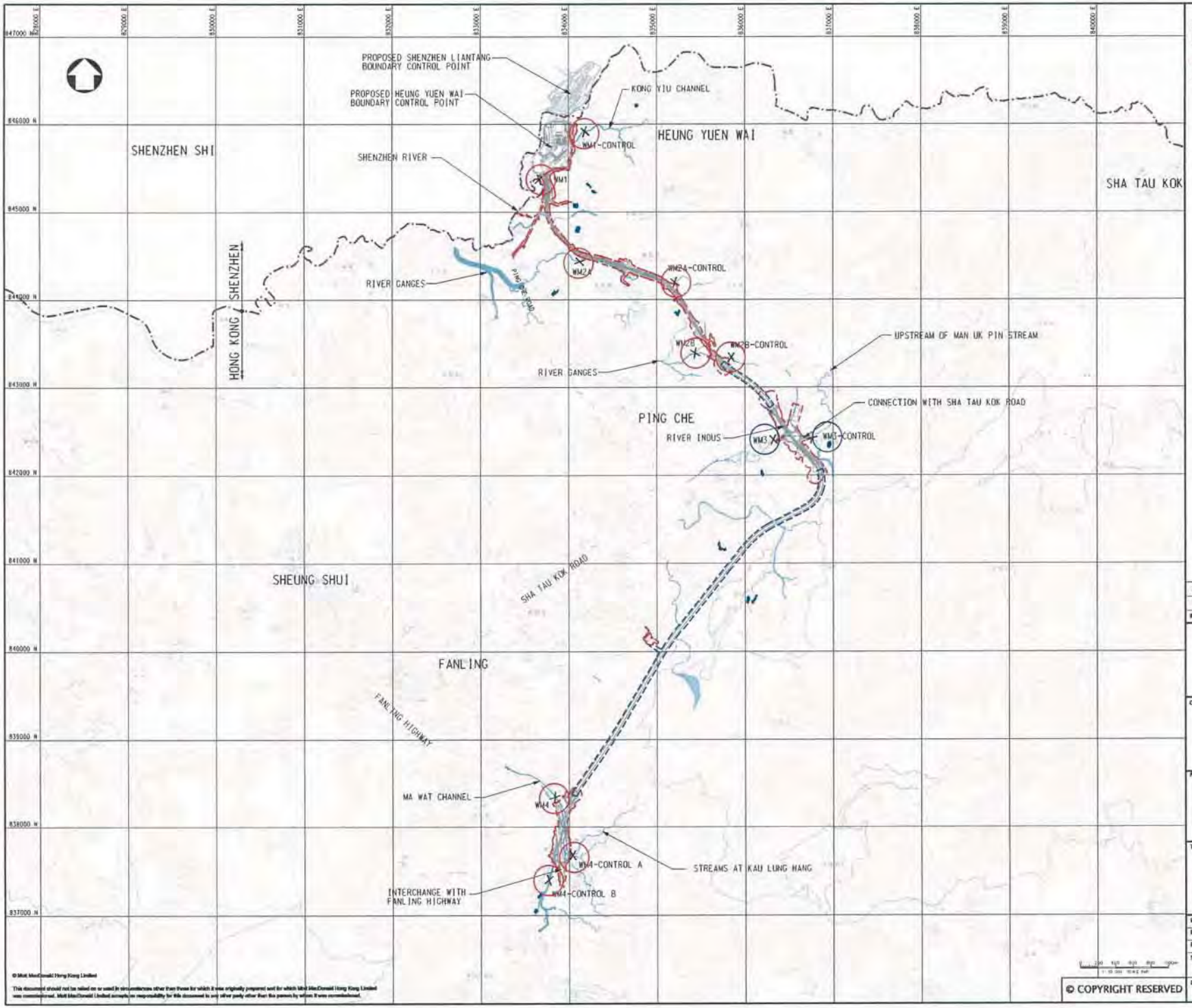
Mott MacDonald

Client: 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	
	EASTING(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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CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

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

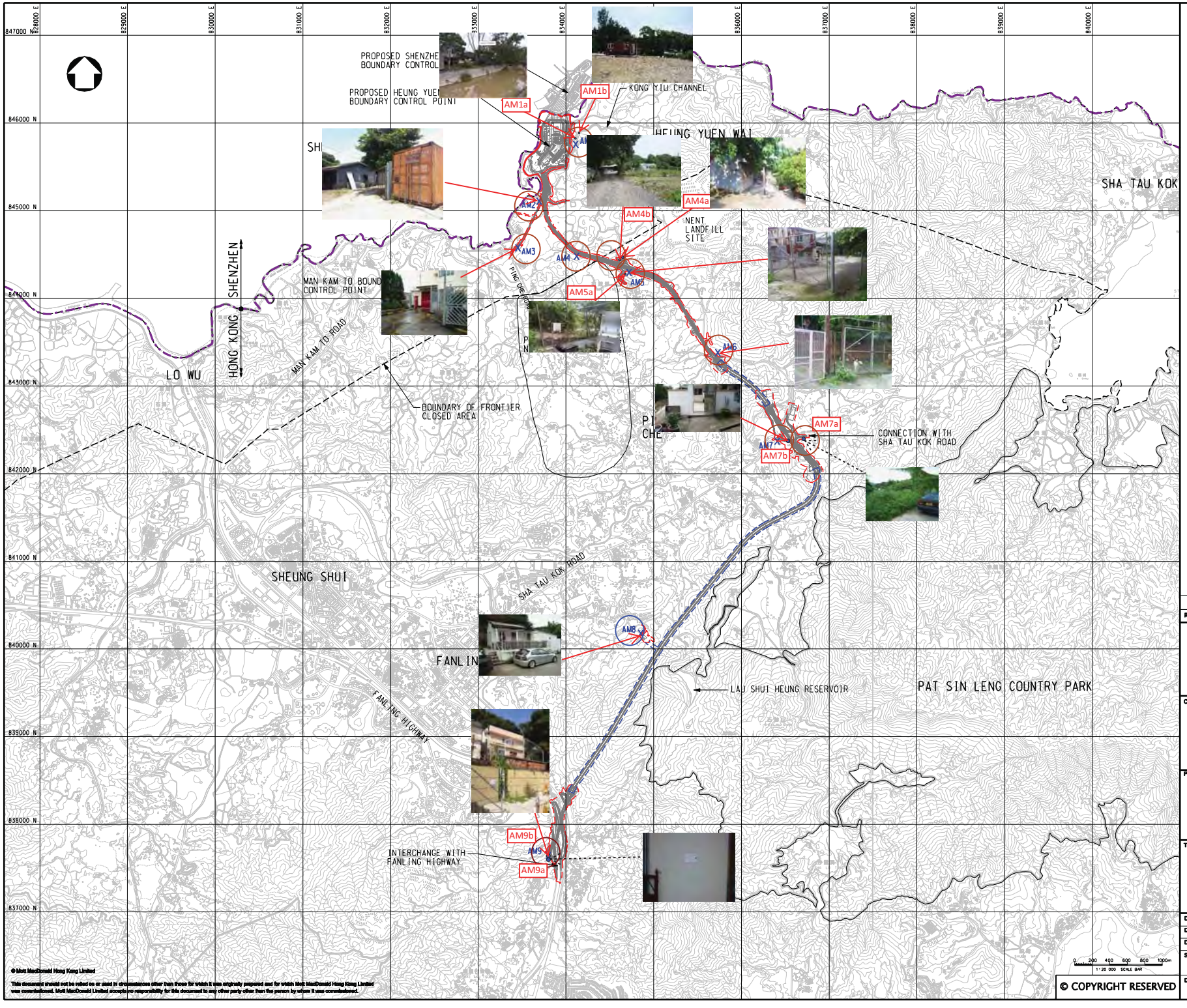
Title

LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Designed	HC		Eng.Chk.	EC	
Drawn	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 D

Monitoring Locations for Impact Monitoring



LEGEND:

- BOUNDARY OF HKSAR
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X Air Monitoring Stations in the EM&A Manual
- Proposed 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
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W www.mottmac.com.hk

Client

CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

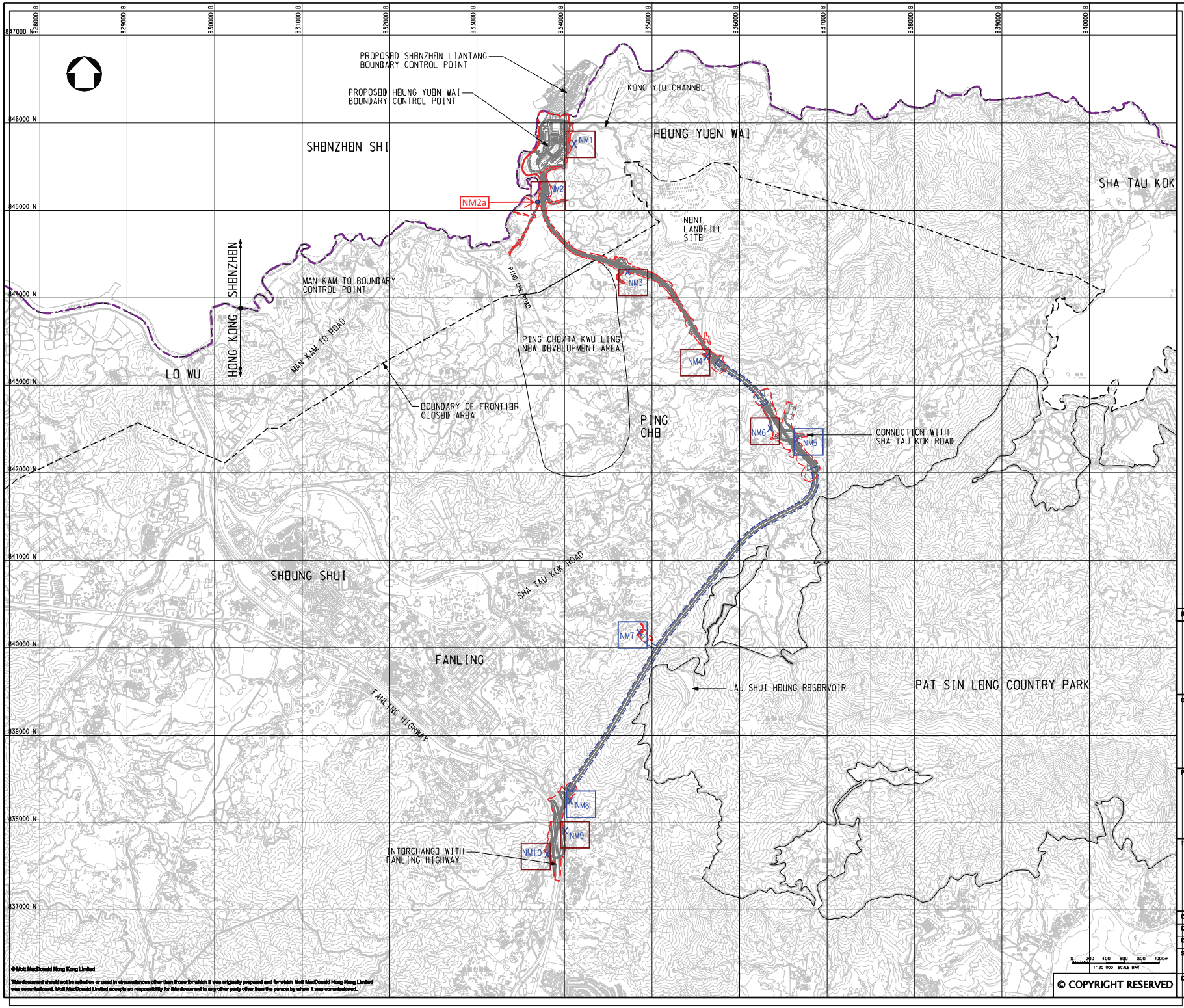
AGREEMENT NO. CE45/2008(CE)
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title

PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

Designed	DC		Eng.Chk.	EC	
Drawn	MING		Coordination	EC	
Dwg.Chk.	DC		Approved	HT	
Scale at A1	1:20000	Project	255228	Status	PRE
		CAD file	j:\255228\report\env\em&a\00B3\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
- Proposed Noise 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
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Client

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

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

Title

PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designed	DC		Eng.Chk.	BC	
Drawn	MING		Coordination	BC	
Dwg.Chk.	DC		Approved	HT	
Scale at A1	1:20000	Project	255228	Status	PRE
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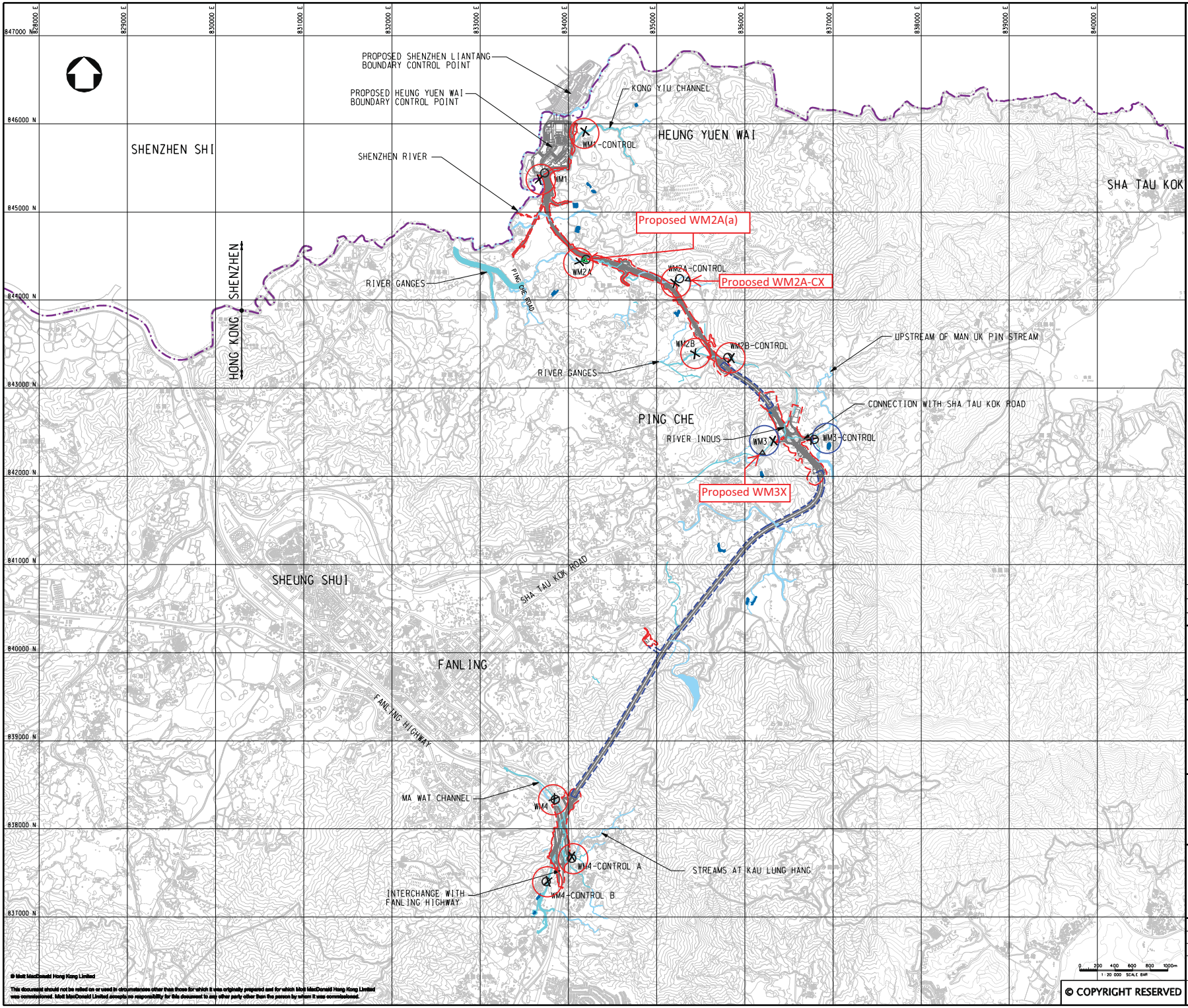
Drawing No	FIGURE 3.1			Rev	P1



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
- △ — New Proposed Water Quality Monitoring Location in November 2015
- △ — New Proposed Water Quality Monitoring Location in May 2016

Station ID	Location recommended in EM&A Manual Coordinates		Location found during site visit Coordinates	
	Easting	Northing	Easting	Northing
WM1	833668.835	845571.897	833679	845421
WM1-Control	834187.480	845916.662	834185	845917
WM2A	834182.193	844432.910	834204	844471
WM2A-Control	835205.329	844200.151	835270	844243
WM2B	835434.744	843304.606	835435	843397
WM2B-Control	835845.878	843343.625	835835	843351
WM3	836323.622	842404.377	836324	842407
WM3-Control	836763.419	842425.507	836763	842400
WM4	833840.784	838344.842	833850	838338
WM4-Control A	834588.937	837668.995	834028	837695
WM4-Control B	833769.123	837406.936	833760	837395

New Proposed Water Quality Monitoring Location in November 2015		
Location ID	Easting	Northing
WM2A-C (Original)	0835270	0844243
WM2A-Cx (Proposed)	0835377	0844188
WM3(Original)	0836324	0842407
WM3x(Proposed)	0836206	0842270

New Proposed Wate Quality Monitoring Location in May 2016		
Location ID	Easting	Northing
WM2A (Original)	834204	844471
WM2A(a) (Proposed	834191	844474

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P1	OCT 10	MING	FIRST ISSUE	HC	HT

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20/F Two Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
T +852 2828 5757
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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

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	a:\255228\REPORT\ENV\EM&A\DWS\FIG 4-1.dgn		
Drawing No	Appendix C				Rev P2

Appendix E

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.

