JOB NO.: TCS00491/09

DSD CONTRACT NO.: DC/2009/08

CONSTRUCTION OF YUEN LONG SOUTH BRANCH SEWERS AND EXPANSION OF HA TSUEN SEWAGE PUMPING STATION

4TH QUARTERLY ENVIRONMENTAL MONITORING & AUDIT SUMMARY REPORT – (NOVEMBER 2010 TO JANUARY 2011)

PREPARED FOR

CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) COMPANY LIMITED

Quality Index

Date	Reference No.	Prepared By	Certified By
25 July 2011	TCS00491/09/600/R0227v3	Nicola Hon (Environmental Consultant)	T.W. Tam (Environmental Team Leader)

Version	Date	Description
1	19 July 2011	First submission
2	21 July 2011	Amended against IEC's comments on 21 July 2011
3	25 July 2011	Amended against IEC's comments on 25 July 2011

安誠工程顧問有限公司
香港灣仔
皇后大道東183號
合和中心47樓
電話：(852) 2911 2233
傳真：(852) 2805 5028

Hyder Consulting Limited
Company Number 126012
47th Floor, Hopewell Centre
183 Queen's Road East
Wan Chai, Hong Kong
Tel: (852) 2911 2233
Fax: (852) 2805 5028
hyder.hk@hyderconsulting.com
www.hyderconsulting.com

27 July 2011

By Post

Action-United Environmental Services & Consulting
Unit A, 20/F, Gold King Industrial Building,
35-41 Tai Lin Pai Road,
Kwai Chung,
New Territories,
Hong Kong.

Your Ref:

Our Ref: EB000586-F/THW11-499

For attention of: Mr. T. W. Tam

Dear Mr. Tam,

Contract No.: DC/2009/08
Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station
Quarterly EM&A Report for Designated Project, November 2010 to January 2011 – IEC Verification

With reference to ET's captioned report (ET's ref.: TCS00491/09/600/R0227v3 dated 27 July 2011) received on 27 July 2011, we have no comment and hereby verify the captioned report excluding the Landscape and Visual Impact section of the report.

We request the ET to submit the separate submission of Landscape and Visual Impact section of the report as soon as possible, for the completion of the captioned report.

Should there be any queries, please feel free to contact our William Law on 2911 2511.

Yours sincerely

F.C. TSANG
Independent Environmental Checker
HYDER CONSULTING LIMITED

FCT/WL/my

EXECUTIVE SUMMARY

ES.01. This is the **4th** quarterly EM&A summary report under Environmental Permit No.EP327/2009 (hereinafter ''the EP'') for the *Expansion of Ha Tsuen Sewage Pumping Station*, covering the period from **1 November 2010** to **31 January 2011** (hereinafter "Reporting Period").

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. Environmental monitoring activities under the EM&A program in the Reporting Period are summarized in the following table.

Aspects	Environmental Monitoring Parameters / Inspection	Occasions
Air Quality	1-hour TSP	**102**
	24-hour TSP	**34**
Construction Noise	Leq (30min) Daytime	**34**
Water Quality	Dissolved Oxygen	**39**
	Turbidity	**39**
	Suspended Solids (SS)	**39**
Inspection / Audit	ET Weekly Environmental Site Inspection	**13**

BREACHES OF ACTION/LIMIT LEVELS

ES.03. In this reporting period, 1 Limit Level exceedance was recorded in construction noise monitoring and 1 Action Level exceedance was recorded in 24-hour TSP monitoring. Moreover, there were 12 Limit Level exceedances recorded in water quality monitoring during the Reporting Period. The summaries of exceedance in water quality monitoring is shown below:

Month	Exceedance	DO	Turbidity	SS	Sub-total
November 2010	Action Level	0	0	0	0
	Limit Level	0	3	1	4
December 2010	Action Level	0	0	0	0
	Limit Level	0	2	1	3
January 2011	Action Level	0	0	0	0
	Limit Level	0	0	5	5
Total	**Action Level**	**0**	**0**	**0**	**0**
	Limit Level	**0**	**5**	**7**	**12**

ES.04. Investigation for the air and the water quality exceedances were completed and it was concluded that both cases were not related to the works under the Project. No corrective action was therefore recommended. Nevertheless, the Contractor was reminded to ensure the water mitigation measures were implementation as stipulated in the EM&A Manual Section 3.8.

ES.05. The results and findings for landscape and visual monitoring, as part of the EM&A programme, will be submitted in a stand-alone submission.

ENVIRONMENTAL COMPLAINT, NOTIFICATIONS OF SUMMONS AND PROSECUTIONS

ES.06. No documented complaint, notifications of summons and successful prosecutions were received during the Reporting Period. No associated mitigation action is needed.

REPORTING CHANGES

ES.07. There are no reporting changes in this reporting period.

FUTURE KEY ISSUES

ES.08. During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary; and also with construction noise and other environmental issues stipulated in the Environmental Monitoring and Audit Manual.

ES.09. According to Clause 3.4 of the Environmental Permit No. EP-327/2009/A, the Contractor should cease all construction activities in Ha Tsuen Pumping Station during the Public Examination period of the school nearby.

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1 INTRODUCTION

BACKGROUND

1.01 The China State Construction Engineering (Hong Kong) Limited (hereinafter "CSCE") has been awarded by the Drainage Services Department (DSD) the Contract D**C/2009/08** *Construction of Yuen Long South Branch Sewers and Expansion of Ha Tsuen Sewage Pumping Station* (the Project) in October 2009.

1.02 The Project involves construction of about 9km of sewers and rising mains with diameter ranging from 200-1500mm in Yuen Long South and Ha Tsuen areas, a sewage pumping station near Shui Tsui San Tsuen Road in Yuen Long South, expansion of existing Ha Tsuen Sewage Pumping Station. The site layout plan is shown in ***Appendix A***.

1.03 The construction of expansion Ha Tsuen Sewage Pumping Station is under a statutory EIA (Register No. AEIAR-072/2003) study for "*Upgrading and expansion of San Wai Sewage Treatment Works and expansion of Ha Tsuen Pumping Station*" commissioned by the DSD. The Variation Environmental Permit No. EP-327/2009A for upgrading and expansion of Sewage Treatment Works at San Wai (excluded for the Project) and Ha Tsuen Sewage Pumping Station was again obtained by DSD in June 2010 for the relevant works.

1.04 According to the Section 25 of the Particular Specification (PS) and the Variation Environmental Permit No. EP-327/2009A, the scope of monitoring includes air quality, construction noise, water quality and environmental site audit. It should be undertaken in accordance with the Environmental Monitoring and Audit Manual as part of EIA report [AEIAR-072/2003] (hereafter "the EM&A Manual") by an independent Environmental Team (ET).

1.05 This is the **4th** Quarterly EM&A Summary Report which undertaken as part of the EM&A programme under Environmental Permit No. EP-327/2009A for the Expansion Ha Tsuen Sewage Pumping Station, covering the period from **1 November 2010 to 31 January 2011**.

REPORT STRUCTURE

1.06 This Report is structured as follows:

Section 1 Introduction
Section 2 Project Organization and Construction Progress
Section 3 Summary of Impact Environmental Monitoring and Audit Requirements
Section 4 Monitoring Results and Breaches of Environmental Quality Criteria
Section 5 Waste Management
Section 6 Site Inspection
Section 7 Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
Section 8 Implementation Status of Mitigation Measures
Section 9 Conclusions and Recommendations

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.01 Organization structure and contact details of the Contractor and relevant parties with respect to the on-site environmental management are shown in ***Appendix B***.

WORKS UNDERTAKEN DURING THE REPORTING PERIOD

2.02 The master tentative construction program is enclosed in ***Appendix C.*** Also, the major construction activities undertaken in this reporting period are listed below:

November 2010	• Installation of temporary shoring system • Excavation
December 2010	• Installation of temporary shoring system • Excavation
January 2011	• Installation of temporary shoring system • Excavation

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.03 Summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in the Reporting Period is presented in ***Table 2-1***.

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Environmental Permit (EP-329/2009/A)	Update on 1 June 2010
2	Air pollution Control (Construction Dust)	In progress
3	Chemical waste Producer Registration Registration No. 5213-511-C3570-01	Issued on 13 Nov 2009
4	Water Pollution Control Ordinance (Discharge License) License No. WT00005671-2009	Issued on 12 Jan 2010 Expiry date: 31 Jan 2015
5	Billing Account for Disposal of Construction Waste (Account Number: 700947)	Issued on 7 October 2009

2.04 The baseline monitoring report - *Expansion of Ha Tsuen Sewage Pumping Station* (*Ref: TCS00491/09/600/R0023v6*) had been verified by IEC and endorsed by EPD.

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS

MONITORING PARAMETERS

3.01 According to the *EM&A Manual*, the environmental aspect implemented by ET, including air quality, construction noise and water quality, also the landscape and visual impact to be monitored by a competent landscape architect. The monitoring parameters are summarized in ***Table 3-1***.

Table 3-1 Summary of Monitoring Parameters

Environmental Aspect	Parameters
Air Quality	• 1-hour Total Suspended Particulate (hereinafter '1-hr TSP'); and • 24-hour Total Suspended Particulate (hereinafter '24-hr TSP').
Construction Noise	• A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'Leq(30min)' during the normal working hours; and • A-weighted equivalent continuous sound pressure level (5min) (hereinafter 'Leq(5min)' for construction work during the restricted hours.
Water Quality – Local Stream Course	• In Situ Measurement - Dissolved Oxygen (DO) and Turbidity • Laboratory Analysis - Suspended Solids (SS)
Water Quality – Effluent Discharge	• In Situ Measurement - pH value • Laboratory Analysis - SS and Chemical oxygen demand (COD)
Landscape and Visual Resources	• Vegetation survey undertaken on an "area" basis to identify representative types and species composition; • Assessment of landscape character; and • Tree survey report. • The inspection findings will be submitted separately.

MONITORING LOCATIONS

Air Quality

3.02 The designated monitoring location Yeung Chun Pui Care & Attention Home located at Sha Chau Lei Road has been identified, but the premise was granted by CEDD existing project CV/2008/03 for air quality monitoring. Also, the HVS installation at the other one designated air monitoring station Tin Shing Court, the premises is refused by the incorporated owners. The alternative location Ho Tak Sum Primary School as one sensitive receiver mentioned in the EIA Report (Register No. AEIAR-072/2003) is proposed to be the replacement to undertake air quality monitoring during the expansion works of Ha Tsuen Sewage Pumping Station in accordance with the EM&A Manual Clauses 2.2.1.20. Simultaneously, air monitoring at the designated location Yeung Chun Pui Care & Attention Home is proposed to perform. The proposal and recommendation is agreed by IEC and as endorsed by EPD. The monitoring stations are detailed to list in ***Table 3-2*** and illustrated in ***Appendix D***.

Table 3-2 Air Quality Monitoring Station under the Project Proposed in the EM&A Manual

Monitoring Location ID	Identified Address	Remarks
AM1	Ho Tak Sum Primary School	Replace the Designated Monitoring Station Tin Shing Court
AM2	Yeung Chun Pui Care & Attention Home	Designated in the EM&A Manual

Construction Noise

3.03 Similarly to the air monitoring, the construction noise monitoring stations undertaken for EM&A programme was agreed by IEC and as endorsed by EPD. The detailed monitoring stations are listed in ***Table 3-3*** and shown in ***Appendix D***.

Table 3-3 Construction Noise Monitoring Station under the Project Proposed in the EM&A Manual

Monitoring Location ID	Identified Address	Remarks
NM1	Ho Tak Sum Primary School	Replace the Designated Monitoring Station Tin Shing Court
NM2	Yeung Chun Pui Care & Attention Home	Designated in the EM&A Manual

Water Quality

3.04 One designated location of a local stream course, Tin Shui Wai Nullah, is recommended to carry out water quality monitoring in accordance with the EM&A Manual. The designated sampling location R1 is located at the midpoint between two pedestrian flyovers athwart Tin Shui Wai Nullah, which are 320 meters apart, there is technical difficulty and safety is concerned. So, a new sampling point located at approximately 160m upstream of the R1 (hereinafter as R1b) was therefore proposed for the local stream impact monitoring and has been verified by IEC and no further comments by EPD.

3.05 The detailed monitoring station is listed in ***Table 3-4*** and shown in ***Appendix D***.

Table 3-4 Local Stream Water Quality Monitoring Station

Monitoring Location ID	Identified Address	Remarks
R1b	The athwart Tin Shui Wai Nullah pedestrian flyover	About 160 meters upstream from the designated location as stipulated in the EM&A Manual. Also, it is closer to the existing Ha Tsuen Pumping Station

Landscape and Visual

3.06 The selected route and area, frequency and requirements of landscape & visual monitoring is proposed by a competent landscape architect.

MONITORING FREQUENCY

3.07 The impact monitoring frequency and duration for air quality, construction noise, water quality of local stream course, and landscape & visual are summarized below.

Air Quality Monitoring

Parameters: 1-hour TSP and 24-hour TSP.
Frequency: Once every six days for 24-hour TSP and three times every six days for 1-hour TSP.
Duration: Throughout the construction period.

Noise Monitoring

Parameters: One set of Leq(30min) as 6 consecutive Leq(5min) between 0700-1900 hours on normal weekdays.
Leq (5min), L10 and L90 during the construction undertaken during Restricted Hours (from 19:00 to 07:00 hours of the following day and full day of public holiday and Sunday)
Frequency: Once every six days during 0700-1900 hours on normal weekdays. Restricted Hour monitoring should depend on conditions stipulated in Construction Noise Permit.
Duration: Throughout the construction period.

Water Quality Monitoring of Local Stream Course

Parameters: DO, Turbidity and SS.
Frequency: 3 days per week.
Depth: mid-depth
Duration: Throughout the construction period and the interval between 2 sets of monitoring is not less than 36 hours

Landscape and Visual Monitoring

Parameters: Site inspection with broad scope of audit as listed in the EM&A Manuals
Frequency: Once every 2 weeks
Duration: Throughout the construction period

Site inspection and Audit

Frequency: Once per week.
Duration: Throughout the construction period.

ENVIRONMENTAL QUALITY CRITERIA

3.08 The environmental quality criteria i.e. Action and Limit levels (herein after 'A/L levels') are listed in Table 3-5, 3-6 and 3-7 below.

Table 3-5 Action and Limit Levels for Air Quality Monitoring

Monitoring Location	Action Level (μg /m^3)		Limit Level (μg /m^3)	
	1-hour	24-hour	1-hour	24-hour
AM1	305	162	> 500	> 260
AM2	310	190	> 500	> 260

Table 3-6 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	0700-1900 hrs on normal weekdays	
NM1	When one or more documented complaints are received	70 dB(A) of Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays, reduced to 65 dB(A) during school examination periods
NM2		70 dB(A) of Leq(30min) during normal hours from 0700 to 1900 hours on normal weekdays

*Note: *Reduces to 65 dB(A) during the school examination periods.*

Table 3-7 Action and Limit Levels for a Local Stream Water Quality Monitoring (R1b)

Parameter	Action Level	Limit Level
DO (mg/L)	4.6	4 mg/L or 40% saturation at 15°C
Turbidity (NTU)	15.6	16.2
SS (mg/L)	31.5	31.9

ENVIRONMENTAL MITIGATION MEASURES

3.09 Environmental Mitigation Implementation Schedule (EMIS) such as the construction dust, noise, wastewater and waste management shall be performed in accordance with the project EM&A Manual Appendix A requirements.

4 MONITORING RESULTS AND BREACHES OF ENVIRONMENTAL QUALITY CRITERIA

AIR QUALITY MONITORING

4.01 Monitoring results and breaches A/L levels of air quality during the Reporting Period are tabulated in ***Tables 4-1*** and ***4-2*** and the relevant graphical plots are presented in ***Appendix E***.

Table 4-1 Summary of Air Quality Monitoring Results, (μg/m3)

Date	24-hour TSP		Date	1-hour TSP					
				AM1			AM2		
	AM1	AM2		1st hour	2nd hour	3rd hour	1st hour	2nd hour	3rd hour
1-Nov-10	104	155	2-Nov-10	68	89	72	70	94	76
6-Nov-10	75	131	8-Nov-10	62	93	71	70	96	75
12-Nov-10	109	114	13-Nov-10	72	79	83	83	98	91
18-Nov-10	47	127	19-Nov-10	72	69	75	78	81	83
24-Nov-10	61	**196**	25-Nov-10	80	76	74	96	90	88
30-Nov-10	77	75	1-Dec-10	84	71	86	92	90	87
6-Dec-10	99	87	7-Dec-10	87	101	94	96	108	100
11-Dec-10	148	115	13-Dec-10	82	96	87	93	103	98
17-Dec-10	65	55	18-Dec-10	86	77	80	94	88	90
23-Dec-10	85	81	24-Dec-10	69	76	75	78	86	75
28-Dec-10	76	83	28-Dec-10	69	66	73	73	75	71
30-Dec-10	84	88	31-Dec-10	100	103	96	111	124	129
5-Jan-11	50	51	6-Jan-11	68	89	72	80	78	73
11-Jan-11	71	119	12-Jan-11	62	93	71	73	81	80
17-Jan-11	76	87	18-Jan-11	72	79	83	96	98	91
22-Jan-11	120	97	24-Jan-11	72	69	75	86	99	97
28-Jan-11	105	114	29-Jan-11	80	76	74	86	79	81
Average (Range)	**85.4 (47-148)**	**104.4 (51-196)**	**Average (Range)**	**79.0 (62-103)**			**88.4 (70-129)**		

Remarks: Bold indicated Action Level exceedance

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	1	1
	Limit Level	0	0	0

4.02 During the Reporting Period, all measured values were well below the A/L Level for the 1-hour TSP monitoring. However, 1 Action Level exceedance in 24-hour TSP monitoring was recorded at Location AM2 on 24 November 2010. Notification of Exceedance (NOE) has been issued and investigation has concluded that the exceedance was not related to the site activities. Therefore, no corrective action was recommended.

CONSTRUCTION NOISE MONITORING

4.03 Monitoring results and breaches A/L levels of construction noise during the Reporting Period are tabulated in ***Tables 4-3*** and ***4-4*** and the relevant graphical plots are presented in ***Appendix E***.

Table 4-3 Summary of Construction Noise Monitoring Results (Leq30, dB(A))

Date	(*) NM1	(*) NM2
2-Nov-10	62.1	65.6
8-Nov-10	69.5	67.2
13-Nov-10	64.7	67.2
19-Nov-10	66.8	67.0
25-Nov-10	70.1	66.6
1-Dec-10	69.3	67.1
7-Dec-10	69.0	67.3

Date	(*) NM1	(*) NM2
13-Dec-10	67.7	67.1
18-Dec-10	65.3	66.5
24-Dec-10	63.8	65.9
28-Dec-10	67.1	67.8
31-Dec-10	57.0	68.3
6-Jan-11	67.3	67.5
12-Jan-11	66.2	69.3
18-Jan-11	63.1	66.1
24-Jan-11	64.6	68.7
29-Jan-11	63.2	65.1

Remarks: (*) A façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines.

Table 4-4 Summaries of Breaches of Construction Noise A/L Levels

Station	Limit Level	Action Level	Received Date
NM1	**1 (25 Nov 2010)**	Noise complaint	NA
NM2	0		

4.04 As shown in ***Table 4-4***, it was noted that no noise complaint (which is an Action Level exceedance) was received but 1 Limit Level exceedance was recorded on 25 November 2010. Notification of Exceedance (NOE) has been issued and investigation has concluded that the exceedance was not project related due to idling of the site on the monitoring date. No corrective action was therefore required.

WATER QUALITY MONITORING – LOCAL STREAM COURSE

4.05 In this Reporting Period, a total of 39 events of local stream course monitoring were undertaken. Statistical analyses for the monitoring results are summarized in ***Table 4-5*** and the relevant graphical plots are presented in ***Appendix E***.

Table 4-5 Statistics of the Monitoring Results

Statistics	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
Minimum	5.8	8.0	2.0
Average	15.5	12.8	33.8
Maximum	22.3	21.2	387.0

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

Table 4-6 Summaries of Breaches of the Existing Water Quality A/L Levels

Construction Month	No of sample analysis in each Parameter	Exceedance	DO	Turbidity	SS	Total Exceedances in the Month
Nov 2010	13	Action Level	0	0	0	0
		Limit Level	0	3	1	4
		Sub-Total	0	3	1	**4**
Dec 2010	13	Action Level	0	0	0	0
		Limit Level	0	2	1	3
		Sub-Total	0	2	1	**3**
Jan 2011	13	Action Level	0	0	0	0
		Limit Level	0	0	5	5
		Sub-Total	0	0	5	**5**
Total	39	**Action Level**	**0**	**0**	**0**	**0**
		Limit Level	**0**	**5**	**7**	**12**
Percentage of Exceedance in the Quarterly Month			**0.0%**	**0.0%**	**7.7%**	**2.6%**

4.07 As shown in ***Table 4-6,*** a total of 12 Limit Level exceedances were recorded in water quality monitoring during the Reporting Period. The exceeded parameter included 5 Limit Levels exceedances of Turbidity and 7 Limit Levels exceedances of Suspended Solids (SS). The NOEs and the associated investigation reports were issued upon confirmation of the results and construction information

4.08 According to the site information provided by the Contractor, only temporary shoring system and excavation were undertaken during this Reporting Period. All wastewater generated from site was transferred to the de-silting system prior discharged to public sewer system. In viewing that Tin Shui Wai Nullah is sensitive by the seasonal change and large fluctuation of values were obtained during the baseline monitoring. It was concluded that water quality exceedances were not due to the Project and no corrective action was therefore recommended.

OTHER MONITORING AND AUDIT

Landscape and Visual

4.09 Regular landscape and visual audit shall undertake twice a month by the landscape architect. Due to monitoring and audit works for landscaping and visual as part of the EM&A programme was undertaken by others. Hence, no monitoring and audit is presented in this Quarterly EM&A Summary Report.

4.10 During the regular weekly site inspection, it was observed that all the retained and transplanted trees were well protected by site hoarding and fencing erection and relevant Tree Report has been described that all the retained and transplanted trees were in good condition.

5 WASTE MANAGEMENT

5.01 Waste management was performed by an on-site Environmental Officer or an Environmental Supervisor from time to time. A Billing Account (The account number 700947) under the ***Waste Disposal (Charges for Disposal of Construction Waste) Regulation*** has already been assigned on 7 October 2009, a discharge license No. WT00005671-2009 under Section 20 of the ***Water Pollution Control Ordinance*** has been issued. CSCE has also registered as a Chemical Waste Producer with EPD under the Waste Disposal (Chemical Waste) (General) Regulation and the Waste Producer Number assigned is WPN: 5213-511-C3570-01 dated 13 November 2009.

RECORDS OF WASTE QUANTITIES

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

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

5.03 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 5-1*** and ***5-2***. The Monthly Summary Waste Flow Table provided by the Contractor can be found at the relevant EM&A monthly report.