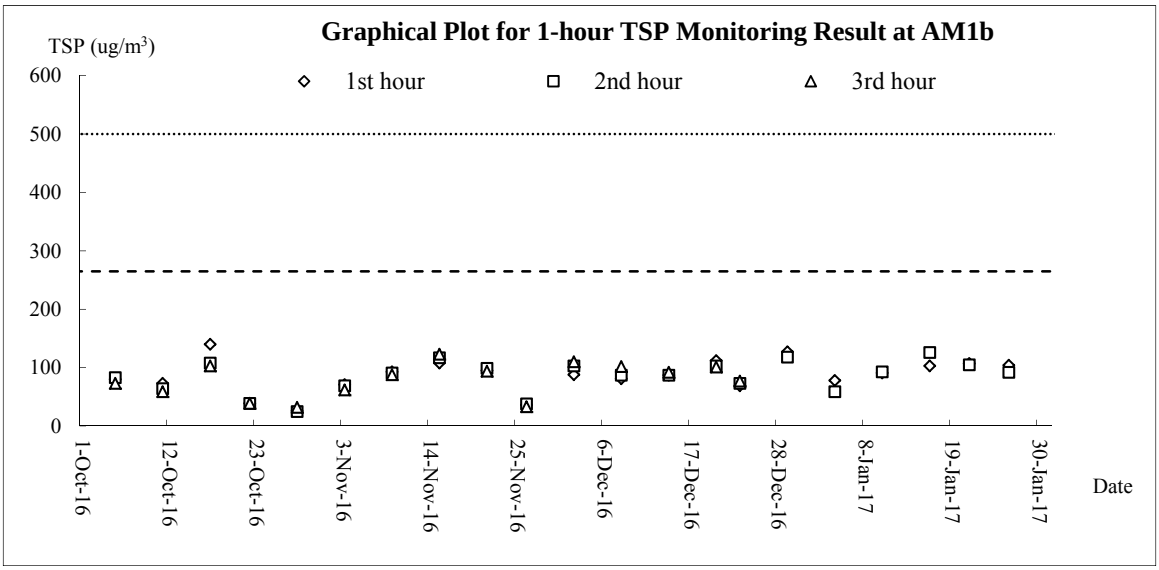
Event and Action Plan for Water Quality

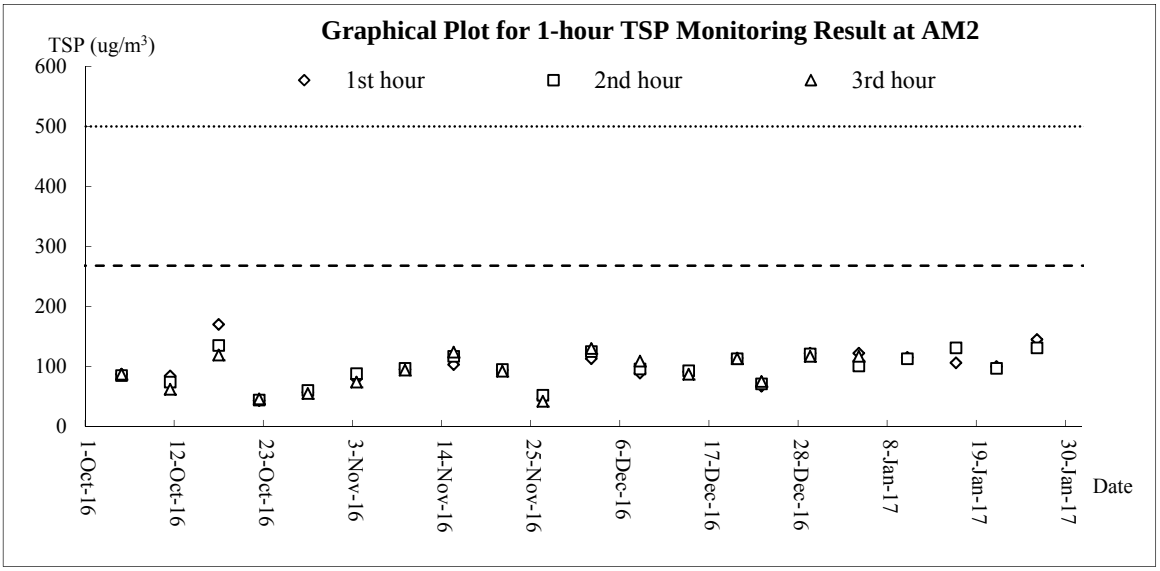
EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working 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.