Table 5-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity				Disposal Location
	Nov 10	Dec 10	Jan 11	**Total**	
C&D Materials (Inert) (m^3)	0	0	0	**0**	-
Reused in this Contract (Inert) (m^3)	0	0	0	**0**	-
Reused in other Projects (Inert) (m^3)	0	0	0	**0**	-
Disposal as Public Fill (Inert) (m^3)	1,054	2,636	4,579	**8,269**	Tuen Mun Area 38

Table 5-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity				Disposal Location
	Nov 10	Dec 10	Jan 11	**Total**	
Recycled Metal (kg)	0	0	0	**0**	-
Recycled Paper/Cardboard Packing (kg)	0	0	0	**0**	-
Recycled Plastic (kg)	0	0	2,575	**2,575**	Professional Recycle Services Ltd / Yat Wai Renewable Resources Co. Ltd
Chemical Wastes (kg)	0	0	0	**0**	--
General Refuses (m^3)	3	3	1	**7**	NENT Landfill

5.04 There was no site effluent or surface runoff discharged in the Reporting Period. The Monthly Summary Waste Flow Table provided by the Contractor can found from the relevant EM&A monthly report.

6 SITE INSPECTIONS

6.01 According to the Environmental Monitoring and Audit Manual, regular environmental site inspections had been carried out by ET joined with the Contractor and ER to confirm the environmental performance. During the Reporting Period, 13 events of the joint site inspection was undertaken to evaluate the site environmental performance. No non-compliance was noted but 11 observations were recorded during the site inspections within the Reporting Period. The summarized the findings are presented in ***Table 6-1*** and the site inspection checklists can be found in relevant EM&A monthly report.

Table 6-1 Site Reminders/Observations Found in the Reporting Period

Date	Findings / Deficiencies
2 November 2010	• Dusty access road was observed at Ha Tsuen Pumping Station, the contractor was reminded to provide proper dust mitigation measure to minimize dust generation.
9 November 2010	• NA
16 November 2010	• Free standing chemical containers without drip tray was observed at Ha Tsuen PS, the contractor was reminded to provide drip tray for all chemical containers. • C&D waste cumulated at the site area was observed, the contractor was reminded to clean to maintain the site clean and tidy. • Stagnant water cumulated at Ha Tsuen PS, the contractor was reminded to clean.
22 November 2010	• Nil
30 November 2010	• The contractor was reminded to properly dispose and store the waste chemical container found at Ha Tsuen PS. • The contractor was reminded to remove the empty cement bags found near the site boundary.
7 December 2010	• Nil
14 December 2010	• Sand and mud was observed at the site entrance, the contractor was reminded to clean to maintain the public area around the site area clean and tidy.
21 December 2010	• It was reminded that the Contractor should provide proper impermeable cover to stockpile of materials. • Accumulation of stagnant water was observed on site. The Contractor was reminded to properly clear the water. • Waste plastic barriers were found onsite. The contractor was reminded to properly dispose the construction waste generated from the site.
28 December 2010	• Nil
4 January 2011	• Nil
11 January 2011	• Nil
20 January 2011	• Stockpile without cover was observed, the contractor was reminded to provide proper mitigation measure to prevent dust generation.
26 January 2011	• Nil

6.02 In general, it is reminded that good housekeeping practice should be maintained. During wet season, implement water mitigation measures to eliminate any accumulation of stagnant water on site is also stressed. Overall, the environmental performance of the Project was considered satisfactory.

7 NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

NON-COMPLIANCE

7.01 Exceedances recorded in this reporting period were summarized in Section 4. No non-compliance or deficiency was identified during regular site inspection and environmental audit. No associated remedial actions were recommended.

ENVIRONMENTAL COMPLAINT

7.02 No documented noise, air quality or water quality was received by the Contractor or ER or EPD. The statistical summary table of environmental complaint is presented in ***Table 7-1***.

Table 7-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 30 November 2010	0	0	NA
1 – 31 December 2010	0	0	NA
1 – 31 January 2011	0	0	NA

NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

7.03 No notifications of summons and successful prosecutions were recorded during the Reporting Period. No associated remedial actions were recommended. The statistical summary table of environmental summons and successful prosecution are presented in ***Tables 7-2 and 7-3***.

Table 7-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 30 November 2010	0	0	NA
1 – 31 December 2010	0	0	NA
1 – 31 January 2011	0	0	NA

Table 7-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 30 November 2010	0	0	NA
1 – 31 December 2010	0	0	NA
1 – 31 January 2011	0	0	NA

8 IMPLEMENTATION STATUS OF MITIGATION MEASURES

8.01 The environmental mitigation measures that recommended in the Environmental Monitoring and Audit Manual covered the issues of dust, noise and waste.

8.02 The Contractor had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented during the Reporting Period are summarized in ***Table 8-1***.

Table 8-1 Environmental Mitigation Measures Implementation in the Reporting Period

Issues	Environmental Mitigation Measures
Water Quality	• Wastewater were appropriately treated by treatment facilities; • Drainage channels were provided to convey run-off into the treatment facilities; • Drainage systems were regularly and adequately maintained. • De-silting facility was provided to treat the discharged water; also the treated water is reused for spraying the road surface; • Exposed stockpiles and exposed soil surfaces were covered with tarpaulin or impervious sheets to minimise dust emission; • The stockpiles of materials were placed in the locations away from the drainage channel so as to avoid releasing materials into the channel; • Wheel washing facilities should has been provided at site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles; • Provision of site drainage systems and treatment facilities would be required to minimize the water pollution; • A discharge licence was applied from EPD for discharging effluent from the construction site; • A licensed waste collector have been applied from EPD; • Illegal disposal of chemicals should be strictly prohibited; and • Registration as a chemical waste producer have been applied from EPD
Air Quality	• Regular watering to reduce dust emissions from all exposed site surface, particularly during dry weather; • Frequent watering for particularly dusty construction areas and areas close to air sensitive receivers; • Cover all excavated or stockpile of dusty material by impervious sheeting or sprayed with water to maintain the entire surface wet; • Public roads around the site entrance/exit had been kept clean and free from dust; • Tarpaulin covering of any dusty materials on a vehicle leaving the site; • Spanker of water spray system is provided at haul road to reduce dust emissions during the vehicles passing through the haul road' • The vehicle speed within the site is limited to 5km/hr; • Wheel washing facilities have been provided at the site exit
Noise	• Good site practices to limit noise emissions at the sources; • Use of quite plant and working methods according to EP-329/2009; • Use of site hoarding with noise barriers to screen noise at ground level of NSRs; • Use of shrouds/temporary noise barriers to screen noise from relatively static PMEs according to EP-329/2009 • Use of temporary noise barrier with surface density 7kg/m2 to be assumed that the noise reduction is 10 dB(A) for stable plants and 5dB(A) for movable plant in accordance with approved EIA Report Appendix 4A Table 4A3.2; • Idle equipment are turned off or throttled down; • No construction works shall be undertaken during school examination period in the Ha Tsuen Pumping Station according to EP-329/2009; and • Alternative use of plant items within one worksite, where practicable.

Issues	Environmental Mitigation Measures
Waste and Chemical Management	• Excavated material should be reused on site as far as possible to minimize off-site disposal. Scrap metals or abandoned equipment should be recycled if possible; • Waste arising should be kept to a minimum and be handled, transported and disposed of in a suitable manner; • The Contractor should adopt a trip ticket system for the disposal of C&D materials to any designed public filling facility and/or landfill; and • Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. • 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; • To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce; • Any unused chemicals or those with remaining functional capacity should be recycled; • Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste utilised as fill material to minimise the quantity of waste to be disposed of to landfill; • Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.
Landscape and Visual	The landscape and visual impacts monitoring results and findings will be presented and submitted in the stand-alone document.
General	• The site was generally kept tidy and clean.

9 CONCLUSIONS AND RECOMMENTATIONS

CONCLUSIONS

9.01 This is the **4th** quarterly EM&A summary report under Environmental Permit No.EP327/2009 for the *Expansion of Ha Tsuen Sewage Pumping Station*, covering the period from **1 November 2010** to **31 January 2011**.

9.02 In this reporting period, 1 Limit Level exceedance in construction noise monitoring and 1 Action Level exceedance in 24-hour TSP monitoring was recorded. Moreover, there were 12 Limit Level exceedances recorded in water quality monitoring. Investigation has completed and it was concluded that the exceedances are not related to the works under the Project and no corrective actions were therefore recommended.

9.03 The monitoring and audit works for landscaping and visual was undertaken by others, hence no result is presented in this summary Report. The landscape and visual impacts monitoring findings will be submitted as a stand-alone document separately. During the regular weekly site inspection, it was observed that all the retained and transplanted trees were well protected by site hoarding and fencing erection and relevant Tree Report has been described that all the retained and transplanted trees were in good condition.

9.04 A total of 13 occasions of joint site inspection was undertaken to evaluate the site environmental performance. No non-compliance was noted but 11 observations were recorded during the site inspections within the Reporting Period.

9.05 No documented complaint, notifications of summons and successful prosecutions were received during the Reporting Period. No adverse environmental impacts were observed during the weekly site inspection and environmental audit of the Reporting Period, indicating the implemented mitigation measures for air quality, construction noise and water quality were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

9.06 No site inspection was undertaken by EPD, the Agriculture, Fisheries and Conservation Department (AFCD) and Leisure and Cultural Services Department (LCSD) in this Reporting Period.

RECOMMENDATIONS

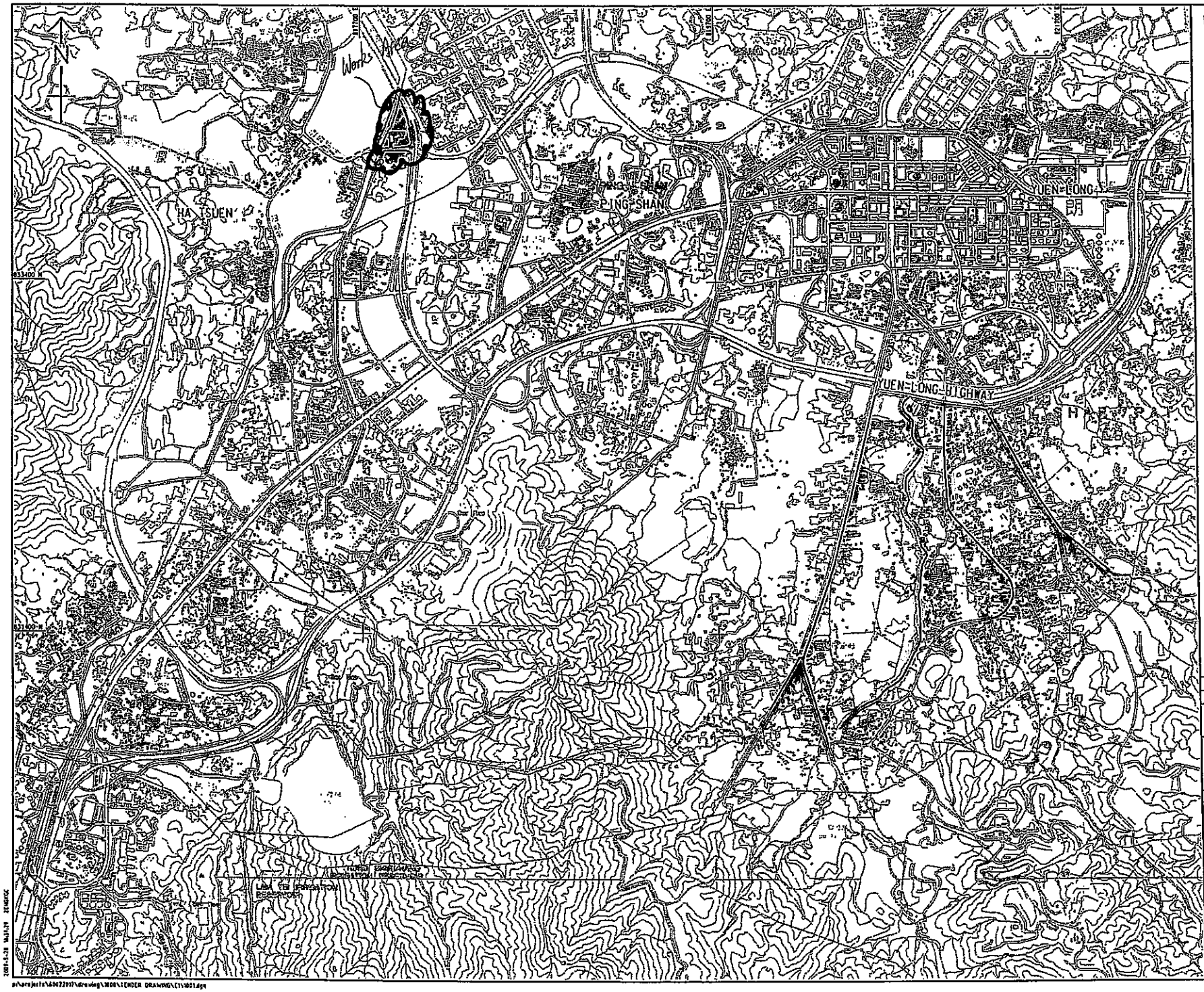
9.07 During dry season, special attention should be paid to the dust mitigation measures to avoid fugitive dust emissions from loose soil surface or haul road. Nevertheless, mitigation measures implemented for control the surface runoff including wheel wash facilities, covering of the loose soil surface or stockpile with tarpaulin sheet, etc., should be properly maintained to prevent any muddy or sandy runoff from the loose soil surface overflow on the site boundary; and also with construction noise and other environmental issues stipulated in the Environmental Monitoring and Audit Manual.

9.08 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.

9.09 According to Clause 3.4 of the Environmental Permit No. EP-327/2009/A, the Contractor should cease all construction activities in Ha Tsuen Pumping Station during the Public Examination period of the school nearby.

Appendix A

Site Layout Plan



LEGEND:

- SEWERAGE PIPE
- RISING MAIN
- SEWAGE PUMPING STATION

-	TENDER DRAWING	DSD/ACTS	05.09

DRAINAGE SERVICES DEPARTMENT,
THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION

YUEN LONG AND KAM TIN SEWERAGE AND SEWAGE DISPOSAL - CONSTRUCTION OF YUEN LONG SOUTH BRANCH SEWERS AND EXPANSION OF HA TSUEN SEWAGE PUMPING STATION

LOCATION PLAN

AECOM

DRG NO. 60022017/C1/1001

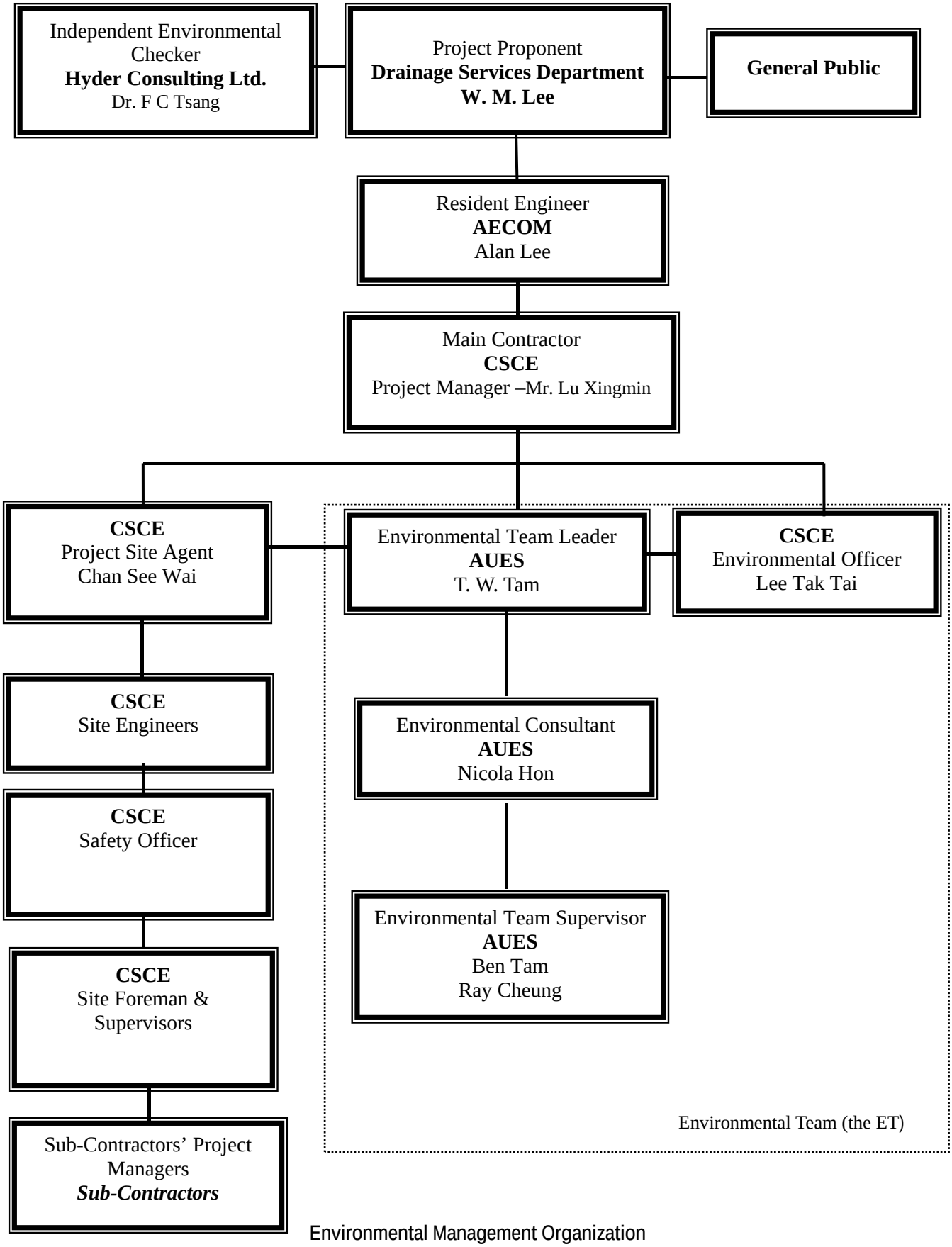
CONTRACT NO. DC/2009/08

SCALE AT A1 1 : 10000

UNITS METRES

Appendix B

On-site environmental management



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. W. M. Lee	--	2827-8700
AECOM	Engineer's Representative	Mr. Alan Lee	9706 9568	2472 0132
Hyder	Independent Environmental Checker	Dr. F C Tsang	2911 2730	2805 5028
CSCE	Project Manager	Mr. Lu Xingmin	2472 0113	2472-0229
CSCE	Site Agent	Mr. Chan See Wai	2472 0113	2472-0229
CSCE	Site Engineer	Mr. Poon Kwong Keung	2472 0113	2472-0229
CSCE	Environmental Officer	Mr. Lee Tak Tai	2472 0113	2472-0229
CSCE	Safety Officer	Mr. Ng Ka Po	2472 0113	2472-0229
AUES	Environmental Team Leader	Mr. T. W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959-6059	2959-6079
AUES	Assistance Environmental Consultant	Mr. Ray Cheung	2959-6059	2959-6079
AUES	Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079

Legend:

DSD (Employer) – Drainage Services Department

AECOM (Engineer) – AECOM

CSCE (Main Contractor) – China State Construction Engineering (Hong Kong) Ltd

Hyder (IEC) – Hyder Consulting Limited

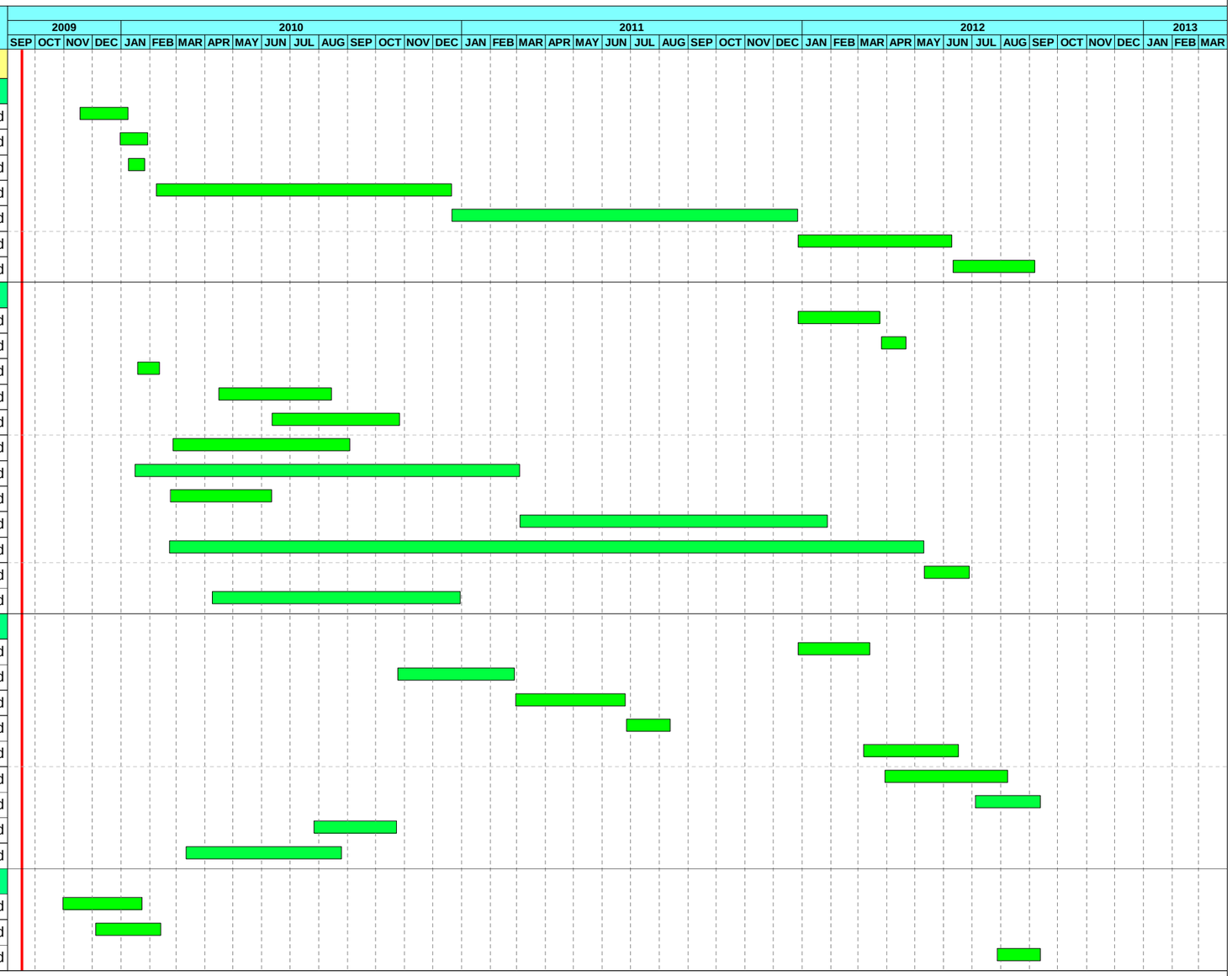
AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