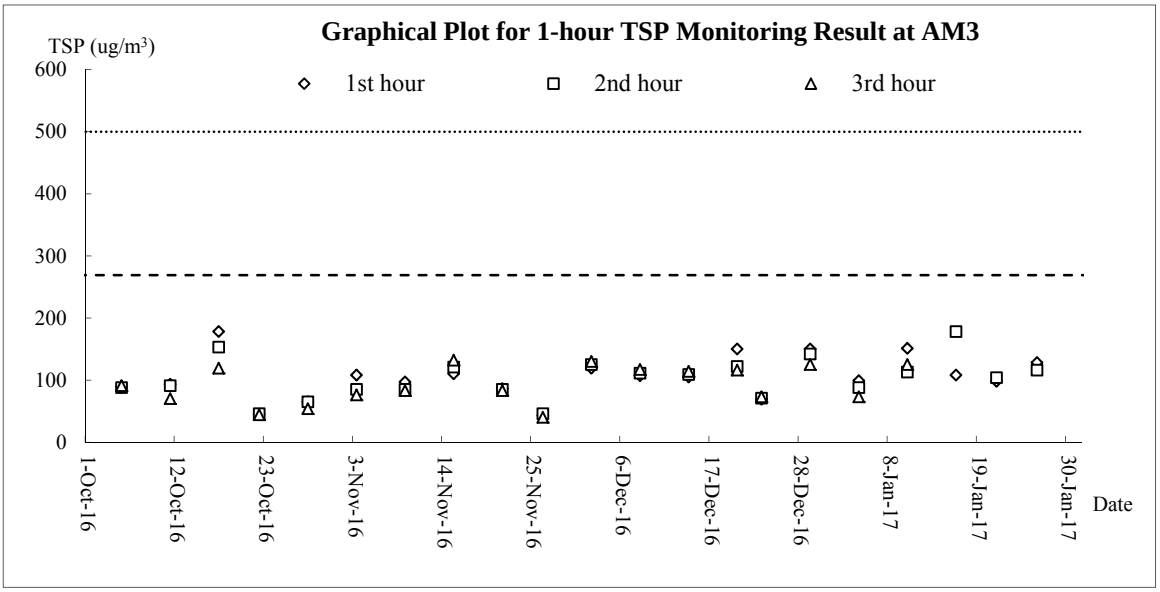
Appendix F

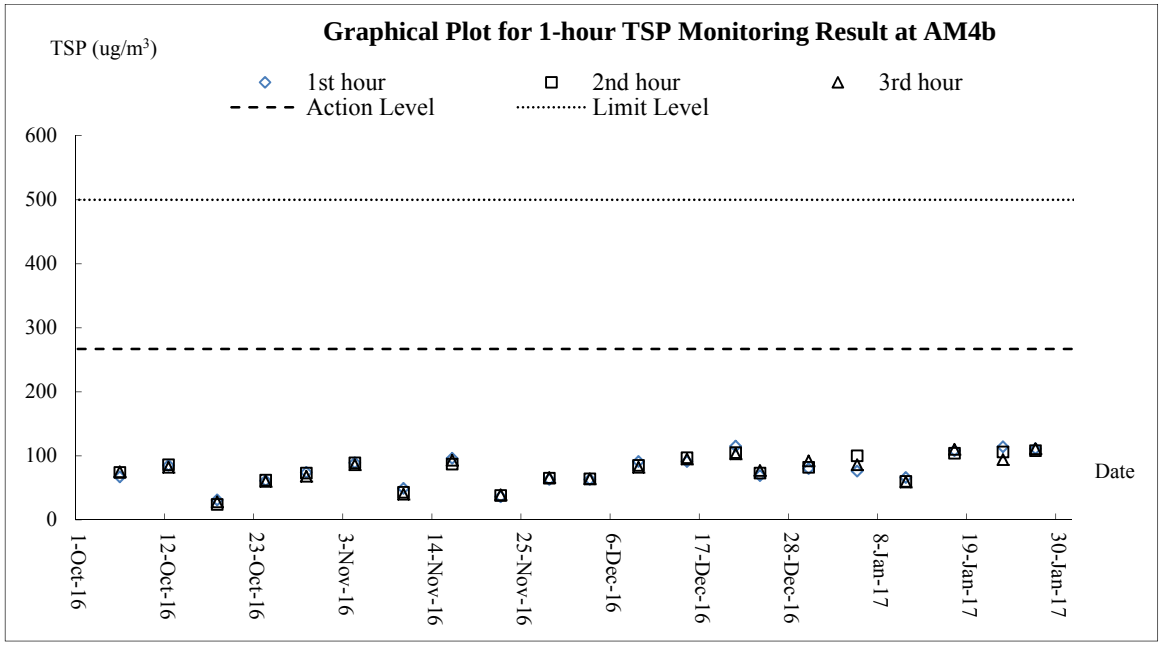
Graphical Plots for Monitoring Result

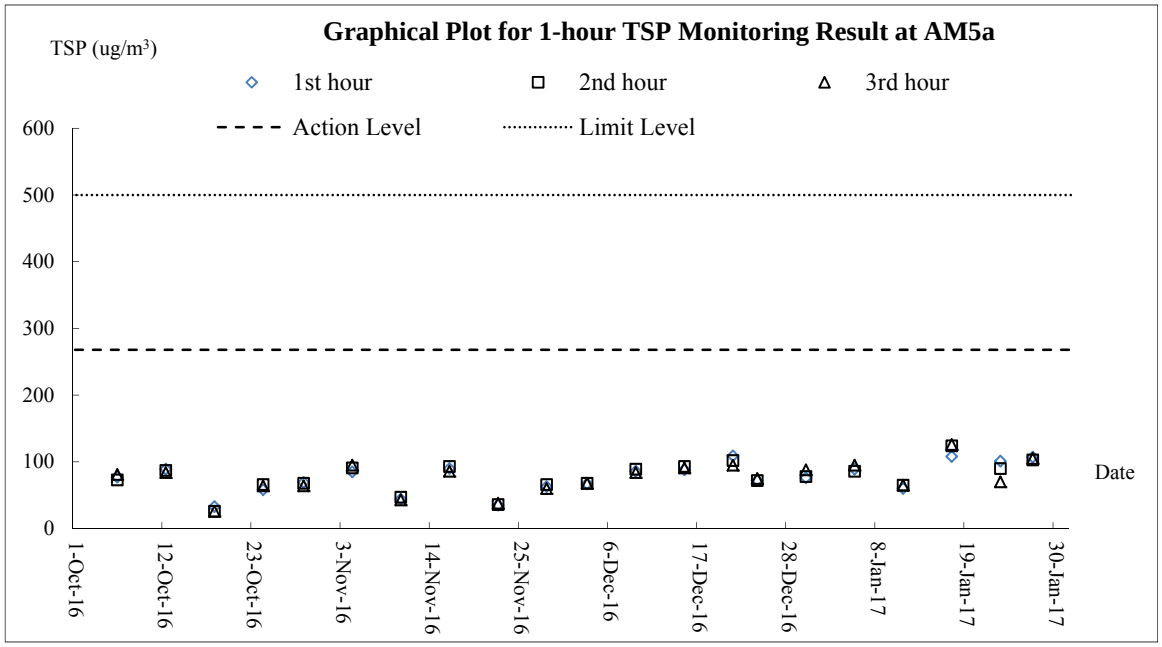
Air Quality – 1-hour TSP

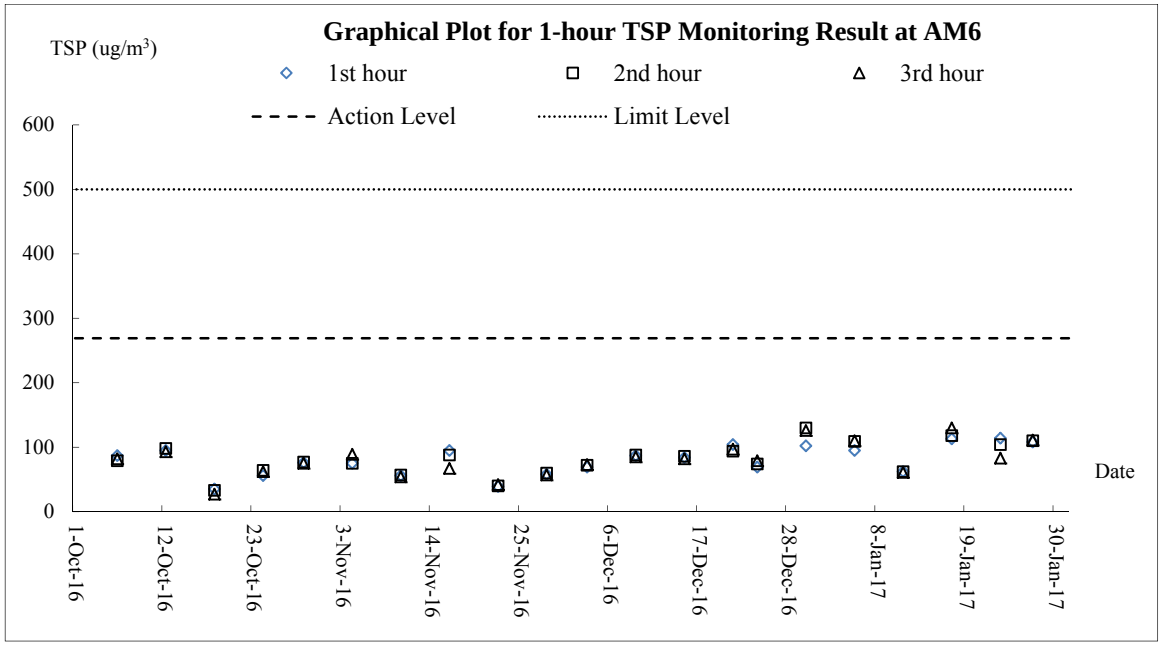


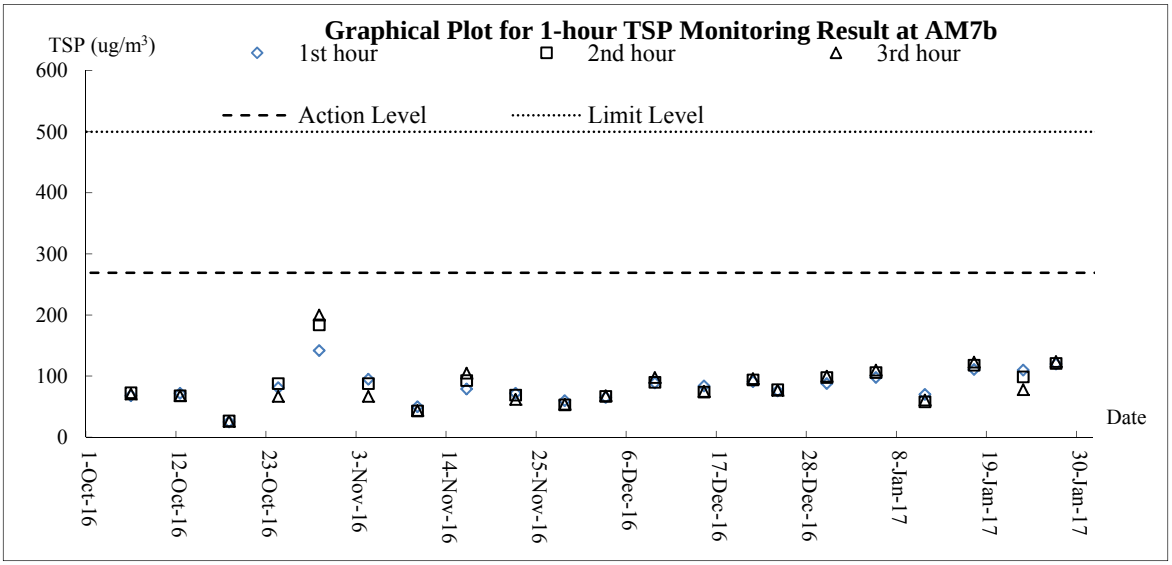


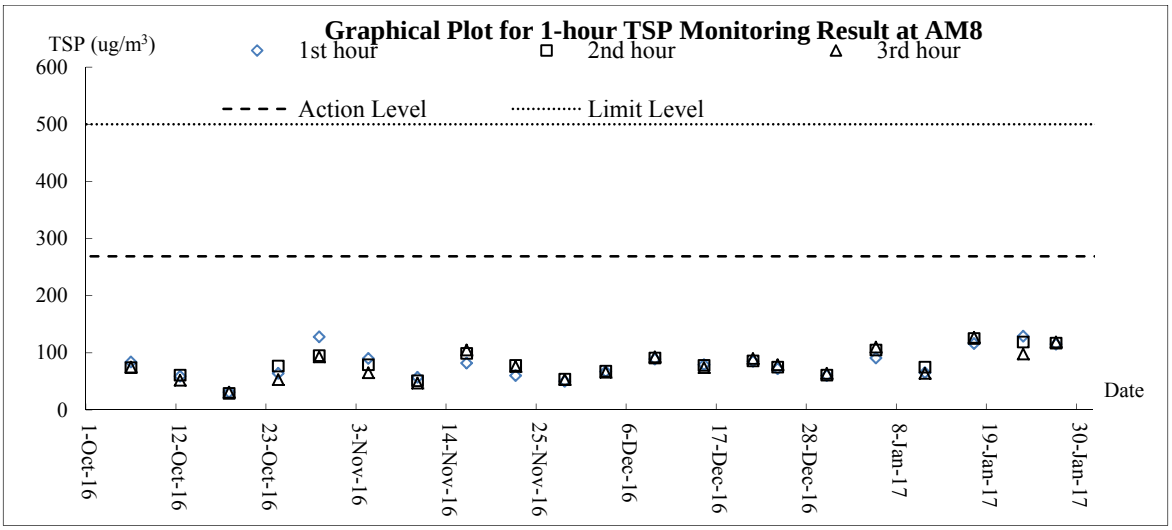


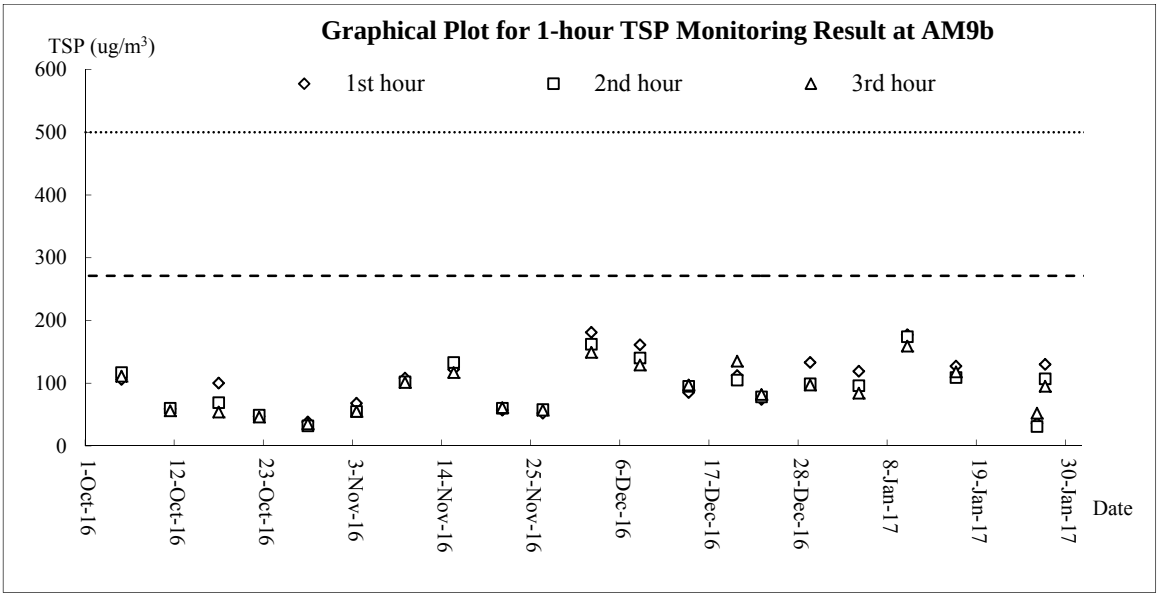

Graphical Plot for 1-hour TSP Monitoring Result at AM4b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for 1-hour TSP Monitoring Result at AM5a
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for 1-hour TSP Monitoring Result at AM6
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


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-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


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-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for 1-hour TSP Monitoring Result at AM9b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
600
500
400
300
200
100
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
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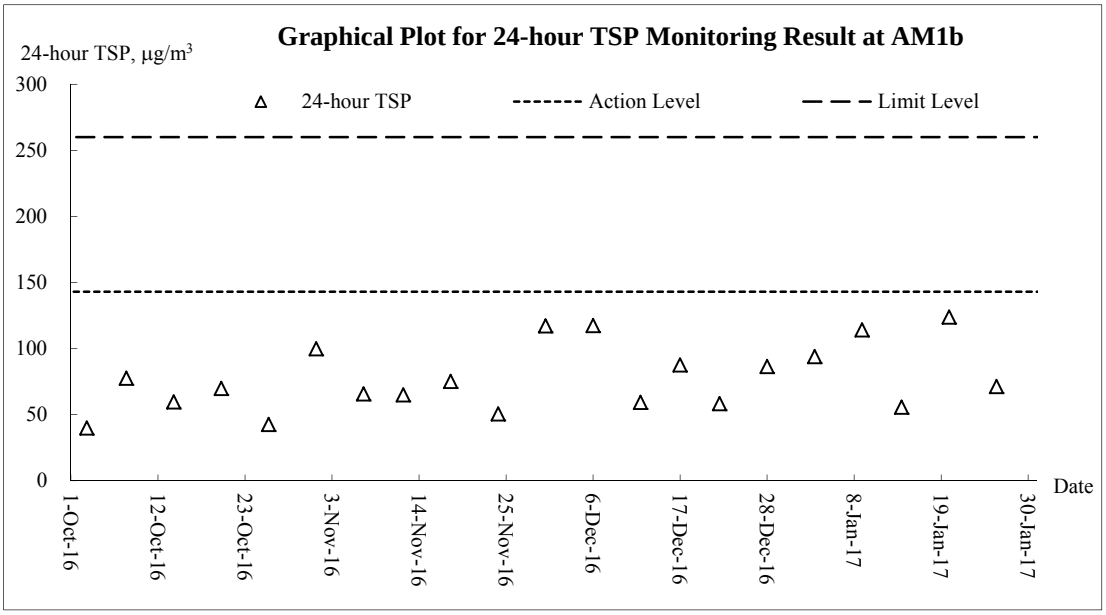
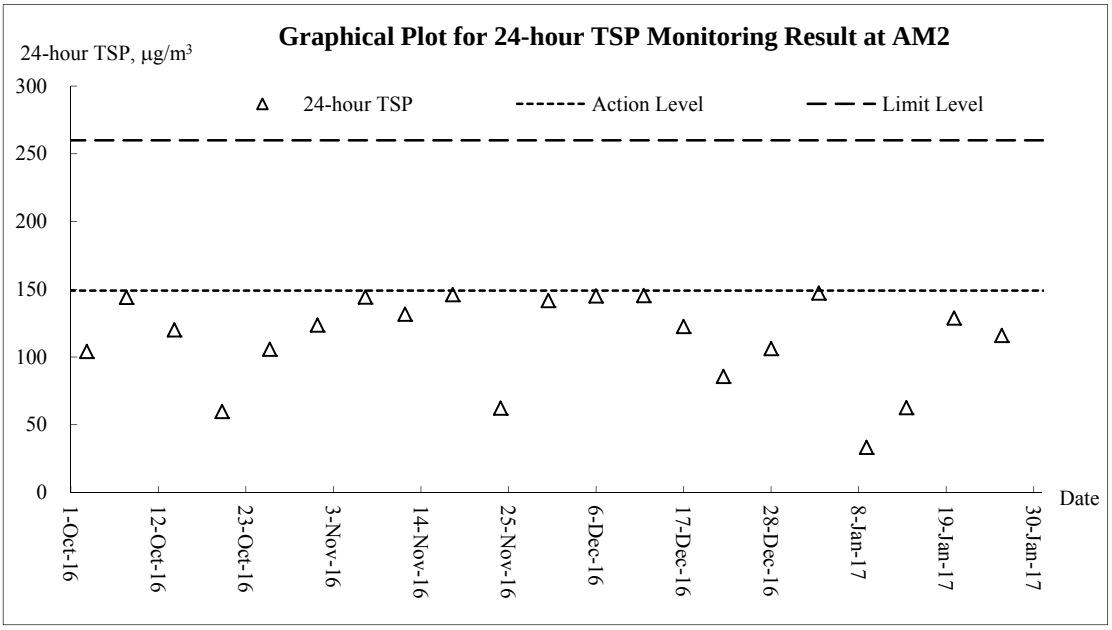
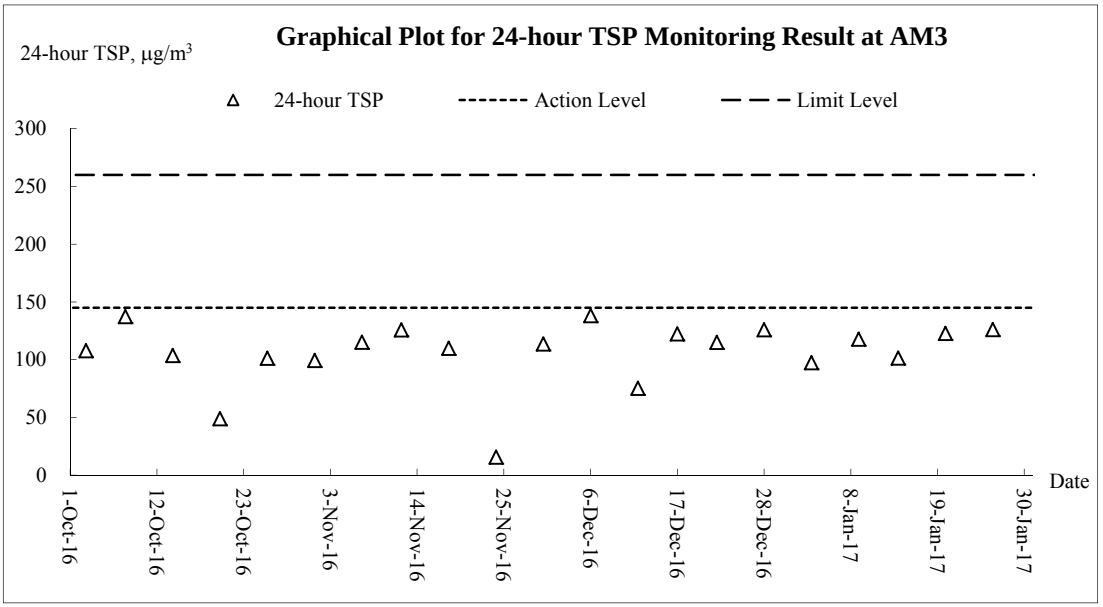
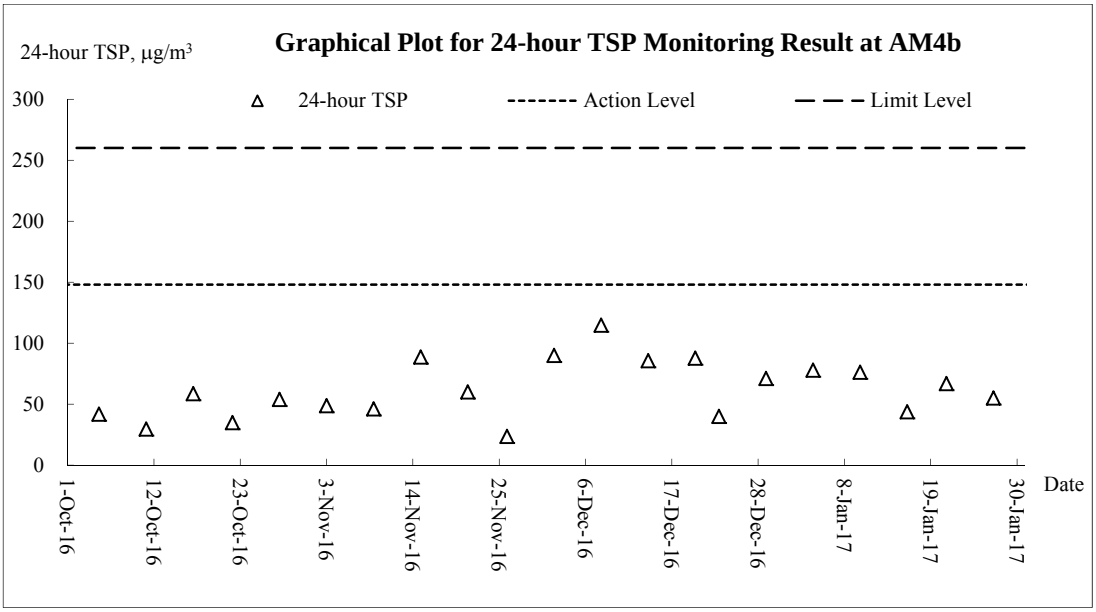
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date

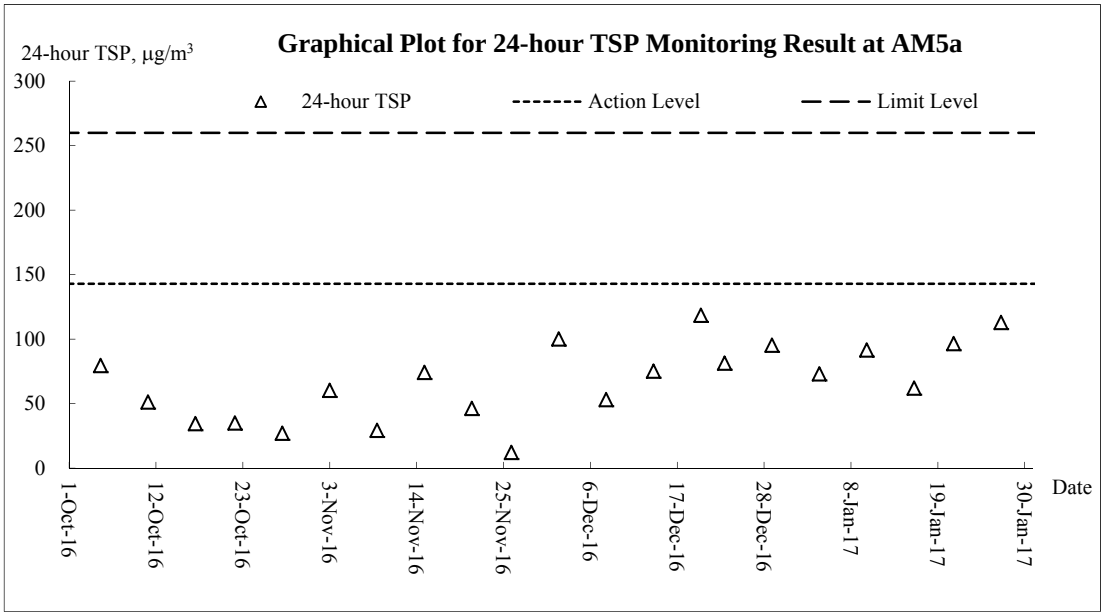
Air Quality – 24-hour TSP

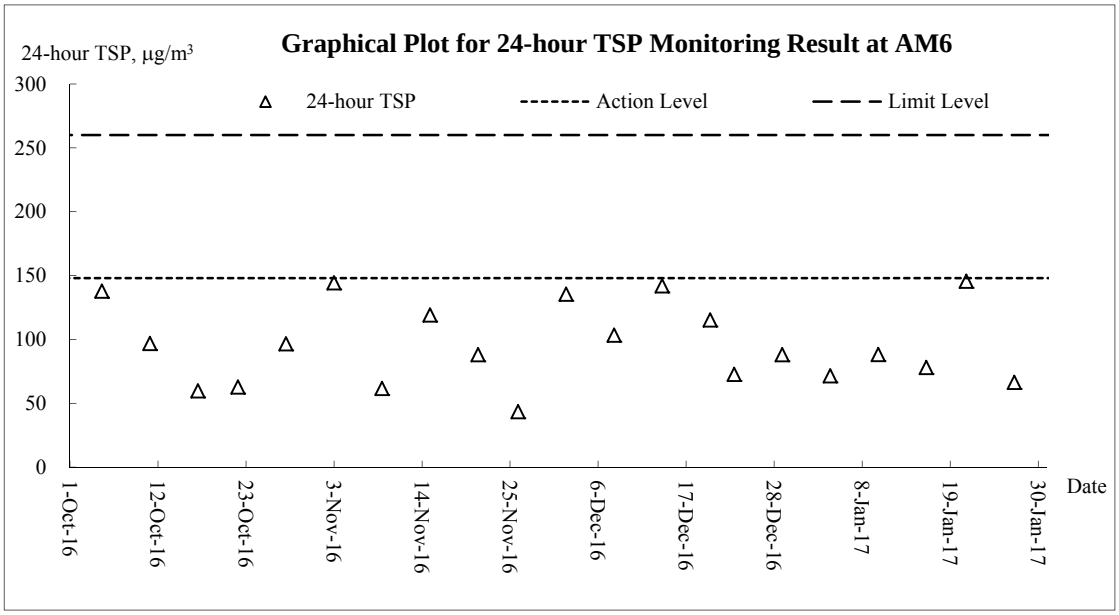


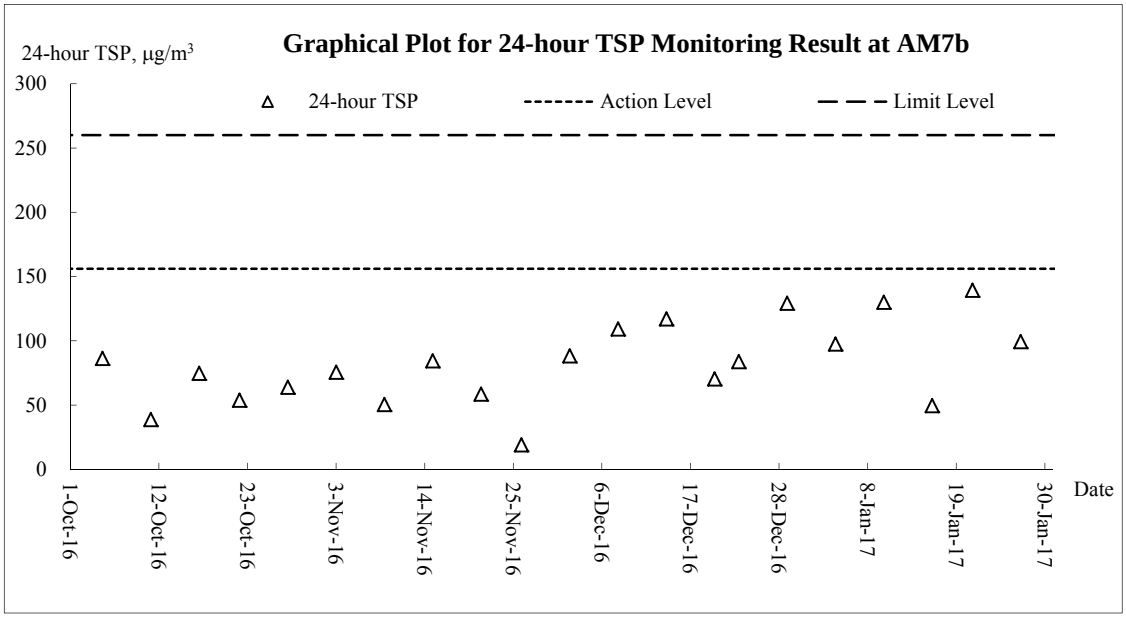


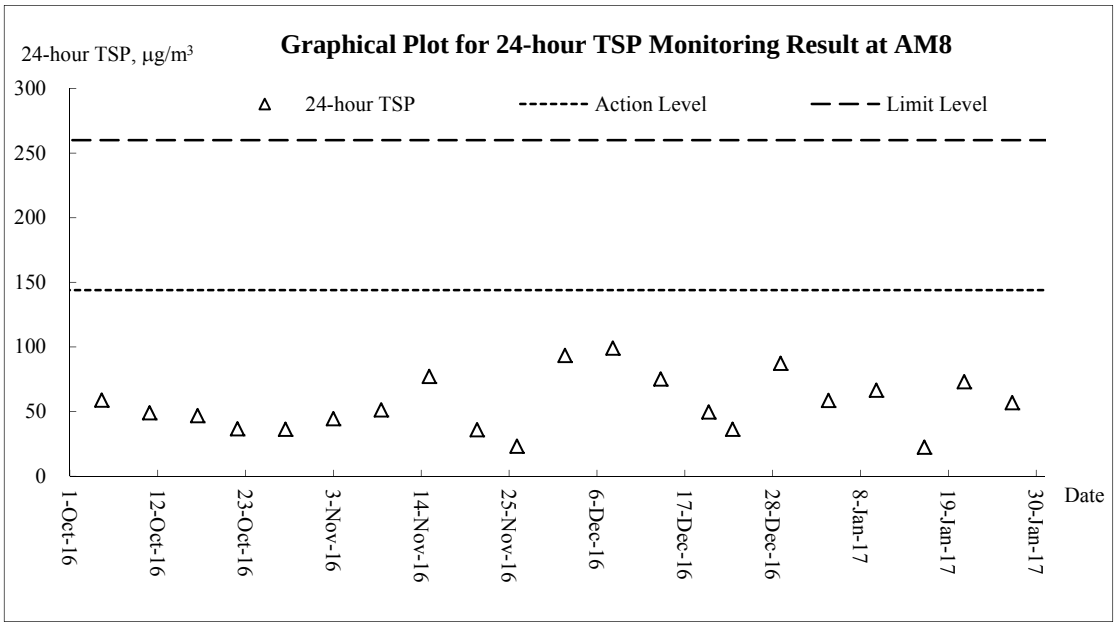


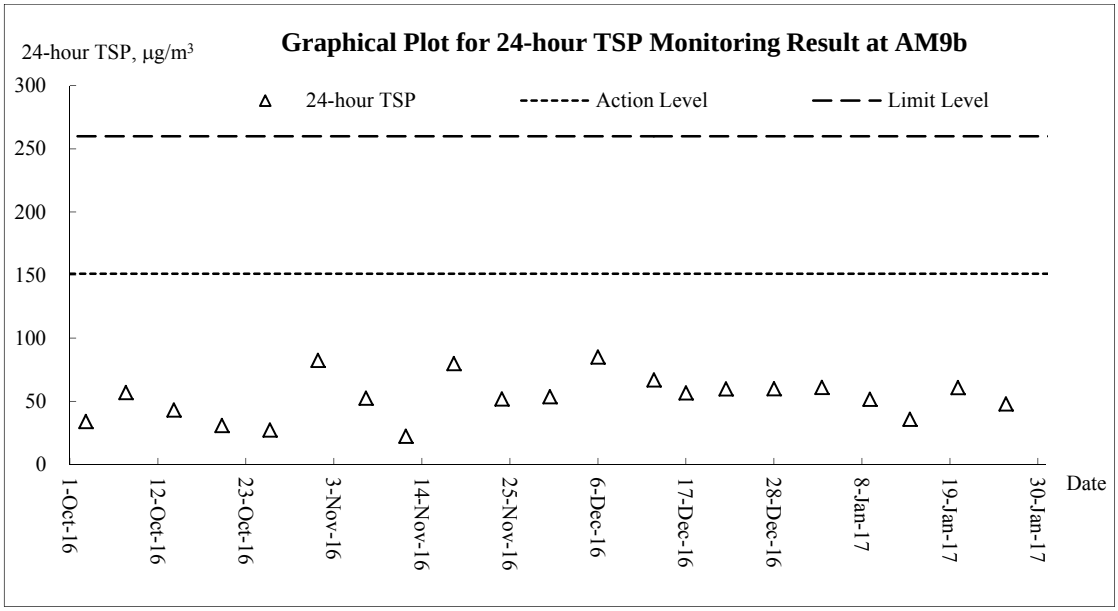

Graphical Plot for 24-hour TSP Monitoring Result at AM4b
24-hour TSP, µg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date


Graphical Plot for 24-hour TSP Monitoring Result at AM5a
24-hour TSP, µg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date

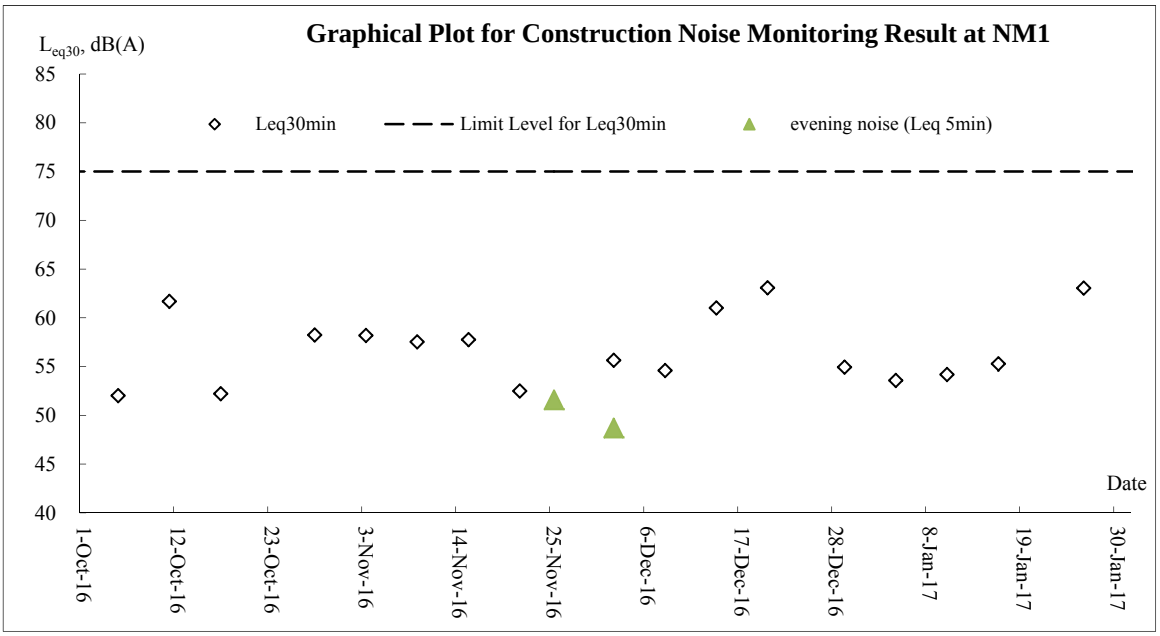

Graphical Plot for 24-hour TSP Monitoring Result at AM6
24-hour TSP, µg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date

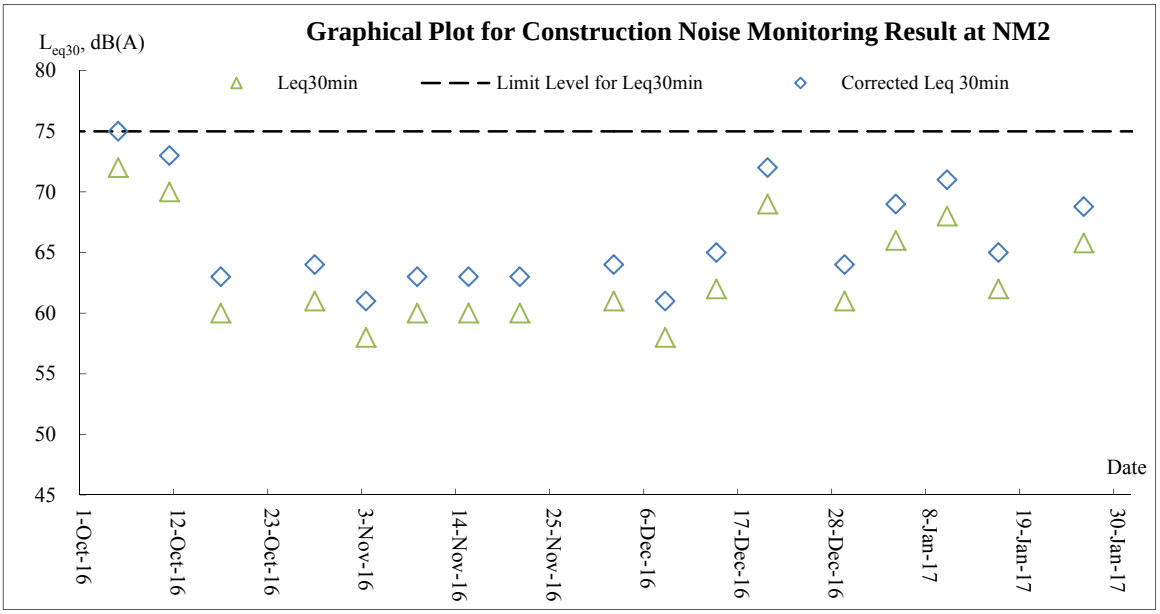

Graphical Plot for 24-hour TSP Monitoring Result at AM7b
24-hour TSP, µg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date

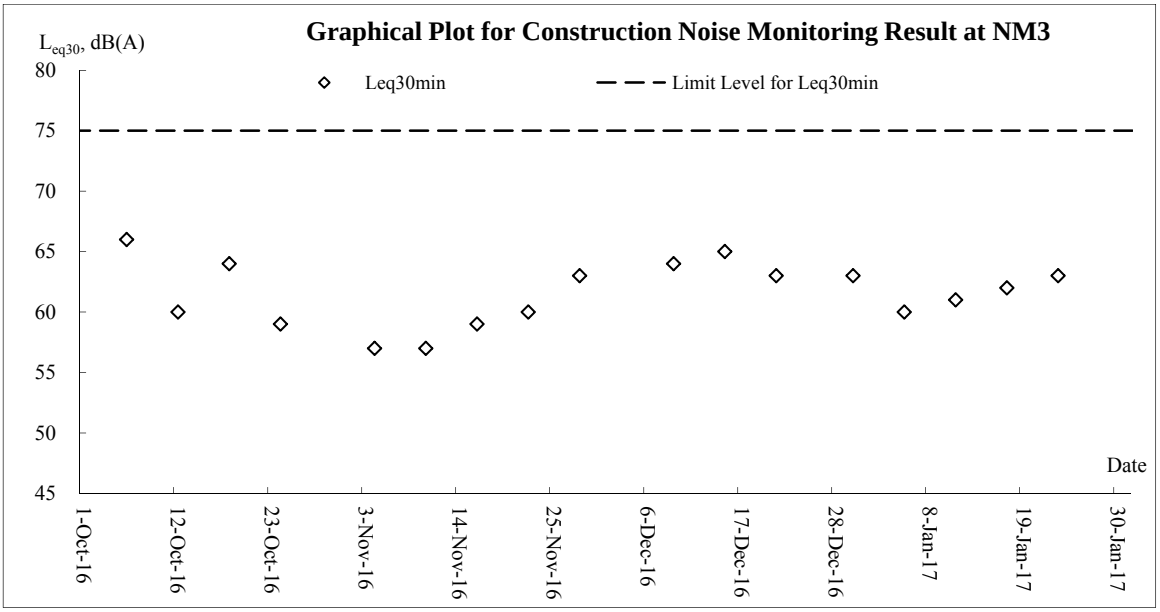

Graphical Plot for 24-hour TSP Monitoring Result at AM8
24-hour TSP, µg/m³
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date


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-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17
Date