Master construction program

Contract No. DC/2009/08
Construction of Yuen Long South Branch Sewers and Expansion of HTS Pumping Station

Activity ID	Description	Original Duration	Early Start	Early Finish	Total Float
Ha Tsuen Area					
Pumping Station					
H/200020	Site investigation and report	42	18NOV09	08JAN10	67d
H/200030	Install acoustic screen	25	31DEC09	29JAN10	154d
H/200040	Installation of monitoring point	15	09JAN10	26JAN10	157d
H/200050	Prebored H-piles	210	08FEB10	21DEC10	147d
H/200070	Substructure	252 *	22DEC10	27DEC11	147d
H/201800	Superstructure	84	28DEC11	09JUN12	158d
H/202100	Finishes	75	11JUN12	06SEP12	158d
Rising Main					
H/300010	Gang B: RM from station to extg valve chamber	70	28DEC11	24MAR12	192d
H/300020	Testing of RM bet station and extg valve chamber	20	26MAR12	21APR12	192d
H/300200	Trial pit to locate existing sleeve at nullah	21	19JAN10	11FEB10	116d
H/300210	Rising Main under existing nullah	100	16APR10	14AUG10	133d
H/300400	Rising Main bet ch274 to ch298 & washout chamber	112	12JUN10	26OCT10	4d
H/300500	Rising Main between ch0 to ch89	155	26FEB10	03SEP10	116d
H/300600	Pipe jacking between ch385 to ch815	330 *	16JAN10	04MAR11	96d
H/300665	Pipe jacking between ch298 to ch385	88	23FEB10	11JUN10	4d
H/300800	Gang A : RM between ch815 to ch1002	264 *	05MAR11	28JAN12	96d
H/300900	Gang A : RM between ch1002 to ch1585	651 *	22FEB10	10MAY12	13d
H/301430	Testing of RM bet ch1787 to extg valve chamber	40	11MAY12	28JUN12	13d
H/302000	Pipe jacking between ch 1585 to ch1787.2	219 *	09APR10	30DEC10	359d
Road and Drain					
H/400020	Concrete pipe between extension to FM17	60	28DEC11	13MAR12	153d
H/400030	Sewage between FM17 to FM15 and manholes	100 *	25OCT10	26FEB11	169d
H/400050	Concrete pipe between M1 to FM16	50	28FEB11	25JUN11	169d
H/400090	Manhole M1 and sewage connection	40	27JUN11	12AUG11	169d
H/400100	Storm water drain	36	07MAR12	16JUN12	153d
H/400110	Power supply to pumping station	60	30MAR12	08AUG12	153d
H/400115	Roadworks	60 *	05JUL12	12SEP12	153d
H/400135	Pipe jacking between FM16 to existing FM7	74 *	27JUL10	23OCT10	169d
H/410010	Pipe jacking between FM16 to FM15	89 *	12MAR10	25AUG10	169d
Landscaping					
H/600110	Tree transplant at HTSPS Extension	70	31OCT09	23JAN10	7d
H/600120	Tree transplant at Ping Ha Road	70	05DEC09	12FEB10	158d
H/600130	Landscaping finishes at HTSPS	40	28JUL12	12SEP12	153d



Start date	17SEP09
Finish date	02JUL15
Run date	05FEB10
Project name	WP11
Page number	1A
c Primavera Systems, Inc.	

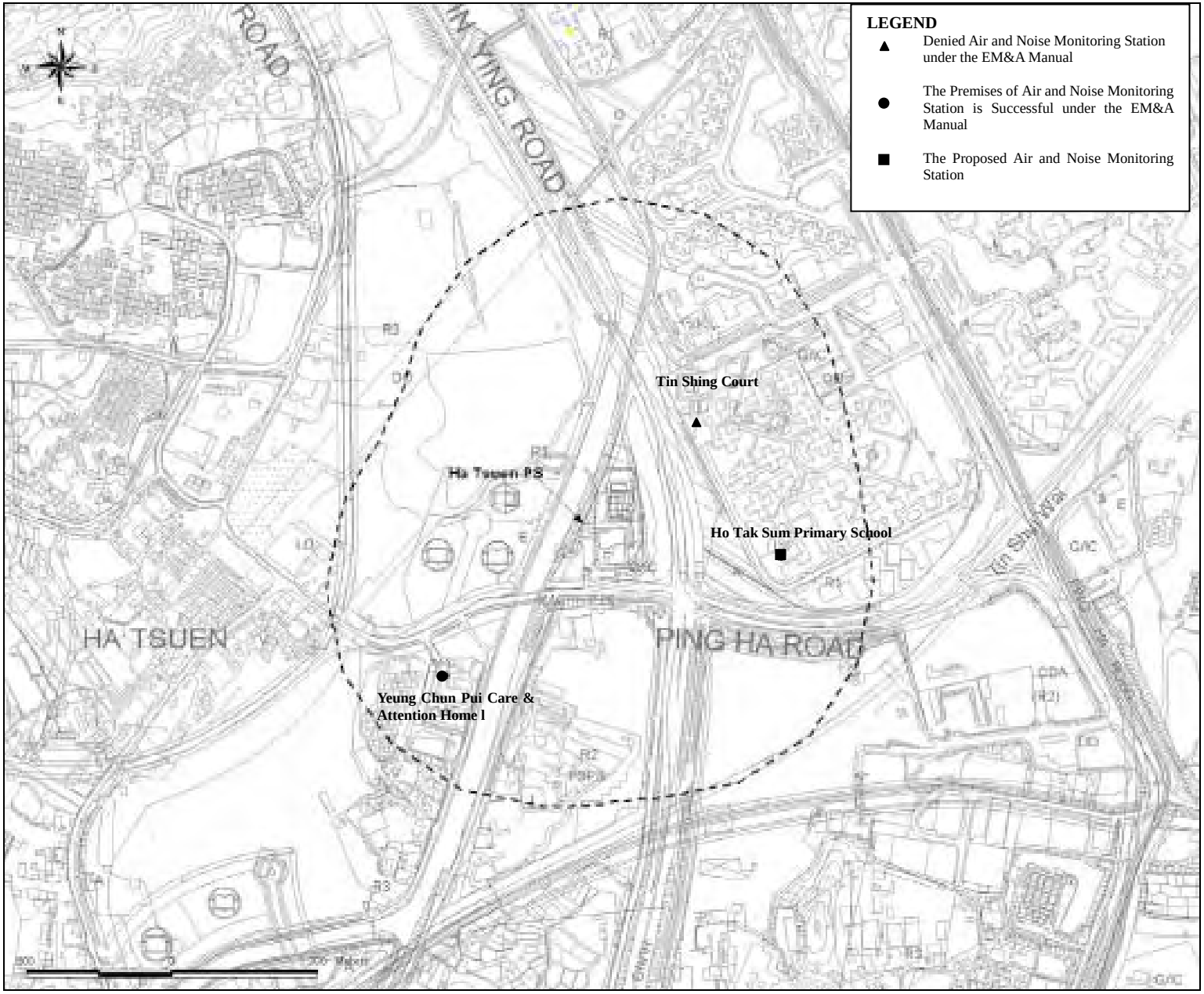
Early bar
Critical bar
Summary bar
Start milestone point
Finish milestone point

Initial Works Programme - Rev 02 (Ha Tsuen Area)

中國建築 CHINA STATE CONSTRUCTION

Appendix D

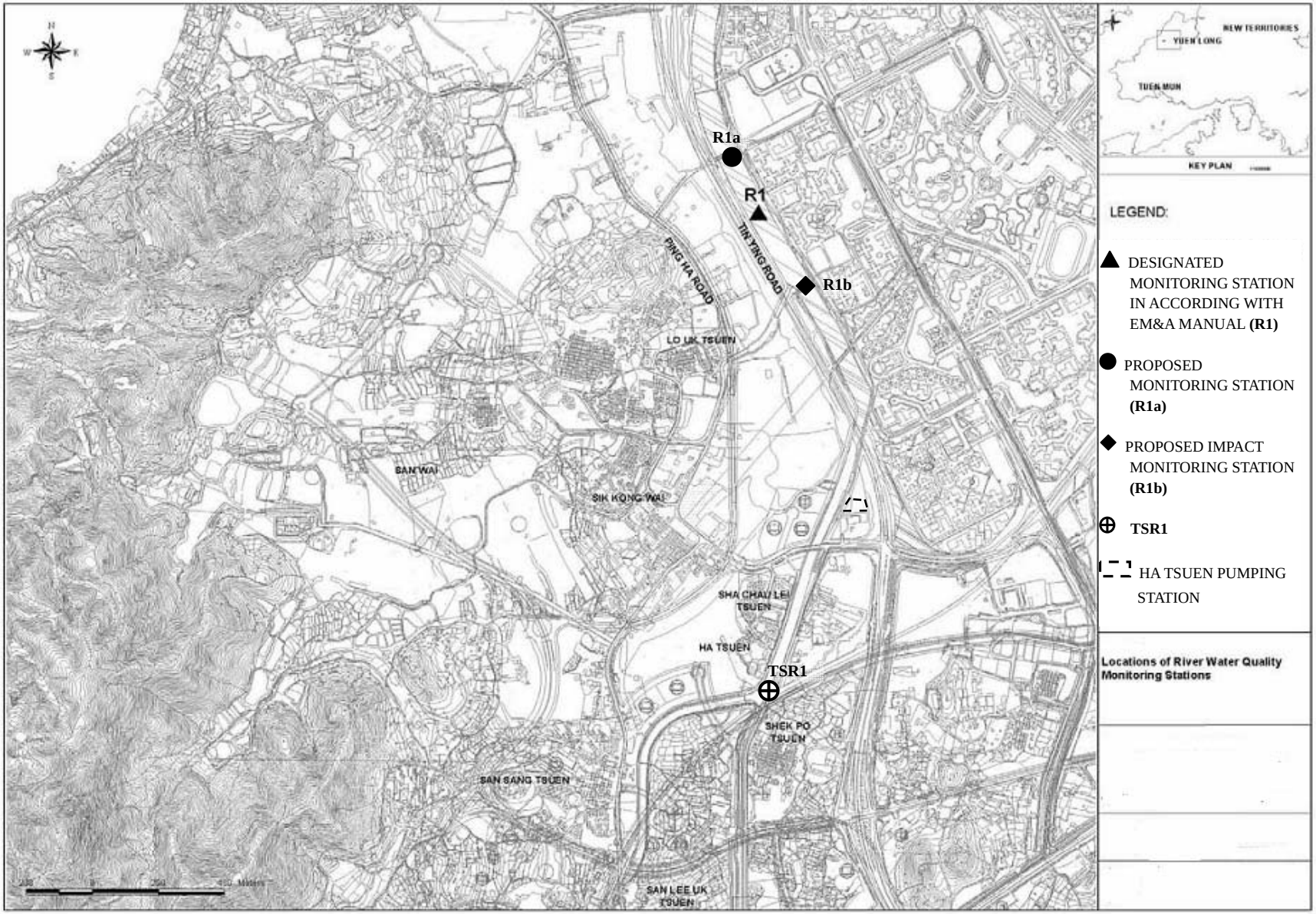
Monitoring Location of EM&A Programme


LEGEND
Denied Air and Noise Monitoring Station under the EM&A Manual
The Premises of Air and Noise Monitoring Station is Successful under the EM&A Manual
The Proposed Air and Noise Monitoring Station
Tin Shing Court
Ha Tsuen PS
Ho Tak Sum Primary School
Yeung Chun Pui Care & Attention Home l
HA TSUEN
PING HA ROAD
IN YING ROAD