Noise


Graphical Plot for Construction Noise Monitoring Result at NM1
L_{eq30}, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
85
80
75
70
65
60
55
50
45
40
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM2
L_{eq30}, dB(A)
Leq30min
Limit Level for Leq30min
Corrected Leq 30min
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM3
Leq30, dB(A)
Leq30min
Limit Level for Leq30min
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
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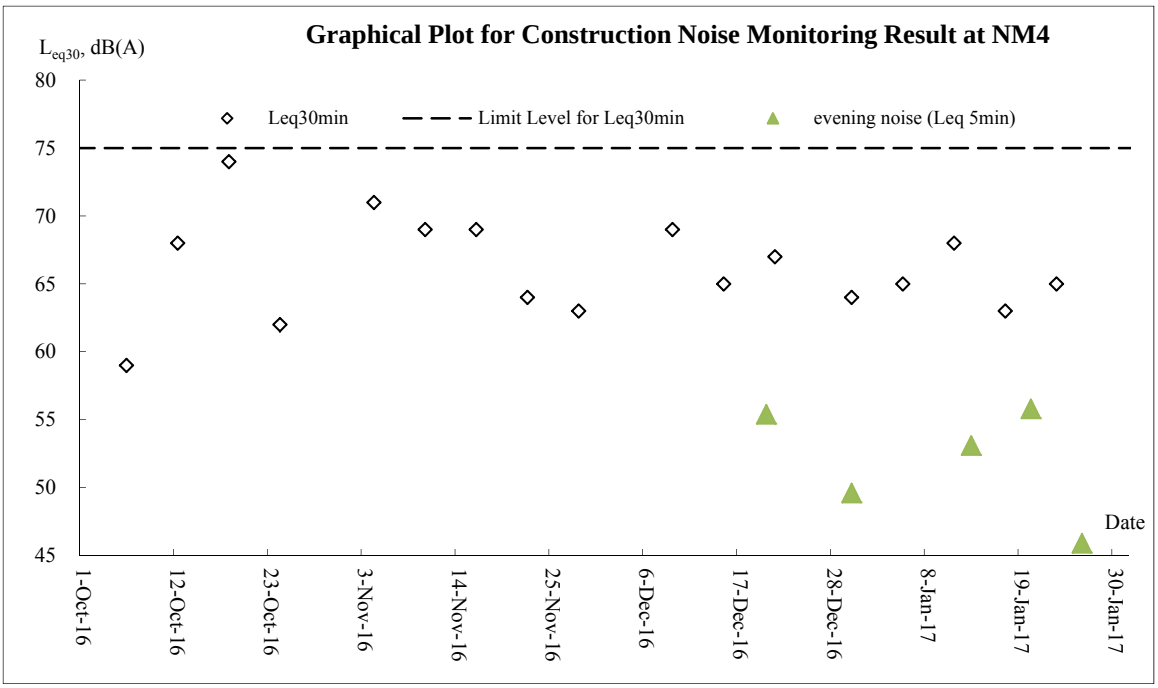
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM4
Leq30, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
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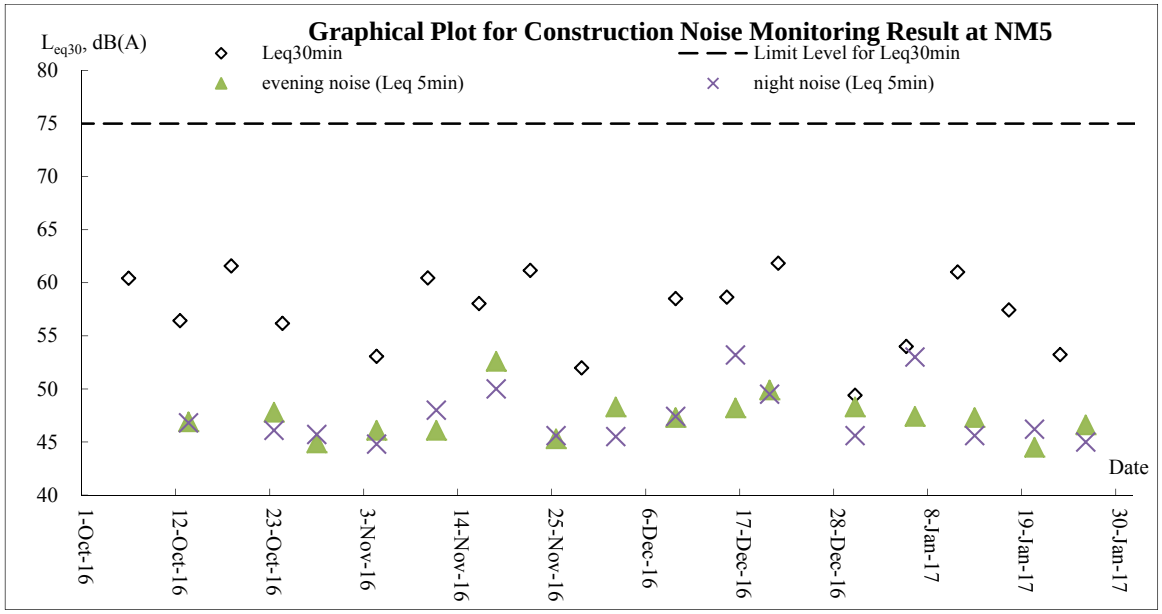
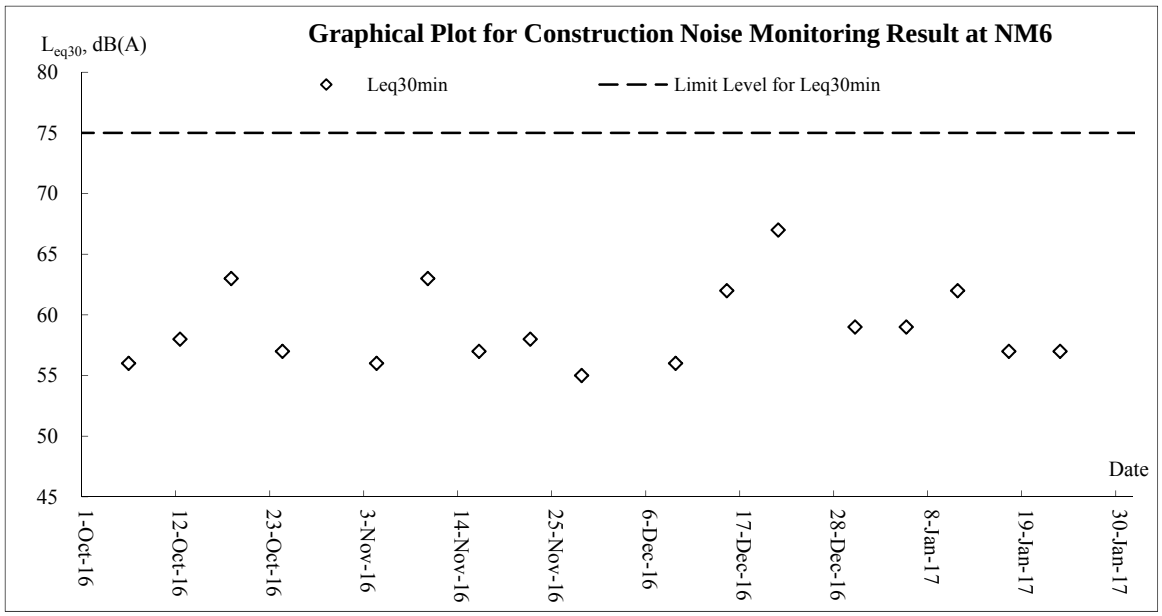
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM5
Leq30, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
night noise (Leq 5min)
80
75
70
65
60
55
50
45
40
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM6
Leq30, dB(A)
Leq30min
Limit Level for Leq30min
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
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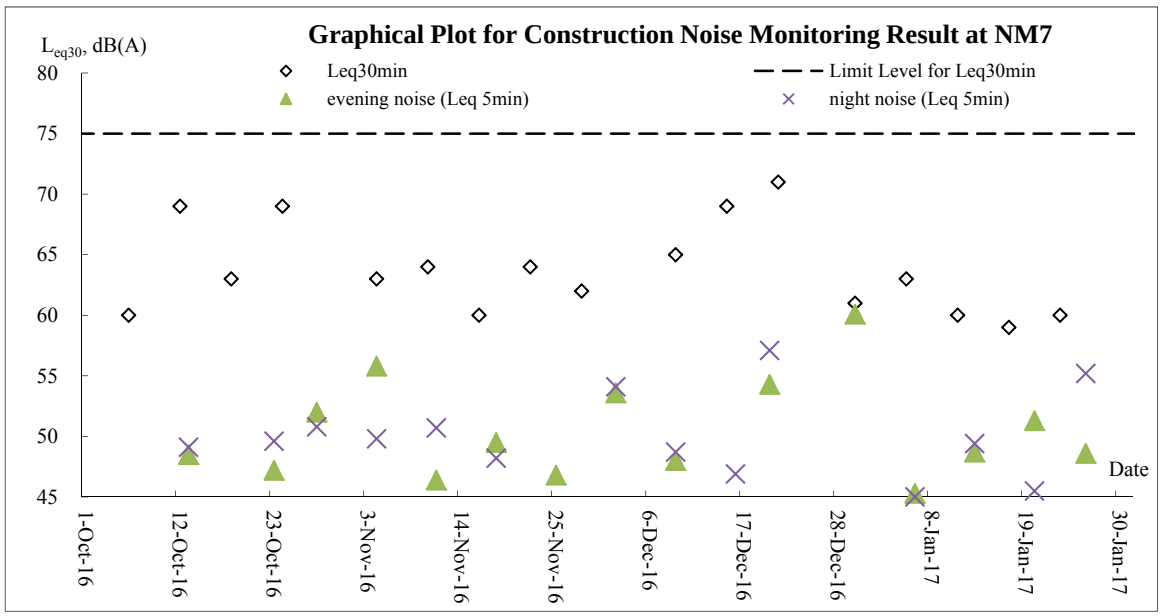
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM7
Leq30, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
night noise (Leq 5min)
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
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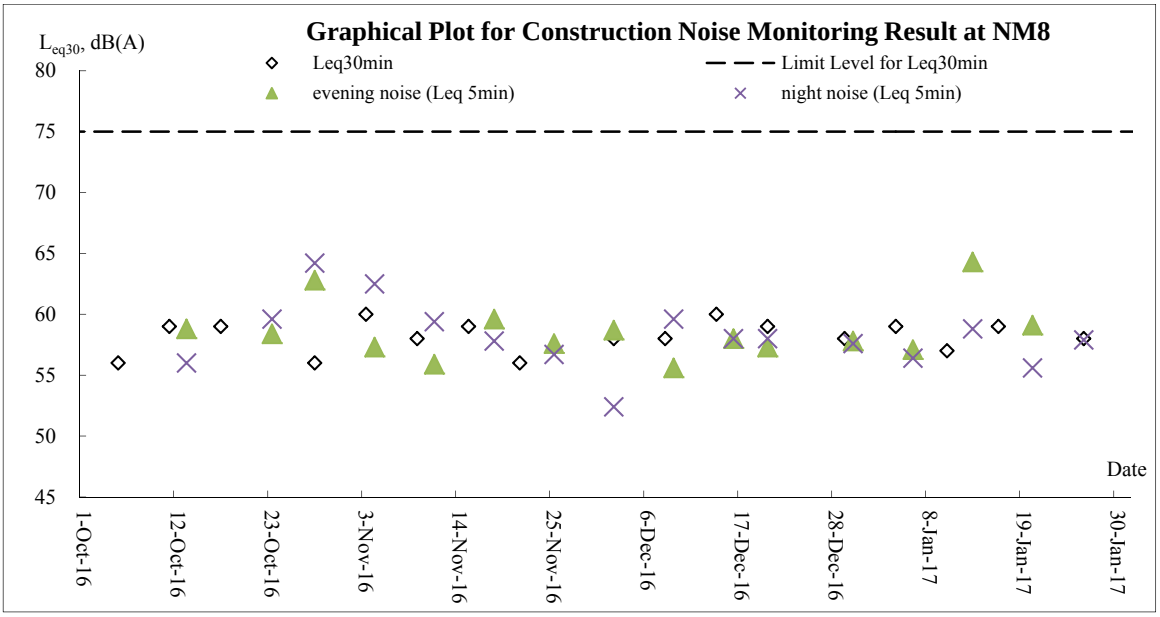
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Construction Noise Monitoring Result at NM8
L_{eq30}, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
night noise (Leq 5min)
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
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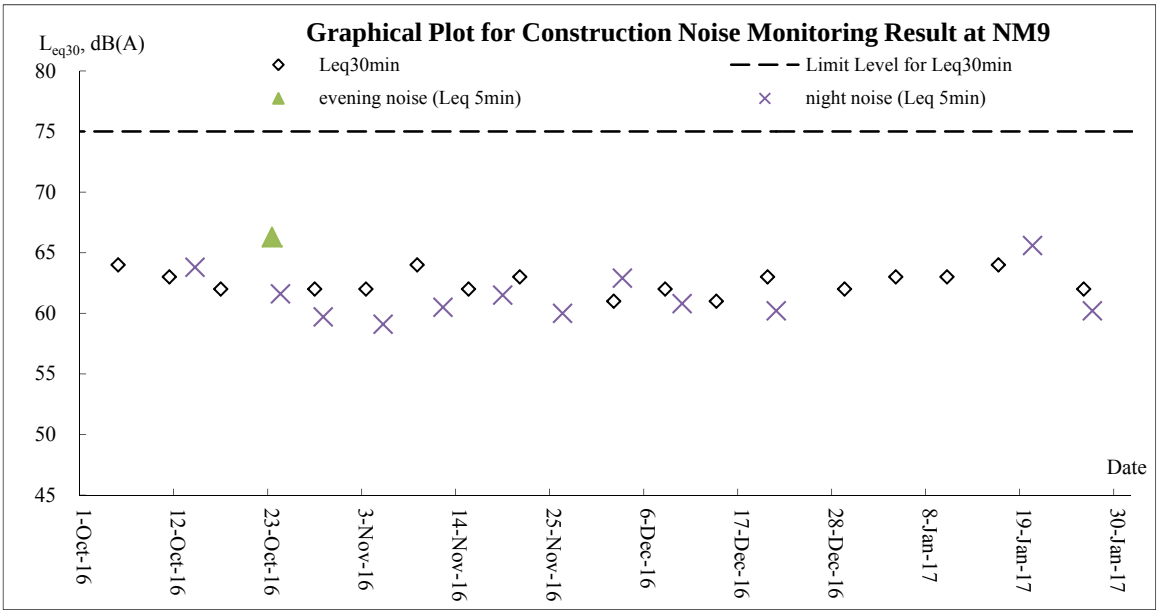
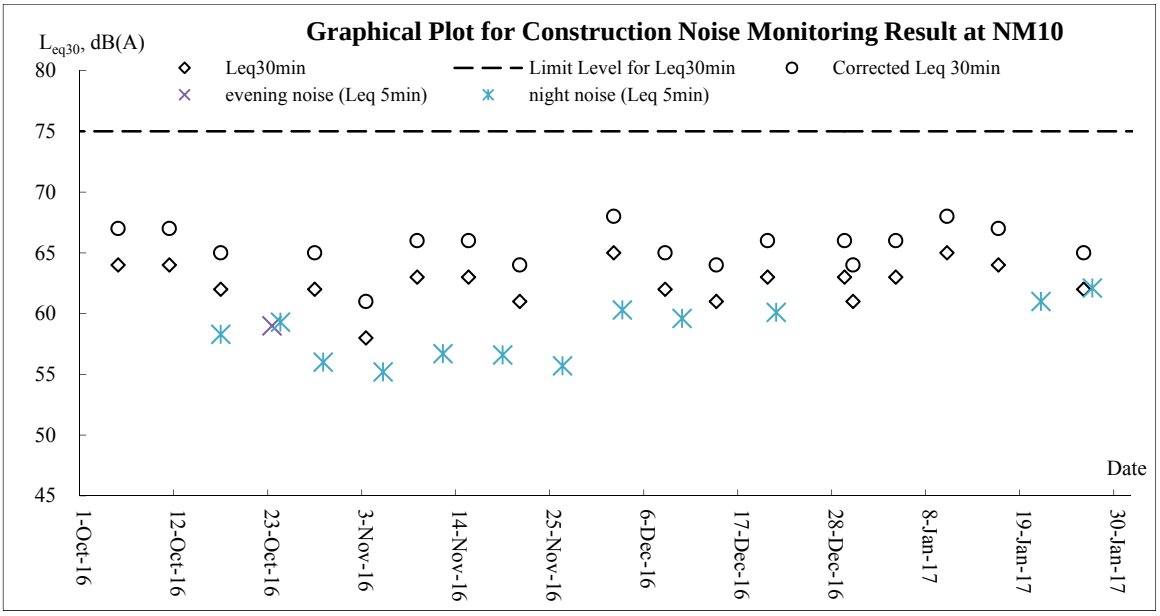
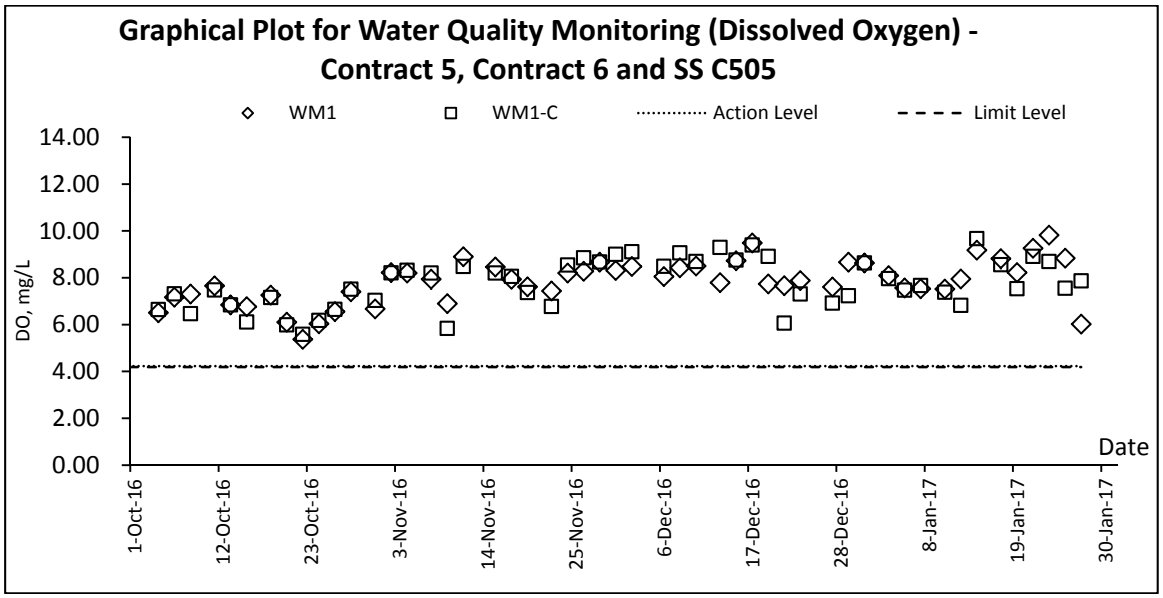
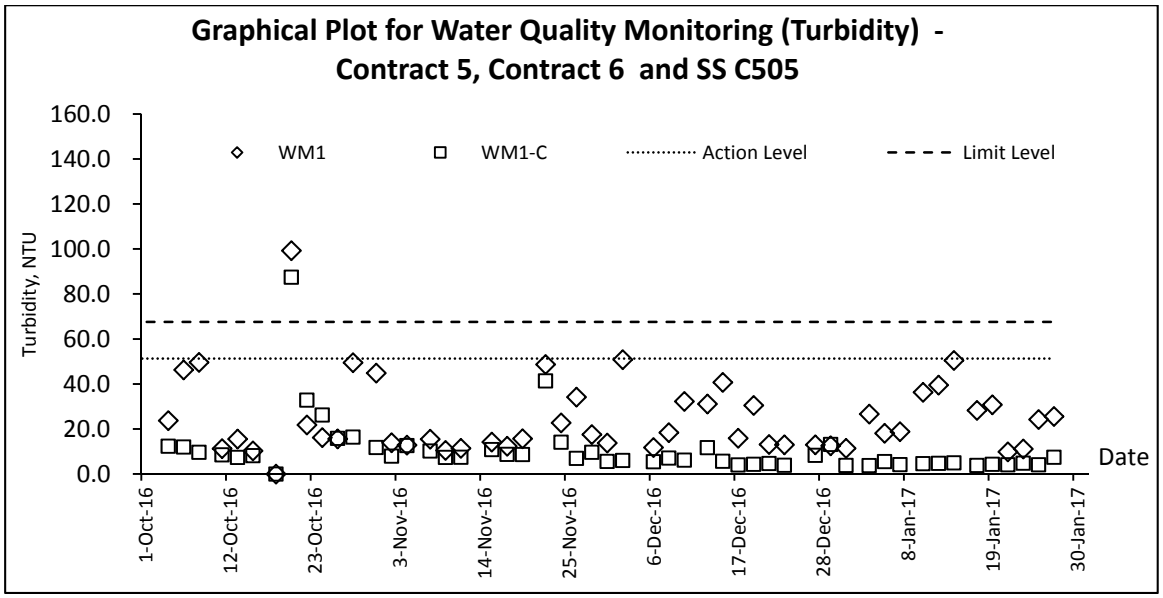
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

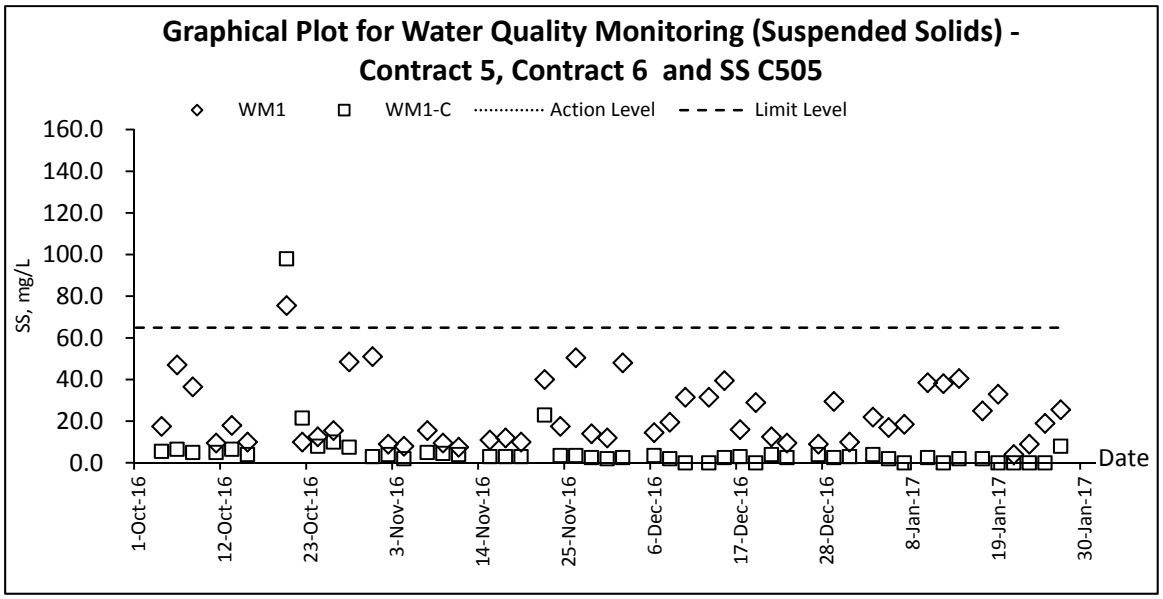

Graphical Plot for Construction Noise Monitoring Result at NM9
L_{eq30}, dB(A)
Leq30min
Limit Level for Leq30min
evening noise (Leq 5min)
night noise (Leq 5min)
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

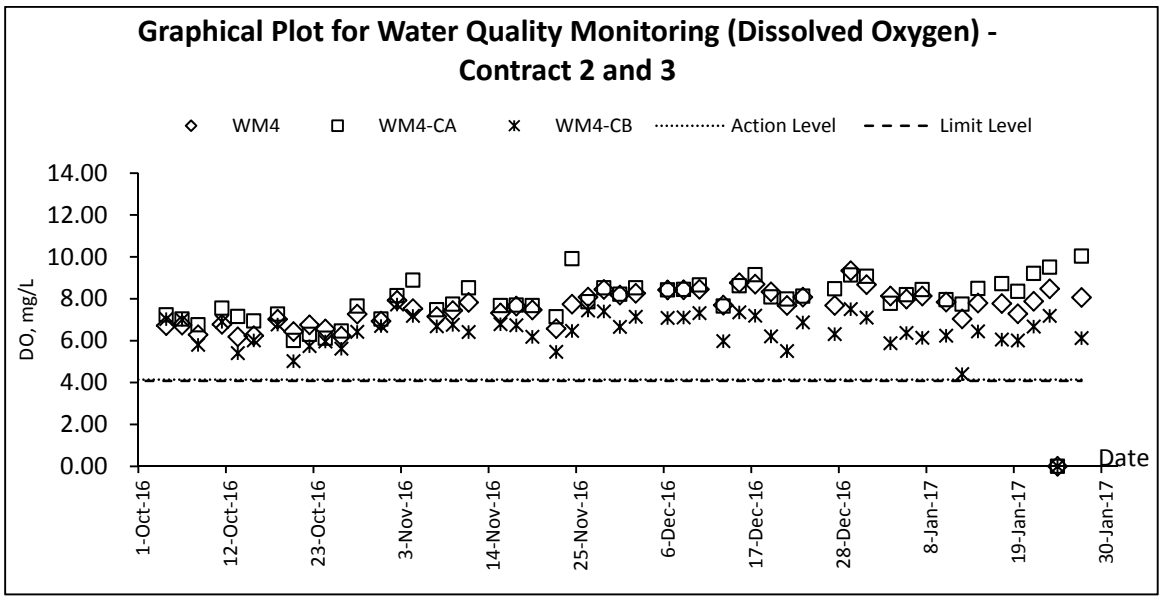

Graphical Plot for Construction Noise Monitoring Result at NM10
L_{eq30}, dB(A)
Leq30min
Limit Level for Leq30min
Corrected Leq 30min
evening noise (Leq 5min)
night noise (Leq 5min)
80
75
70
65
60
55
50
45
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

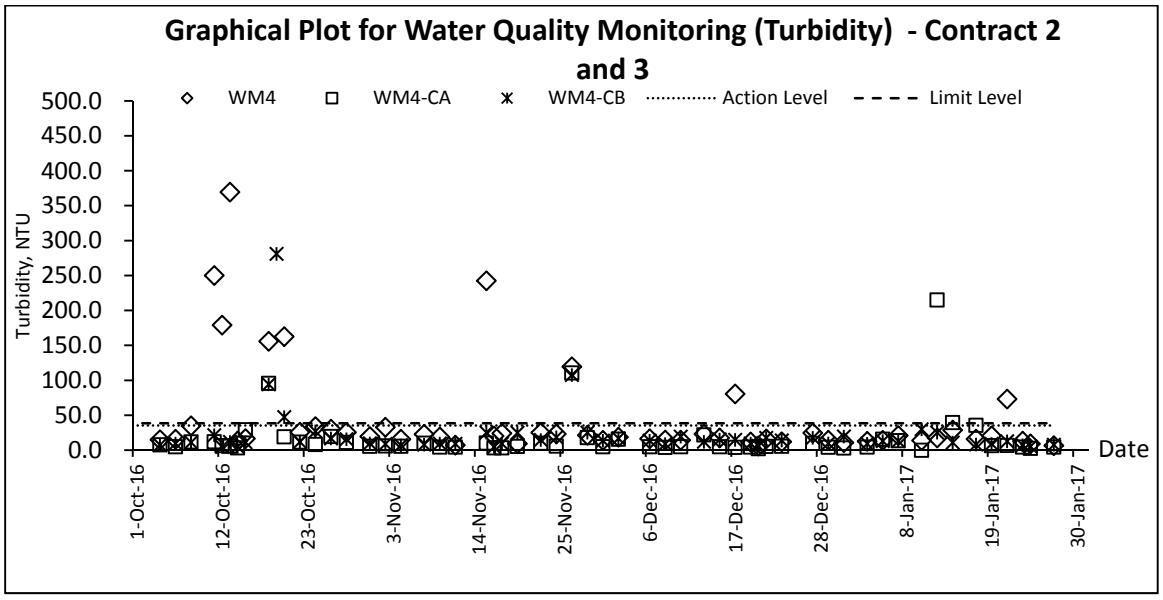
Water Quality

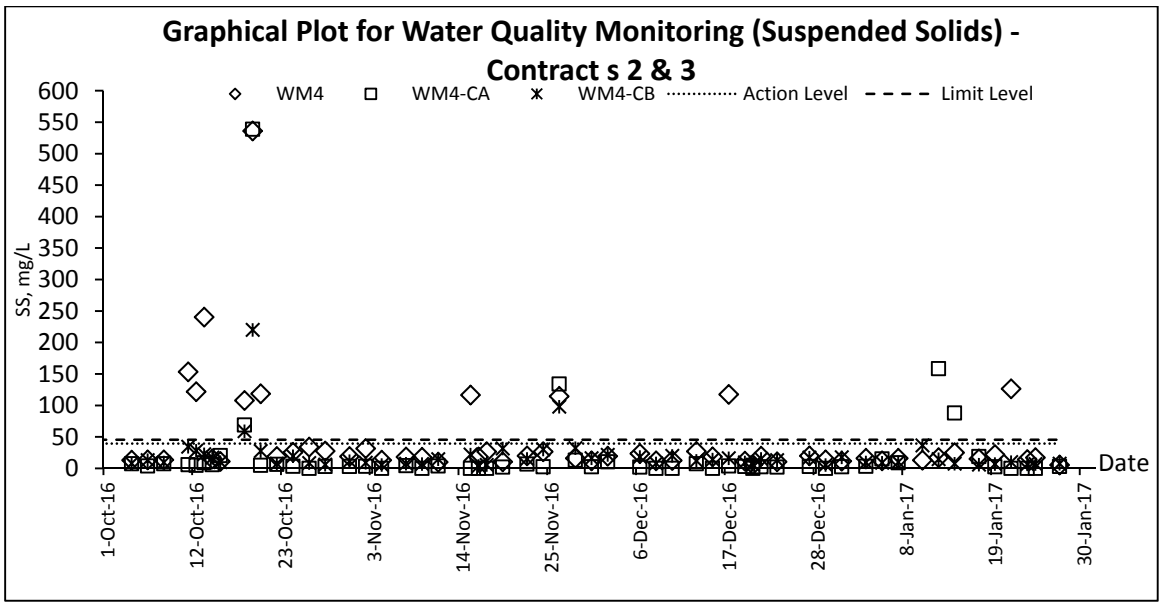


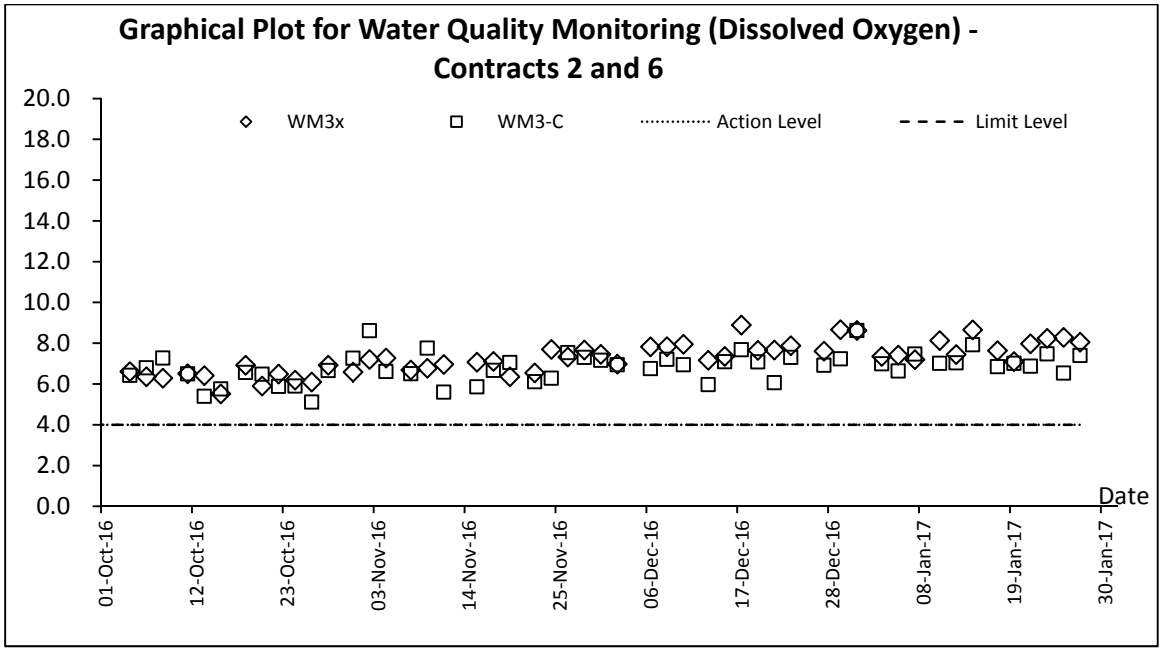


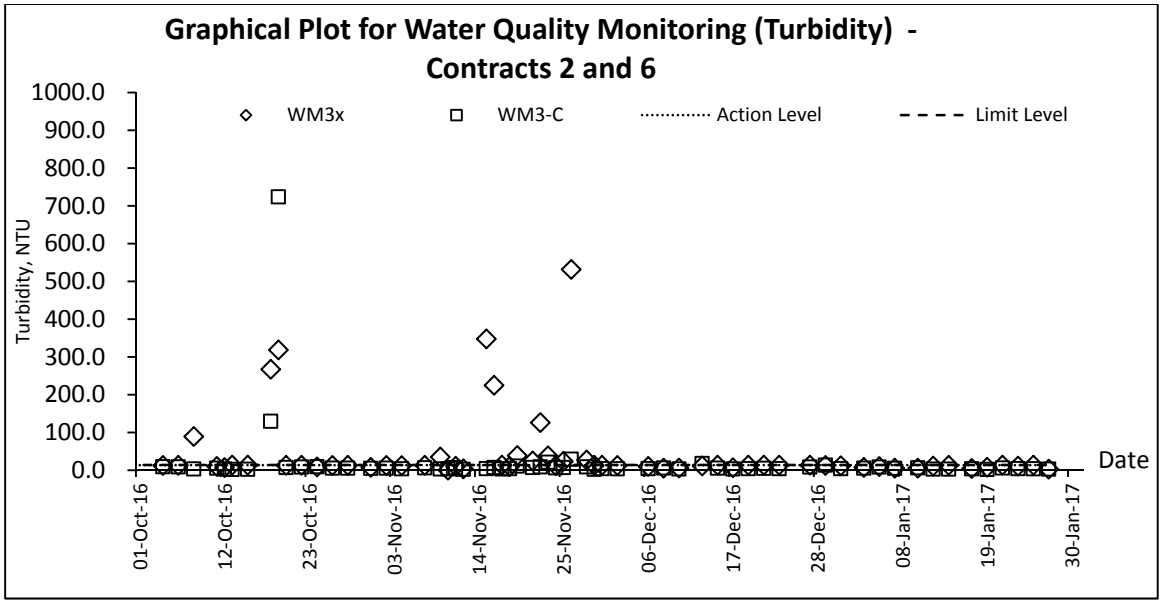


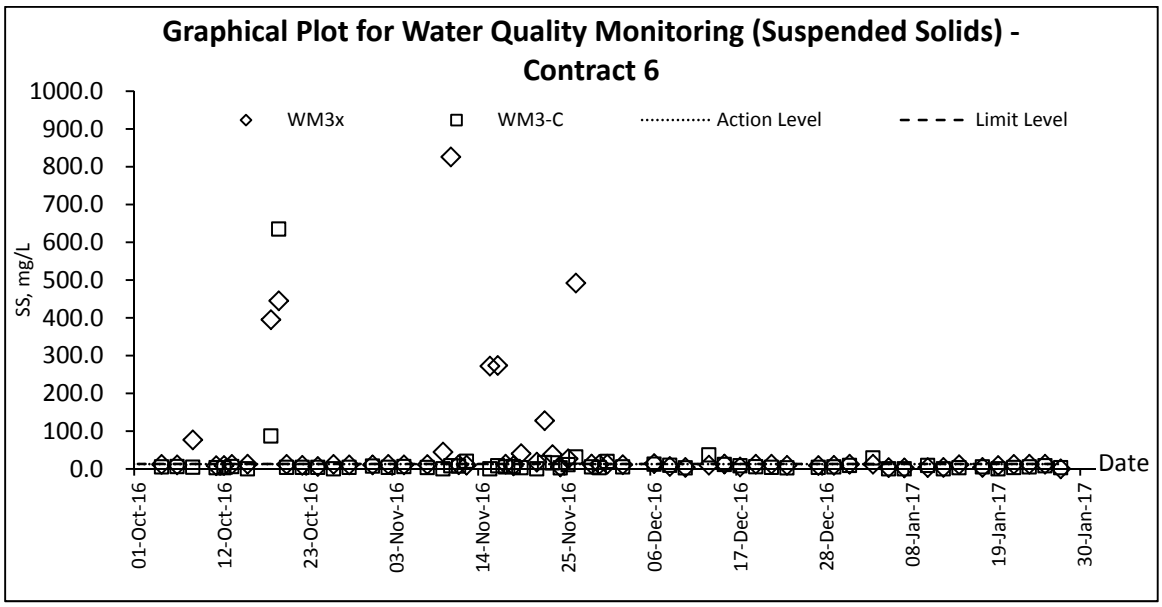

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 2 and 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
DO, mg/L
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