DSD Contract No. DC/2009/08 – Construction of Yuen Long South Branch Sewers And Extension of Ha Tsuen Sewage Pumping Station

Proposed Water Quality Monitoring Location

AUES

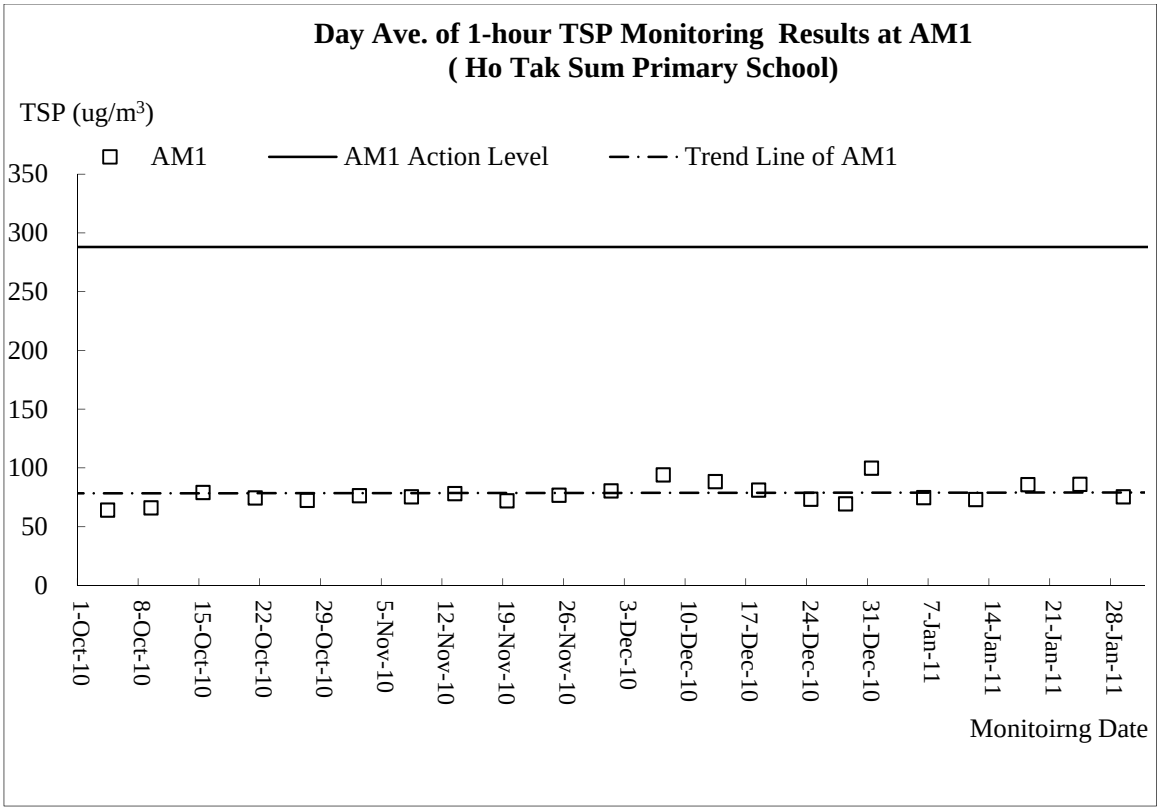


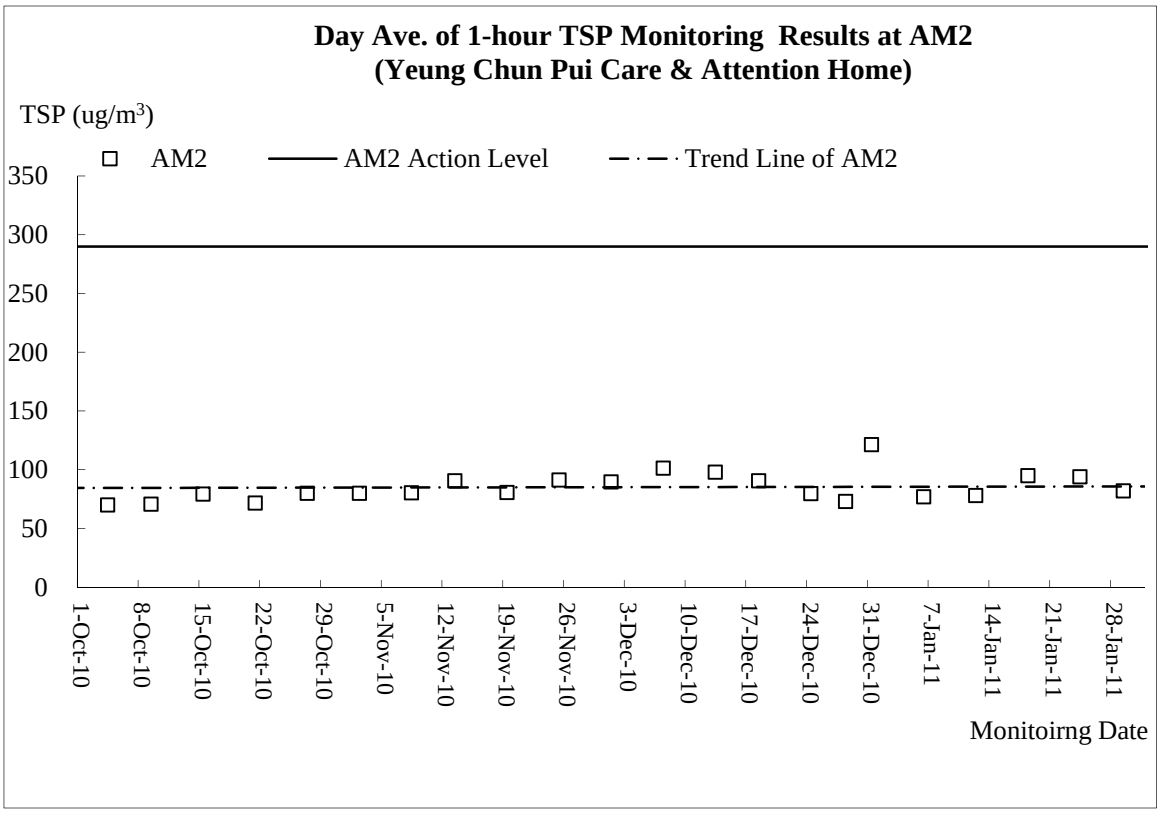
Appendix E

Graphic Plot of

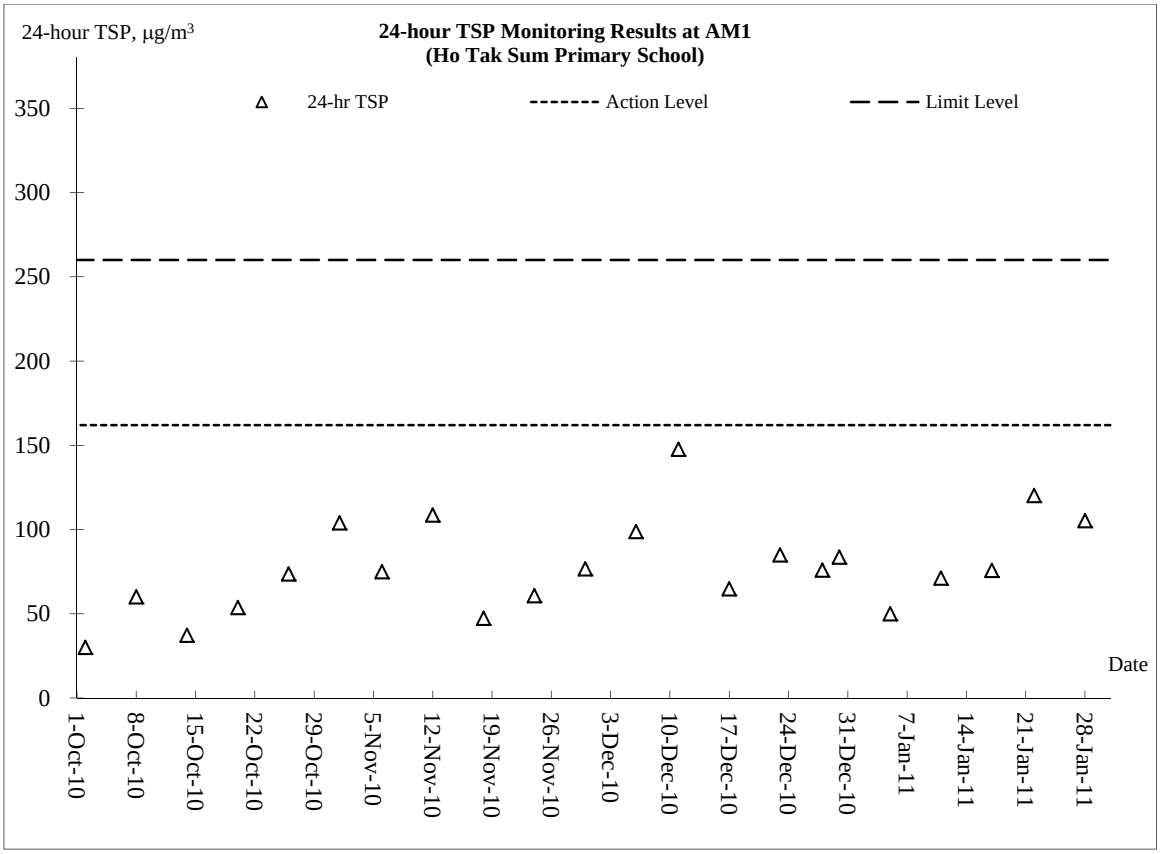
- **Air Quality**
- **Construction Noise**
- **Water Quality**