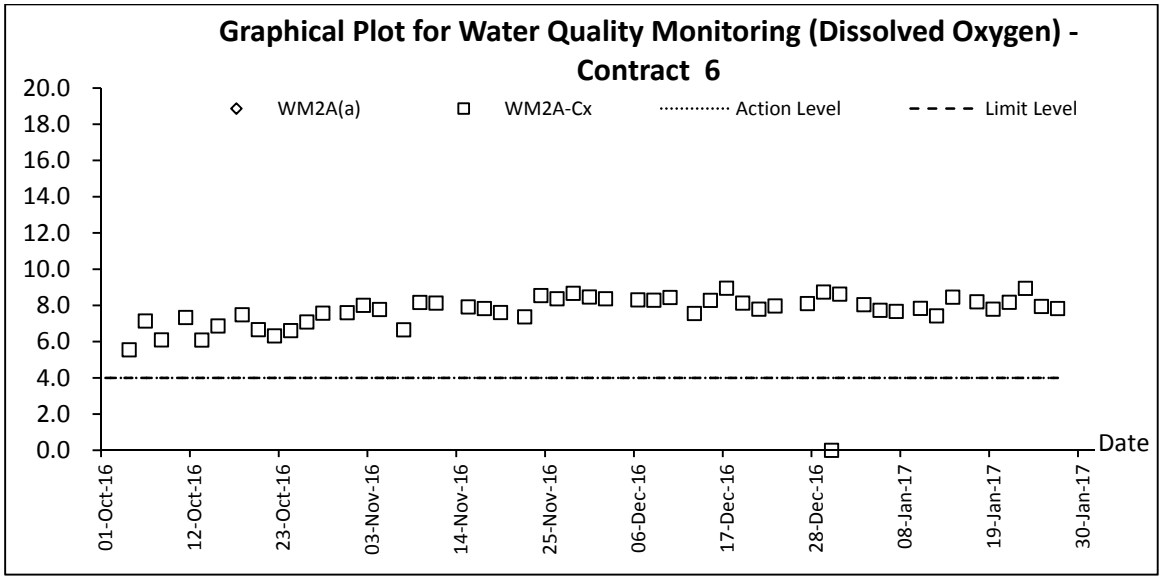

Graphical Plot for Water Quality Monitoring (Turbidity) - Contract 2 and 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
Turbidity, NTU
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

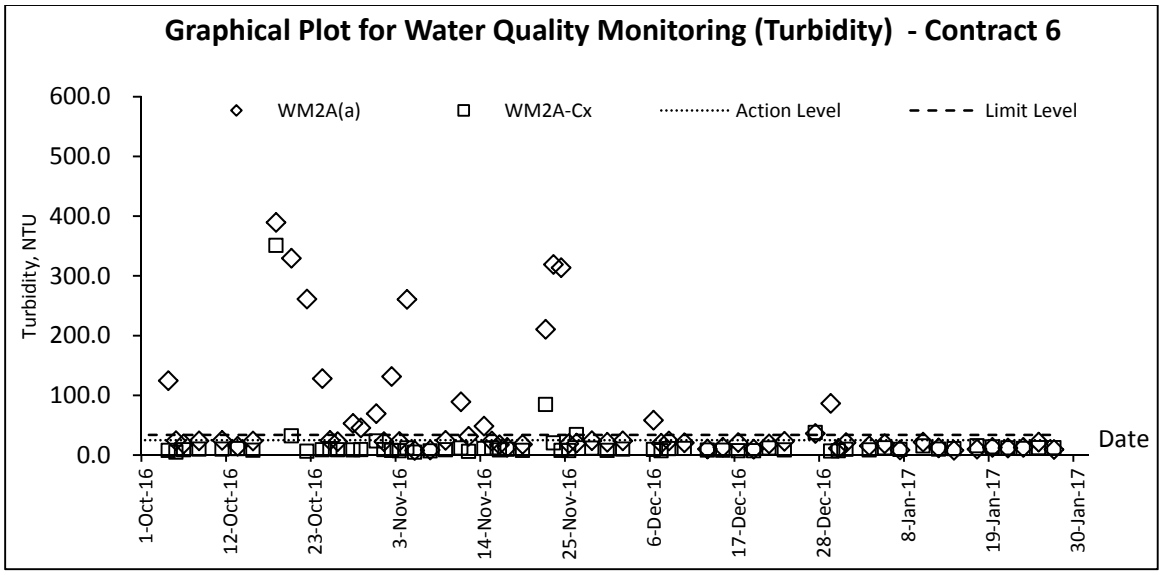

Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract s 2 & 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
SS, mg/L
600
550
500
450
400
350
300
250
200
150
100
50
0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

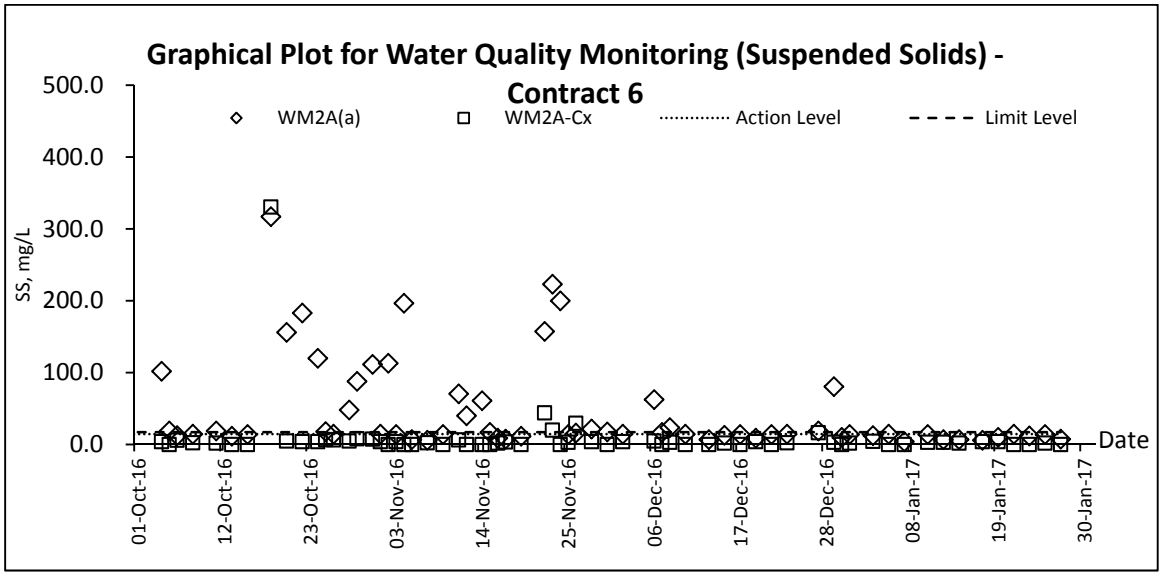

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contracts 2 and 6
WM3x
WM3-C
Action Level
Limit Level
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
01-Oct-16
12-Oct-16
23-Oct-16
03-Nov-16
14-Nov-16
25-Nov-16
06-Dec-16
17-Dec-16
28-Dec-16
08-Jan-17
19-Jan-17
30-Jan-17

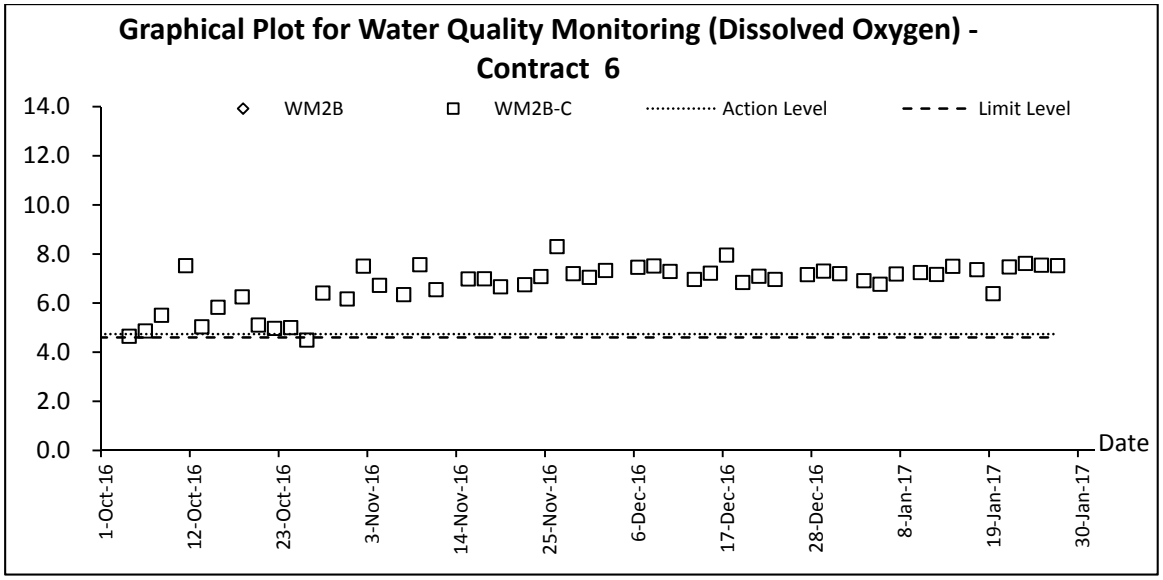

Graphical Plot for Water Quality Monitoring (Turbidity) - Contracts 2 and 6
WM3x
WM3-C
Action Level
Limit Level
Turbidity, NTU
1000.0
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Date
01-Oct-16
12-Oct-16
23-Oct-16
03-Nov-16
14-Nov-16
25-Nov-16
06-Dec-16
17-Dec-16
28-Dec-16
08-Jan-17
19-Jan-17
30-Jan-17

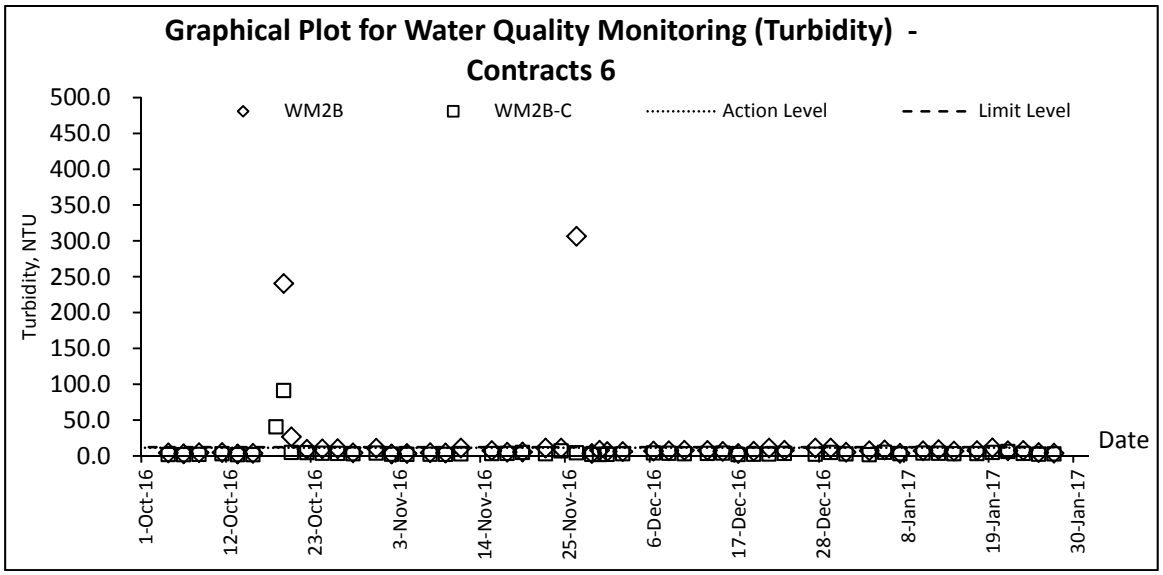

Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract 6
WM3x
WM3-C
Action Level
Limit Level
SS, mg/L
1000.0
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Date
01-Oct-16
12-Oct-16
23-Oct-16
03-Nov-16
14-Nov-16
25-Nov-16
06-Dec-16
17-Dec-16
28-Dec-16
08-Jan-17
19-Jan-17
30-Jan-17

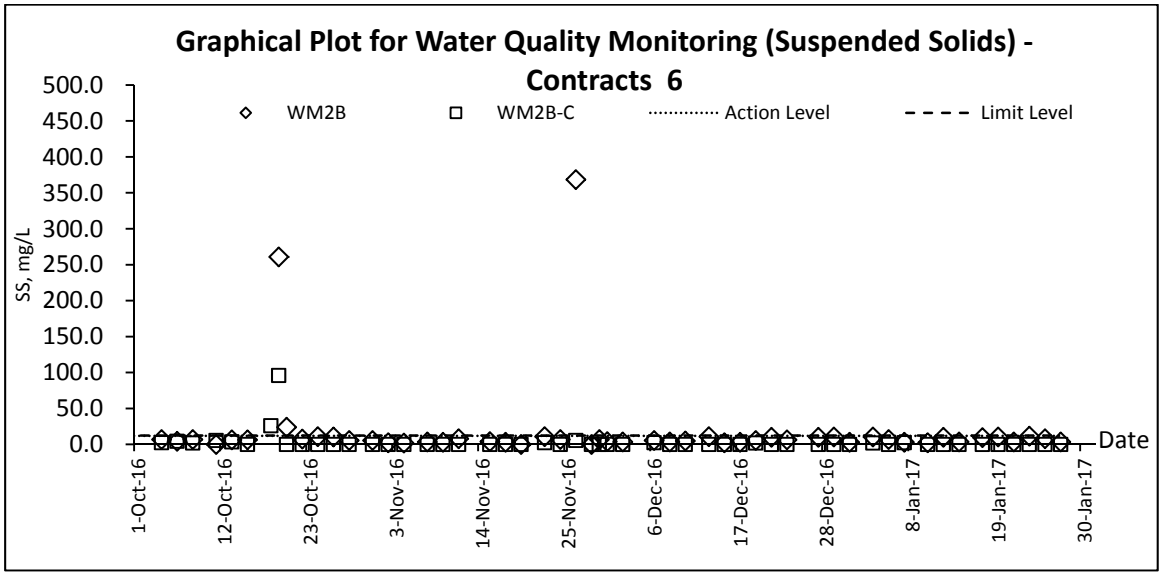

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 6
WM2A(a)
WM2A-Cx
Action Level
Limit Level
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
01-Oct-16
12-Oct-16
23-Oct-16
03-Nov-16
14-Nov-16
25-Nov-16
06-Dec-16
17-Dec-16
28-Dec-16
08-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Water Quality Monitoring (Turbidity) - Contract 6
WM2A(a)
WM2A-Cx
Action Level
Limit Level
Turbidity, NTU
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract 6
WM2A(a)
WM2A-Cx
Action Level
Limit Level
SS, mg/L
500.0
400.0
300.0
200.0
100.0
0.0
Date
01-Oct-16
12-Oct-16
23-Oct-16
03-Nov-16
14-Nov-16
25-Nov-16
06-Dec-16
17-Dec-16
28-Dec-16
08-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 6
WM2B
WM2B-C
Action Level
Limit Level
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Water Quality Monitoring (Turbidity) - Contracts 6
WM2B
WM2B-C
Action Level
Limit Level
Turbidity, NTU
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17


Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contracts 6
WM2B
WM2B-C
Action Level
Limit Level
SS, mg/L
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Date
1-Oct-16
12-Oct-16
23-Oct-16
3-Nov-16
14-Nov-16
25-Nov-16
6-Dec-16
17-Dec-16
28-Dec-16
8-Jan-17
19-Jan-17
30-Jan-17

Appendix G

Weather information

Weather Condition Extracted from HKO

The weather of November 2016

November 2016 was characterized by relatively warm weather during the first three weeks, followed by rainy and cooler weather in the latter part of the month. Overall, the month was warmer and much wetter than usual. The mean temperature for the month was 22.3 degrees, 0.5 degree above the normal figure of 21.8 degrees. The monthly total rainfall recorded at the Hong Kong Observatory was 131.3 millimetres, more than three times the November normal of 37.6 millimetres and the eighth highest on record for November. The accumulated rainfall of 3020.2 millimetres up to end of November was about 27 percent above the normal figure of 2371.7 millimetres for the same period.