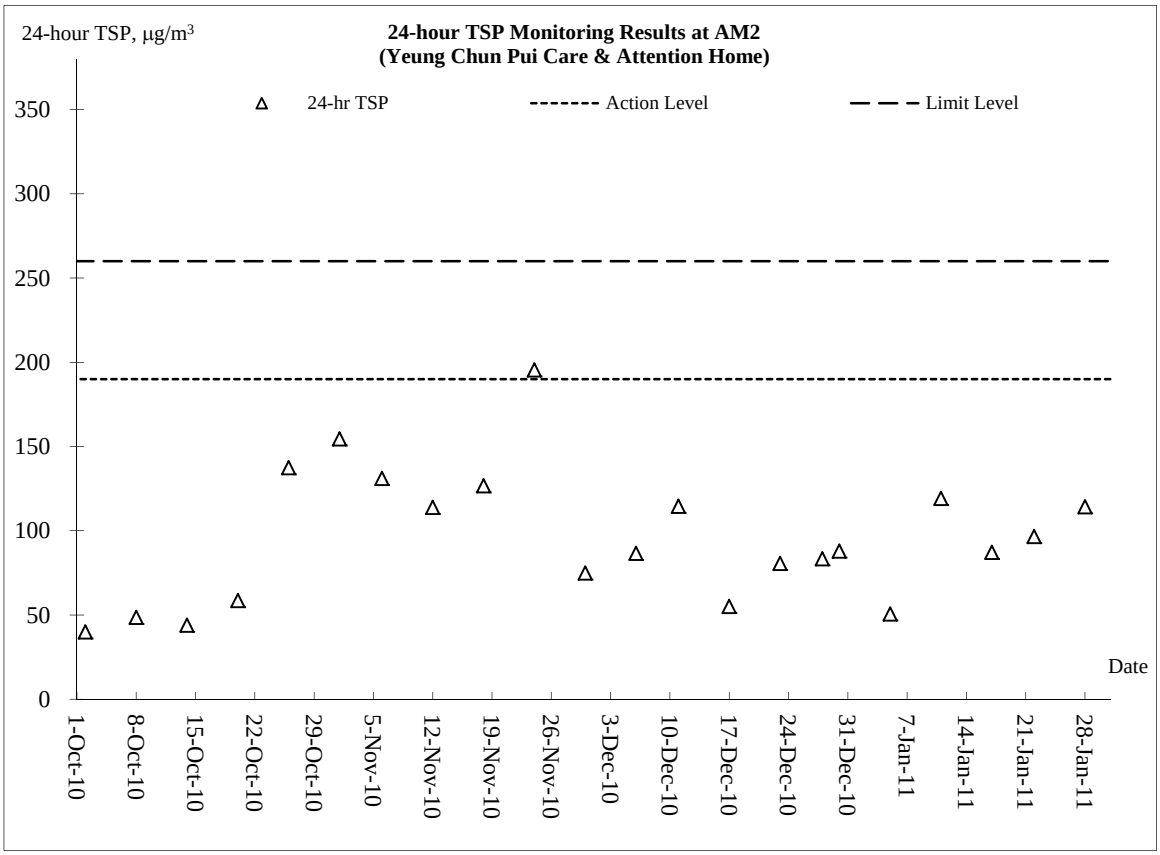
Air Quality – One Hour TSP



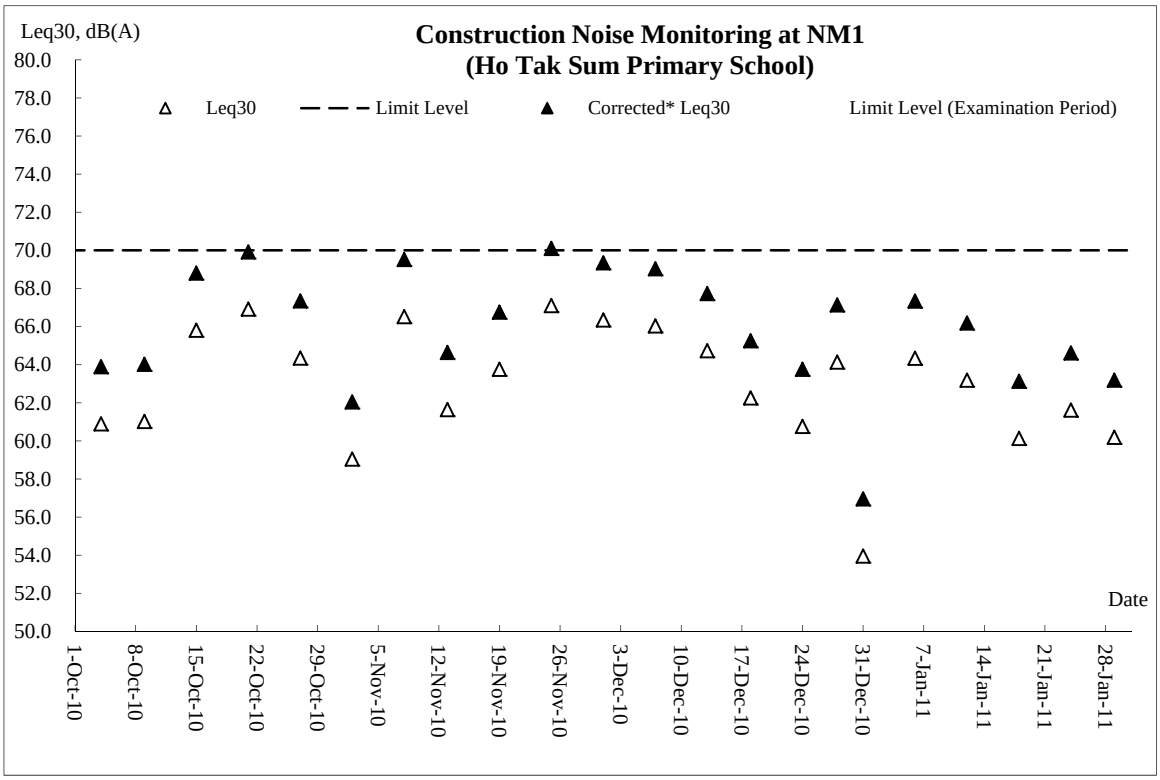


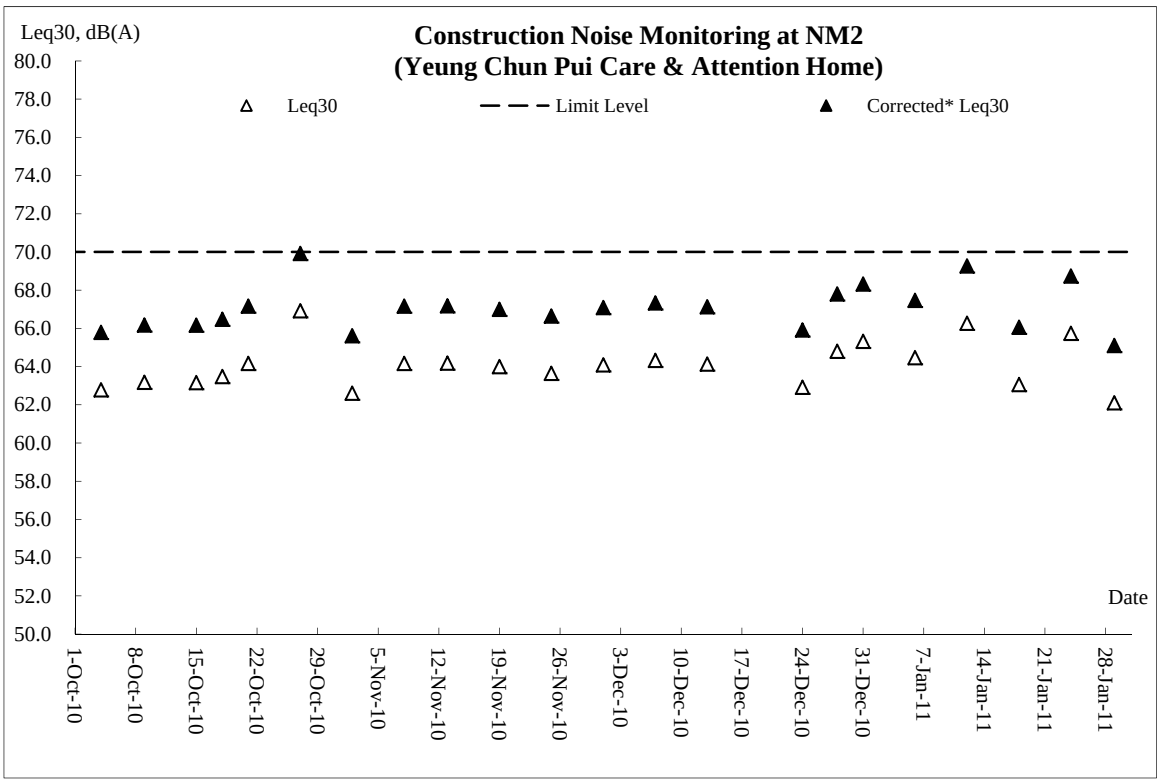
Air Quality – 24-our TSP



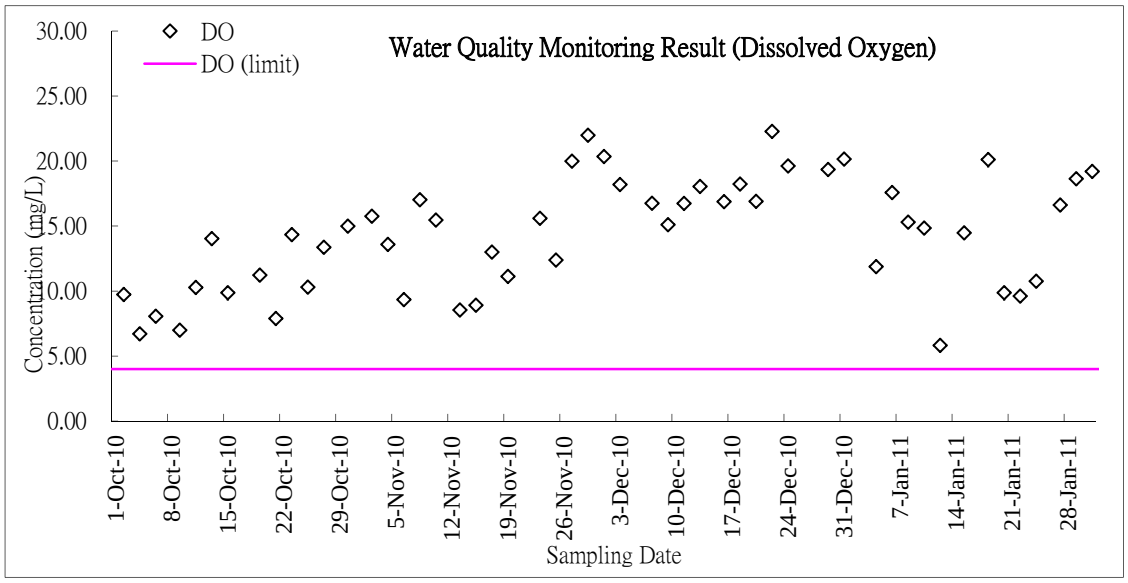


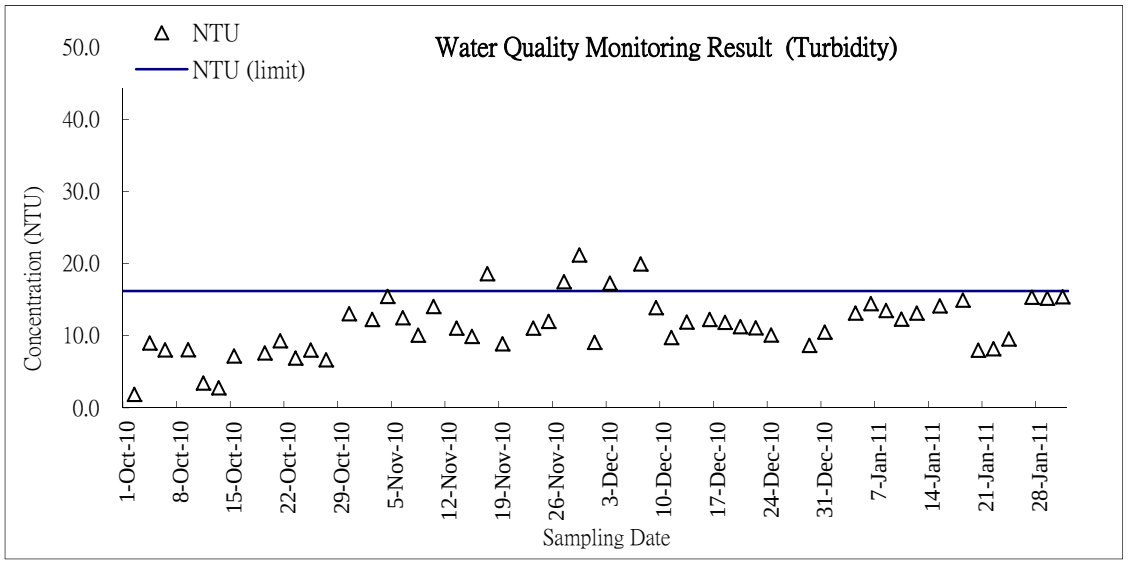
Construction Noise

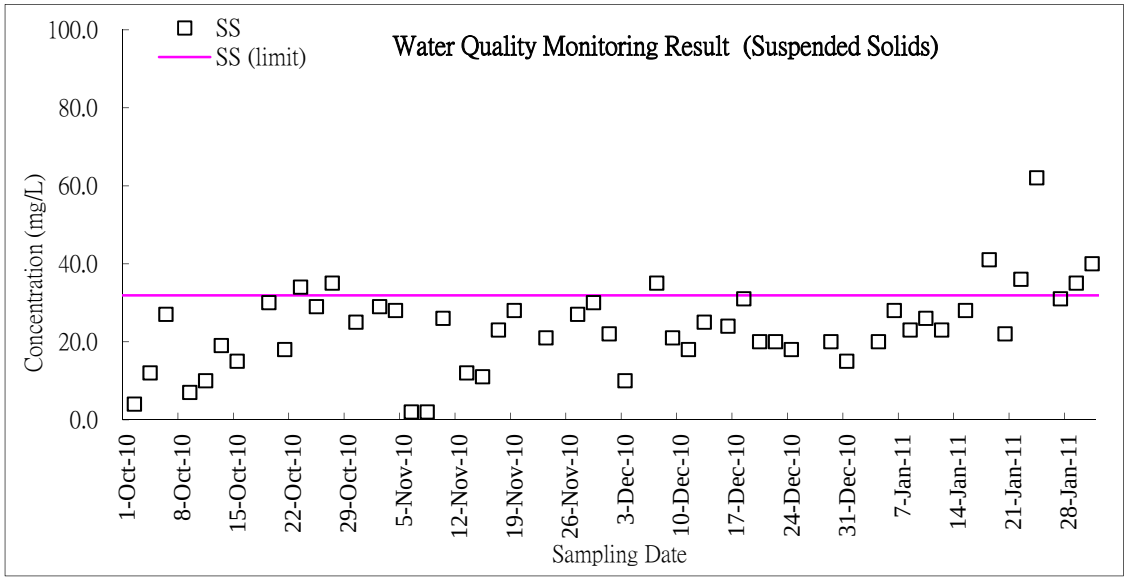




Water Quality (R1b)







Appendix F

Meteorological information

Meteorological Data Extracted from HKO – November 2010

Date		Weather	Total Rainfall (mm)	Lau Fau Shan Weather Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Nov-10	Mon	Fine and dry.	0	19.8	8.9	57.2	N
2-Nov-10	Tue	Moderate to fresh east to northeasterly winds.	0	21.6	15.9	63.5	E
3-Nov-10	Wed	Mainly fine and dry.	0	21.1	12.5	65	E/NE
4-Nov-10	Thu	Cloudy with one or two light rain patches.	3.2	18.7	11.3	75	NE
5-Nov-10	Fri	Overcast with rain. Visibility rather low.	24.3	17.1	8.2	93.5	E
6-Nov-10	Sat	Moderate north to northeasterly winds.	14.7	18.1	7.5	92.5	NE
7-Nov-10	Sun	Fine and dry.	0	21.6	5.5	76.5	N/NE
8-Nov-10	Mon	Moderate north to northeasterly winds.	0	22.1	9.1	66.2	E/NE
9-Nov-10	Tue	Fine and dry.	0	21.3	14.2	51.7	E/NE
10-Nov-10	Wed	Sunny periods. Visibility relatively low.	0	21.6	8.2	61.7	E/NE
11-Nov-10	Thu	Mainly cloudy.	0	20.5	7.5	58.7	E/SE
12-Nov-10	Fri	Moderate easterly winds, occasionally fresh	0	22.3	22.3	12.2	E/SE
13-Nov-10	Sat	Sunny periods.	0	23.5	23.5	9	E
14-Nov-10	Sun	Moderate northeasterly winds.	Trace	24.6	24.6	12	E
15-Nov-10	Mon	Visibility relatively low.	Trace	24.8	24.8	11.1	E/NE
16-Nov-10	Tue	Mainly fine.	Trace	21.7	12	71.2	E/NE
17-Nov-10	Wed	Some haze.	0	19.3	7.8	71.5	E/NE
18-Nov-10	Thu	Moderate east to northeasterly winds.	0	21.4	7.7	70.7	E/NE
19-Nov-10	Fri	Mainly fine with some haze.	0	20.9	9	73.2	N/NE
20-Nov-10	Sat	Moderate east to northeasterly winds.	0	20.3	8	70	E/NE
21-Nov-10	Sun	Fine and dry	0	21.1	9	79	E/SE
22-Nov-10	Mon	Moderate east to northeasterly winds	0	22.1	12.2	75	N
23-Nov-10	Tue	Mainly fine and dry in the afternoon.	Trace	20.5	10	67.5	E/NE
24-Nov-10	Wed	Mainly fine.	0	20.5	11	71	E/NE
25-Nov-10	Thu	Fine and dry apart from some haze.	0	20.4	15	62	NE
26-Nov-10	Fri	Fine and dry.	0	19.2	7.7	54	E
27-Nov-10	Sat	Fine apart from some haze.	0	19.9	8.2	72	E/NE
28-Nov-10	Sun	Moderate east to northeasterly winds.	0	21.7	9.5	66	E/NE
29-Nov-10	Mon	Mainly fine but hazy.	0	20.5	11.5	76.7	SE
30-Nov-10	Tue	Moderate northeasterly winds.	0	21	11.5	76.5	N/NW

Meteorological Data Extracted from HKO – December 2010

Date		Weather		Lau Fau Shan Weather Station			
			Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Dec-10	Wed	Light to moderate northeasterly winds.	0	19.9	10.2	67.5	E/NE
2-Dec-10	Thu	Mainly fine apart from some haze.	0	20.7	8	74	E/SE
3-Dec-10	Fri	Fine and dry apart from some haze.	0	20.1	13.5	58.5	E/NE
4-Dec-10	Sat	Light winds	0	20.7	11.2	58.5	E
5-Dec-10	Sun	Hazy with sunny periods.	0	21.5	8.5	62.5	E/SE
6-Dec-10	Mon	Fresh northerly winds	0	23.1	12.8	65	N/NE
7-Dec-10	Tue	Fine and very dry.	0	17.8	28.5	49.5	NE
8-Dec-10	Wed	Moderate to fresh northerly winds	0	16.2	17	33.7	N
9-Dec-10	Thu	Mainly cloudy with mist.	0	17	10.7	28.2	E/SE
10-Dec-10	Fri	Moderate northeasterly winds	0	19.7	11.2	68.7	E/NE