The weather of December 2016

With the northeast monsoon over the south China coastal areas remaining relatively weak for most of the month, December 2016 was warmer than usual. The monthly mean temperature of 19.6 degrees was 1.7 degrees above the normal figure of 17.9 degrees and the third highest for December since record began in 1884. The total rainfall recorded in the month was only 6.6 millimetres, less than one quarter of the normal figure of 26.8 millimetres. But in terms of rainfall for the whole year, the annual total of 3026.8 millimetres was about 26 percent above the yearly normal of 2398.5 millimetres.

The weather of January 2017

With no significant cold surge affecting the coastal areas of Guangdong, January 2017 became the warmest January in Hong Kong with record-breaking monthly mean temperature of 18.5 degrees and monthly mean minimum temperature of 17.0 degrees, 2.2 degrees and 2.5 degrees above their respective normals. The month was drier than usual in terms of rainfall amount with only 7.8 millimetres in total, less than one-third of the normal of 24.7 millimetres for January.

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

Appendix H

Waste Flow Table

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

Appendix I - Monthly Summary Waste Flow Table for 2016

(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	72.2029	0.0000	0.6482	31.8061	39.7486	0.9345	26.2000	0.0000	0.7600	1.2320	0.1247
February	55.6715	0.0000	1.0145	38.3484	16.3085	1.3108	8.3800	0.9800	0.4000	1.4080	0.1089
March	34.1757	0.0000	0.3241	29.3514	4.5003	1.0325	44.1700	0.0000	1.0700	11.9680	0.0732
April	86.9048	0.0000	0.7045	32.8811	53.3191	1.3786	31.8220	0.4000	1.0900	1.6456	0.1306
May	77.5386	0.0000	0.1268	38.9050	38.5068	6.3690	44.8000	0.3500	1.1400	2.7280	0.1246
June	62.4192	0.0000	0.5848	45.2952	16.5392	2.4119	35.7300	0.3700	1.8200	1.7600	0.0916
Half-year total	388.9127	0.0000	3.4030	216.5873	168.9224	13.4373	191.1020	2.1000	6.2800	20.7416	0.6536
July	65.3701	0.0000	0.4227	25.0255	39.9219	2.4087	11.3820	0.3500	1.5510	2.9920	0.1794
August	88.4708	0.0000	0.1283	27.0545	61.2879	2.0077	23.0010	0.1650	2.0110	5.2800	0.1482
September	97.0232	0.0000	1.5359	50.8682	44.6191	1.8653	4.6810	0.1650	1.9410	3.8720	0.2018
October	92.8467	0.0000	0.8666	39.8733	52.1068	2.2050	0.8420	0.3000	2.1840	0.0000	0.1852
November	100.2462	0.0000	0.4509	45.5418	54.2534	0.6084	65.1720	0.4500	2.5623	2.4640	0.3216
December	75.9804	0.0000	0.9293	26.2843	48.7668	2.5000	21.7910	0.3200	2.5000	3.3000	0.2052
Yearly Total	908.8500	0.0000	7.7367	431.2349	469.8784	25.0324	317.9710	3.8500	19.0293	38.6496	1.8950

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

Year	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)
2013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2014	425.4406	0.0000	2.7362	376.3945	46.3099	5.6245	3.2100	0.4390	0.0070	10.8800	2.2609
2015	570.9459	0.0000	20.8159	543.2162	6.9138	4.5492	14.1300	3.9220	11.9700	16.1920	1.1696
2016	908.8500	0.0000	7.7367	431.2349	469.8784	25.0324	317.9710	3.8500	19.0293	38.6496	1.8950
2017											
2018											
Total	1905.2365	0.0000	31.2888	1350.8456	523.1021	35.2060	335.3110	8.2110	31.0063	65.7216	5.3255

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
3) Density of Spent Oil to be 0.88 metric ton/m3

香寶嘉 Dragages HongKong
A member of the Bouygues Construction group

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

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

Appendix I - Monthly Summary Waste Flow Table for 2017

(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	59.9685	0.0000	0.4203	26.9277	32.6205	1.7050	9.6870	0.3000	2.3000	1.7600	0.1931
February	0.0000										
March	0.0000										
April	0.0000										
May	0.0000										
June	0.0000										
Half-year total	59.9685	0.0000	0.4203	26.9277	32.6205	1.7050	9.6870	0.3000	2.3000	1.7600	0.1931
July	0.0000										
August	0.0000										
September	0.0000										
October	0.0000										
November	0.0000										
December	0.0000										
Yearly Total	59.9685	0.0000	0.4203	26.9277	32.6205	1.7050	9.6870	0.3000	2.3000	1.7600	0.1931

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

Year	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)
2013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2014	425.4406	0.0000	2.7362	376.3945	46.3099	5.6245	3.2100	0.4390	0.0070	10.8800	2.2609
2015	570.9459	0.0000	20.8159	543.2162	6.9138	4.5492	14.1300	3.9220	11.9700	16.1920	1.1696
2016	905.0989	0.0000	7.4372	427.7834	469.8783	24.8350	259.2290	3.8500	18.7262	34.2936	1.9720
2017	59.9685	0.0000	0.4203	26.9277	32.6205	1.7050	9.6870	0.3000	2.3000	1.7600	0.1931
2018											
Total	1961.4539	0.0000	31.4096	1374.3219	555.7224	36.7137	286.2560	8.5110	33.0032	63.1256	5.5956

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
3) Density of Spent Oil to be 0.88 metric ton/m3

Name of Department: CEDD

Contract No.: CV/2012/09

Monthly Summary Waste Flow Table for 2016 (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	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 m^3)	(in '000m^3)
Jan	2.683	0.253	0.030	0.000	2.400	0.799	0.001	0.000	0.000	0.000	0.115
Feb	1.877	0.651	0.020	0.000	1.205	1.141	0.000	0.000	0.000	0.000	0.110
Mar	1.501	0.417	0.000	0.000	1.084	0.831	0.000	0.000	0.001	0.000	0.090
Apr	0.472	0.046	0.018	0.000	0.408	0.647	0.000	0.000	0.000	0.000	0.135
May	0.488	0.013	0.000	0.000	0.475	2.479	0.000	0.000	0.000	0.000	0.105
Jun	0.523	0.103	0.000	0.000	0.420	0.716	0.000	0.000	0.001	0.000	0.135
Sub-total	7.544	1.483	0.068	0.000	5.993	6.613	0.001	0.000	0.002	0.000	0.690
Jul	0.565	0.019	0.000	0.000	0.546	1.407	0.000	0.001	0.004	1.000	0.085
Aug	0.582	0.088	0.000	0.000	0.494	0.715	0.000	0.000	0.001	0.000	0.105
Sep	1.797	0.604	0.258	0.000	0.935	0.038	0.001	0.000	0.002	0.000	0.090
Oct	1.115	0.485	0.177	0.000	0.453	0.395	0.000	0.000	0.002	0.800	0.120
Nov	0.747	0.140	0.201	0.000	0.407	0.714	0.001	0.000	0.001	0.000	0.125
Dec	0.675	0.130	0.120	0.000	0.425	0.353	0.001	0.000	0.000	0.000	0.120
Total	13.025	2.948	0.824	0.000	9.252	10.235	0.004	0.001	0.012	1.800	1.335

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.
8. Assume the density of plastic is 941 kg/m^3.

Name of Department: CEDD

Contract No.: CV/2012/09

Monthly Summary Waste Flow Table for 2017 (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	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 m^3)	(in '000m^3)
Jan	1.150	0.204	0.150	0.000	0.796	1.150	0.000	0.000	0.001	0.000	0.170
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	1.150	0.204	0.150	0.000	0.796	1.150	0.000	0.000	0.001	0.000	0.170
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	1.150	0.204	0.150	0.000	0.796	1.150	0.000	0.000	0.001	0.000	0.170

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.
8. Assume the density of plastic is 941 kg/m^3.

Monthly Summary Waste Flow Table for _2016__ (year)

Name of Person completing the record: K.M. Lui (EO)

Project : Liangtang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 6 Contract No.: CV/2013/08

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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	58.943	0	3.811	12.131	43.001	31.248	0	0	0	0	0.695
Feb	74.418	0	8.785	39.85	25.783	6.552	0	0.097	0	0	0.339
Mar	43.764	0	6.438	12.034	25.292	3.288	0	0.206	0.007	0	0.042
Apr	33.767	0	1.933	5.759	26.075	0	0	0.221	0	0	0.070
May	51.115	0	3.229	17.469	30.417	0.928	0	0.211	0	0	0.079
Jun	61.126	0	6.921	23.286	30.919	3.693	0	0.166	0	0	0.043
Sub-total	323.133	0	31.117	110.529	181.487	45.709	0	0.901	0.007	0	1.268
Jul	73.407	0	0.951	32.858	39.598	0.827	0	0.271	0	0	0.094
Aug	45.652	0	6.653	5.933	33.066	0	0	0.323	0	0	0.110
Sep	31.086	0	2.089	11.529	17.468	0.048	0	0.231	0	0	0.049
Oct	36.479	0	5.359	9.743	21.377	0.01	0	0.273	0	1.475	0.075
Nov	35.682	0	8.541	4.298	22.843	0.03	0	0.252	0	0	0.115
Dec	28.5	0	10.447	6.618	11.435	0.066	0	0.228	0	0	0.065
Total	743.162	0	83.691	198.292	461.179	53.939	0	2.773	0.007	33.755	4.852

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for _2017___ (year)

Name of Person completing the record: K.M. Lui (EO)

Project : Liangtang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 6 Contract No.: CV/2013/08

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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	39.926	0	19.095	6.067	14.764	0	0	0	0	0	0.065
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	39.926	0	19.095	6.067	14.764	0	0	0	0	0	0.065
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	783.088	0	102.786	204.359	475.943	53.939	0	2.773	0.007	33.755	4.917

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

Appendix I

MONTHLY SUMMARY WASTE FLOW TABLE

Name of Department: CEDD

Contract Title: Liantang/ Heung Yuen Wai Boundary Control Point
Site Formation and Infrastructure Works – Contract 7

Contract No.: NE/2014/03

Monthly Summary Waste Flow Table for 2016 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Inert 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	Plastic (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
Jan	0	0	0	0	0	0	0	0	0	0	0
Feb	0.16	0	0	0	0.16	0	0	0	0	0	0
Mar	0.135	0	0	0	0.135	0	0	0	0	0	0.005
Apr	0.313	0	0	0	0.313	0	0	0	0	0	0.005
May	0.505	0	0	0	0.505	0	0	0	0	0	0
June	0.613	0	0	0	0.613	0	0	0.005	0.001	0	0
Sub-total	1.726	0	0	0	1.726	0	0	0.005	0.001	0	0.01
July	0.207	0	0	0	0.207	0	0	0.047	0.001	0	0
Aug	0.464	0	0	0	0.464	0	0	0.03	0.001	0	0
Sept	0.207	0	0	0	0.207	0	0.1	0.05	0.001	0	0
Oct	0	0	0	0	0	0	0.2	0.04	0.001	0	0
Nov	0	0	0	0	0	0	0.1	0.04	0.001	0	0.005
Dec	0	0	0	0	0	0	0.1	0.04	0.001	0	0.005
Total	2.604	0	0	0	2.604	0	0.5	0.252	0.007	0	0.02

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Appendix I

MONTHLY SUMMARY WASTE FLOW TABLE

Name of Department: CEDD

Contract Title: Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 7

Contract No.: NE/2014/03

Monthly Summary Waste Flow Table for 2017 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Inert 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	Plastic (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
Jan	0	0	0	0	0	0	0.1	0.05	0.001	0	0.01
Feb											
Mar											
Apr											
May											
June											
Sub-total	0	0	0	0	0	0	0.1	0.05	0.001	0	0.01
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	0	0	0	0	0	0	0.1	0.05	0.001	0	0.01

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Architectural Services Department	**Form No. D/OI.03/09.002**

Contract No. / Works Order No.: - SSC505

Monthly Summary Waste Flow Table for 2016 [year] [to be submitted not later than the 15th day of each month following reporting month]

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

Month	Actual Quantities of Inert Construction Waste Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 4)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Jan	0.800	0	0	0	0.800
Feb	0.858	0	0	0	0.858
Mar	0.793	0	0	0	0.793
Apr	0.111	0	0	0	0.111
May	1.087	0	1.074	0	0.013
Jun	8.645	0	8.541	0	0.104
Sub-total	12.293	0	9.615	0	2.678
Jul	2.942	0	2.884	0	0.059
Aug	4.247	0	4.182	0	0.065
Sep	2.963	0	2.911	0	0.052
Oct	8.665	0	7.501	0	1.164
Nov	4.841	0	4.048	0	0.793
Dec	6.713	0	6.440	0	0.273
Total	42.663	0	37.580	0	5.083

Month	Actual Quantities of Non-inert Construction Waste Generated Monthly												
	Timber		Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Other Recyclable Materials (see Page 3)		General Refuse disposed of at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	0.000	0.000	4.73	4.73	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.072
Feb	0.000	0.000	0.0004	0.0004	0.0186	0.0186	0.000	0.000	0.000	0.000	0.021	0.021	0.065
Mar	0	0	52.752	52.752	0.044	0.044	0	0	0	0	0.05	0.05	0.059
Apr	0	0	1465.5906	1465.5906	0.09	0.09	0	0	0	0	0.084	0.084	0.091
May	0	0	1587.5818	1587.5818	0	0	0.004	0.004	0	0	0.153	0.153	0.156
Jun	0	0	725.0582	725.0582	0.33	0.33	0.0045	0.0045	0	0	0.067	0.067	0.117
Sub-total	0	0	3818.7330	3818.7330	0.4826	0.4826	0.0085	0.0085	0	0	0.375	0.375	0.559
Jul	0	0	265.690	265.690	0.430	0.430	0.020	0.020	0.000	0.000	0.194	0.194	0.189
Aug	0	0	298.260	298.260	0.360	0.360	0.025	0.025	0.000	0.000	0.069	0.069	0.228
Sep	0	0	572.15	572.15	0.370	0.370	0.048	0.048	0.000	0.000	0.088	0.088	0.241
Oct	0	0	287.87	287.87	0.36	0.36	0.098	0.098	0.000	0.000	0.112	0.112	0.189
Nov	0	0	268.18	268.18	0.54	0.54	0.087	0.087	0.000	0.000	0.0765	0.0765	0.423
Dec	0	0	298.052	298.052	0	0	0.053	0.053	0.000	0.000	0.0095	0.0095	0.390
Total	0	0	5808.935	5808.935	2.543	2.543	0.339	0.339	0.000	0.000	0.923	0.923	2.217

Description of mode and details of recycling if any for the month e.g. XX kg of used timber was sent to YY site for transformation into fertilizers					
9.5kg of cans were sent to Kong Han for recycling.	53kg of plastic bottles were sent to Action Health for recycling.	298 tons of scrap metals from LCAL were sent for recycling			

Notes:
(1) The performance targets are given in the Particular Specification on Environmental Management Plan.
(2) The waste flow table shall also include construction waste that are specified in the Contract to be imported for use at the site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) Broken concrete for recycling into aggregates.
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.

Architectural Services Department	**Form No. D/OI.03/09.002**

Contract No. / Works Order No.: - SSC505

Monthly Summary Waste Flow Table for 2017 [year] [to be submitted not later than the 15th day of each month following reporting month]

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

Month	Actual Quantities of Inert Construction Waste Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 4)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Jan	3.160	0	2.003	0	1.157
Feb	-	-	-	-	-
Mar	-	-	-	-	-
Apr	-	-	-	-	-
May	-	-	-	-	-
Jun	-	-	-	-	-
Sub-total	3.16	0	2.003	0	1.157
Jul	-	-	-	-	-
Aug	-	-	-	-	-
Sep	-	-	-	-	-
Oct	-	-	-	-	-
Nov	-	-	-	-	-
Dec	-	-	-	-	-
Total	3.16	0	2.003	0	1.157

Month	Actual Quantities of Non-inert Construction Waste Generated Monthly												
	Timber		Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Other Recyclable Materials (see Page 3)		General Refuse disposed of at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	0.000	0.000	458.150	458.150	0.560	0.560	0.058	0.058	0.000	0.000	0.024	0.024	0.481
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total	0	0	458.150	458.150	0.560	0.560	0.058	0.058	0.000	0.000	0.024	0.024	0.481
Jul	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	0	0	458.150	458.150	0.560	0.560	0.058	0.058	0.000	0.000	0.024	0.024	0.481

Description of mode and details of recycling if any for the month e.g. XX kg of used timber was sent to YY site for transformation into fertilizers					
12kg of cans was sent to Kong Han for recycling and 560kg of paper was sent to Wai San for recycling.	58kg of plastic bottles and 12kg of glass bottles were sent to Action Health for recycling.	458.15 tons of scrap metals from LCAL were sent for recycling			

Notes:
(1) The performance targets are given in the Particular Specification on Environmental Management Plan.
(2) The waste flow table shall also include construction waste that are specified in the Contract to be imported for use at the site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) Broken concrete for recycling into aggregates.
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.

Appendix I

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		

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?
		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