11-Dec-10	Sat	There will be coastal fog.	0	19.9	10.6	70	E
12-Dec-10	Sun	Light to moderate northeasterly winds	Trace	20.7	14.5	79.5	E
13-Dec-10	Mon	Fresh easterly winds, strong over offshore waters.	Trace	22.5	8.2	83	E/NE
14-Dec-10	Tue	Cloudy with a few rain patches later.	Trace	21.7	9.1	79.7	E/NE
15-Dec-10	Wed	Cloudy with occasional rain.	12.9	14.8	18.5	86	E
16-Dec-10	Thu	Moderate to fresh northerly winds.	5.3	7.8	38.5	74	N/NE
17-Dec-10	Fri	Fine and very dry.	0	8.3	14.7	47.2	N/NE
18-Dec-10	Sat	Light winds	0	12	11	57	E/SE
19-Dec-10	Sun	Fine and dry apart from some haze.	0	17.1	10.1	68.7	W/SW
20-Dec-10	Mon	Fine and dry but hazy.	0	20	9.7	73.5	W/SW
21-Dec-10	Tue	Fine but hazy. Light winds.	0	20.1	9.7	70.5	W/SW
22-Dec-10	Wed	Fine and dry.	0	18.9	12.7	62	E/NE
23-Dec-10	Thu	Mainly fine and dry apart from some haze.	0	17.1	9.5	62	E/SE
24-Dec-10	Fri	Mainly fine and dry.	0	19.4	12.1	67	E
25-Dec-10	Sat	Holiday					
26-Dec-10	Sun	Holiday					
27-Dec-10	Mon	Holiday					
28-Dec-10	Tue	Light to moderate northeasterly winds.	0	13.7	10	62	SE
29-Dec-10	Wed	Fine and very dry.	0	15.5	10.8	66.5	E/SE
30-Dec-10	Thu	Moderate to fresh northerly winds	0	17.1	15.5	61	N/NE
31-Dec-10	Fri	Fine and very dry.	0	14.4	16.2	31	NE

Meteorological Data Extracted from HKO – January 2011

Date		Weather	Total Rainfall (mm)	Lau Fau Shan Weather Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Jan-11	Sat	Holiday					
2-Jan-11	Sun	Holiday					
3-Jan-11	Mon	Moderate northeasterly winds	Trace	11.3	17.5	65	NE
4-Jan-11	Tue	Mainly cloudy.	1.2	8.9	12.5	87.5	E/NE
5-Jan-11	Wed	Cloudy at first	0	12.6	9.5	77.5	N
6-Jan-11	Thu	Moderate to fresh northerly winds.	Trace	11.4	18.7	70.5	N
7-Jan-11	Fri	sunny periods	0	9.4	16.5	56.7	NE
8-Jan-11	Sat	Mainly fine apart from some haze.	0	11.7	9.5	57	E/NE
9-Jan-11	Sun	Very cold and cloudy.	0	13.8	18.5	50.7	N
10-Jan-11	Mon	Fresh north to northeasterly winds.	0	11.8	14.4	45.7	N/NE
11-Jan-11	Tue	Cold and cloudy.	Trace	8.3	19.5	61	N/NE
12-Jan-11	Wed	Moderate north to northeasterly winds.	4.2	6	10.5	88.5	N/NE
13-Jan-11	Thu	Mainly fine and dry.	Trace	11.3	9	73.7	E/NE
14-Jan-11	Fri	Cold in the morning.	0	15.2	10	71.5	W/SW
15-Jan-11	Sat	Moderate east to northeasterly winds.	0	12.4	31.5	57	N
16-Jan-11	Sun	It will be dry.	0	10.9	12.5	56.5	N/NE
17-Jan-11	Mon	Moderate east to northeasterly winds, freshening later.	0	10.4	12.2	56.3	E/NE
18-Jan-11	Tue	Mainly fine apart from some haze	0	15.7	12.2	60	E/NE
19-Jan-11	Wed	Moderate east to northeasterly winds.	0	14.7	13.7	65.2	E/NE
20-Jan-11	Thu	Fine and dry apart from some haze.	0	15.3	14.6	66.2	N
21-Jan-11	Fri	Moderate northeasterly winds	0	12	12	60.7	E/NE
22-Jan-11	Sat	Rather cool in the morning.	0	11.2	12.5	58.2	N/NW
23-Jan-11	Sun	Cold and cloudy.	0	14.4	14.5	57.7	N/NW
24-Jan-11	Mon	Fresh north to northeasterly winds.	0	12.4	14.5	57	NE
25-Jan-11	Tue	sunny periods	0	13.5	10.2	63	NE
26-Jan-11	Wed	There will also be haze.	0	13.7	11	68.7	SW
27-Jan-11	Thu	Moderate northerly winds, fresh offshore.	0	15.8	11.5	77.2	E/NE
28-Jan-11	Fri	Mainly cloudy.	0	14.6	15.2	67.2	N/NE
29-Jan-11	Sat	Mainly fine	0	12	14.2	57.5	N
30-Jan-11	Sun	Moderate northeasterly winds.	0	11	13.7	47	N
31-Jan-11	Mon	Dry with some haze.	Trace	12.4	14.7	47	NE