

JOB NO.: TCS/00462/08

VERSION NO. 2

DRAINAGE SERVICES DEPARTMENT CONTRACT NO. DE/2005/05

SUPPLY AND INSTALLATION OF E&M EQUIPMENTS FOR NAM SANG WAI, SHA PO AND KAM TIN SEWAGE PUMPING STATIONS

MONTHLY ENVIRONMENTAL MONITORING & AUDIT (EM&A) REPORT FOR FEBRUARY 2010 (No. 13)

PREPARED FOR

REC ENGINEERING COMPANY LIMITED

Quality Index Date 9 March 2010	Reference No. TCS00462/08/600/R0042v2	Certified By T W Tam	Verified By Dr. Anne F Kerr
		Jam	Action
		Environmental Team Leader	Independent Environmental Checker

Version No.	Date	Remarks
1	8 March 2010	First Submission
2	9 March 2010	Amended against IEC's comments on 9 March 2010.

This report has been prepared by Action-United Environmental Services & Consulting with all reasonable skill, care and diligence within the terms of the Agreement with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

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EXECUTIVE SUMMARY

- ES01. REC Engineering Company Limited has been awarded the DSD Contract No.: DE/2005/05 Supply and Installation of E&M Equipments for Nam Sang Wai, Sha Po and Kam Tin Sewage Pumping Stations. The Project requires an Environmental Monitoring and Audit (EM&A) program to be implemented by an Environmental Team (ET) throughout the contract period in accordance with the requirements as stated in the Environmental Permit (EP-220/2005), EIA Report, EM&A Manual (under the DC/2005/02 Contract – Designated Element) and the Particular Specifications (PS).
- ES02. Action-United Environmental Services and Consulting (AUES) has been commissioned by REC Engineering Company Limited (the Contractor) to be the Environmental Team (ET) to implement the EM&A program throughout the construction period.
- ES03. From the approved Baseline Monitoring Report (R0003 Revision 3), three nearest monitoring locations (AM5, AM6 and AM7) under the Contract DC/2005/02 would be adopted as the representative monitoring stations for this Project (Contract No.: DE/2005/05) which were agreed by the Engineer's Representative (ER) and the Independent Environmental Checker (IEC).
- ES04. This is the **thirteen (13th)** Monthly Environmental Monitoring and Audit (EM&A) Report for **February 2010** presenting the EM&A program conducted from **1 to 28 February 2010** for the Contract No.: DE/2005/05. The EM&A program in **February 2010** covered air quality, construction noise and waste management only.
- ES05. Substantial completion of works had been certified by the Engineer's Representative as on 3 February 2010 and the EM&A programme was completed on 28 February 2010 upon receiving the notification. Therefore, this report is served as the last monthly EM&A report of the Project.

BREACH OF ACTION AND LIMIT (AL) LEVELS

- ES06. There was no breach of Action or Limit level for air monitoring in this reporting month.
- ES07. No construction noise complaint (an Action Level exceedance) or exceedance of the Limit Level was recorded in this month.

COMPLAINT LOG

ES08. No environmental complaint was received in this month.

NOTIFICATION OF ANY SUMMONS AND SUCCESSFUL PROSECUTION

ES09. There was no environmental summons or prosecution notified this month.

REPORTING CHANGES

ES10. There are no changes in the reporting format or content to be reported in this month.

FUTURE KEY ISSUES

ES11. The construction works of the captioned project have been completed on 3 February 2010. Therefore no construction activities will be held on March 2010.



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1.0 INTRODUCTION

- 1.01 REC Engineering Company Limited has been awarded the DSD Contract No.: DE/2005/05 Supply and Installation of E&M Equipments for Nam Sang Wai, Sha Po and Kam Tin Sewage Pumping Stations, which forms part of the Yuen Long and Kam Tin Sewerage and Sewage Disposal PWP Item No. 215DS. The Project is for the provision of the supply and installation of electrical and mechanical installation in three Sewage Pumping Stations (SPS), namely Nam Sang Wai Sewage Pumping Station, Sha Po Sewage Pumping Station and Kam Tin Sewage Pumping Station. Layout plan showing the site boundary and work areas are shown in Annex A.
- 1.02 This is the **thirteen (13th)** Monthly Environmental Monitoring and Audit (EM&A) Report for **February 2010** presenting the EM&A program conducted from **1 to 28 February 2010** for the Contract No.: DE/2005/05. The EM&A program in **February 2010** covered air quality, construction noise and waste management only.
- 1.03 Substantial completion of works had been certified by the Engineer's Representative as on 3 February 2010 and the EM&A programme was completed on 28 February 2010 upon receiving the notification. Therefore, this report is served as the last monthly EM&A report of the Project.

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

1.04 The organization chart and lines of communication with respect to the on-site management structure of the Project is shown in Annex B. The construction program for this project is shown in Annex C

CONSTRUCTION ACTIVITIES UNDERTAKEN IN THIS MONTH

1.05 The major construction activities undertaken during this month under the *Environmental Permit* (*EP-220/2005*) are shown in the **Table 1-1**.

Sewage Pumping Station Construction Activities in this Month	
Nam Sang Wai	• Final Testing and Commissioning Works and Defects Rectification Works
Sha Po	Defects rectification works under Defects Liability Period
Kam Tin	Defects rectification works under Defects Liability Period

Table 1-1Construction Activities in this Month

REPORT STRUCTURE

1.06 The EM&A report is structured into the following sections:

SECTION 1	INTRODUCTION
SECTION 2	ENVIRONMENTAL STATUS
SECTION 3	SUMMARY OF EM&A REQUIREMENT
SECTION 4	STATUS OF ENVIRONMENTAL LICENSE AND PERMITS
SECTION 5	MONITORING METHODOLOGY AND RESULTS
SECTION 6	REPORT ON NON-COMPLIANCE, COMPLAINT, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS
SECTION 7	OTHERS



2.0 ENVIRONMENTAL STATUS

WORK UNDERTAKEN IN THIS MONTH WITH ILLUSTRATIONS

2.01 A summary of the work undertaken in this month with illustrations and environmental mitigation measures implemented is shown in Table 2-1.

Sewage Pumping Stations	Description of Construction Activities	Environmental Mitigation Measures	EM&A Ref.
Nam Sang Wai	 Defects rectification works 	 Perform weekly inspection with ET and monthly audit with IEC Conduct noise and dust monitoring as per EM&A Manual during construction Implement trip-ticket system for waste disposal 	H1 1 & 2 D5
Sha Po	 Defects rectification works 	 Perform weekly inspection with ET and monthly audit with IEC Conduct noise and dust monitoring as per EM&A Manual during construction Implement trip-ticket system for waste disposal 	H1 1 & 2 D5
Kam Tin	 Defects rectification works 	 Implement trip-ticket system for waste disposal Conduct noise and dust monitoring as per EM&A Manual during construction Perform weekly inspection with ET and monthly audit with IEC 	D5 1 & 2 H1

 Table 2-1
 Works Undertaken and Illustrations of Mitigation Measures

PROJECT DRAWINGS

- 2.02 Drawings showing the work areas under EP-220/2005 and location of representative monitoring stations are presented in **Annex D**.
- 2.03 The monitoring points: AM5, AM6 & AM7, are the nearest stations for 24-hour TSP monitoring and NM3, NM6 & NM7 are the nearest locations for construction noise monitoring locations for this Project (Contract No.: DE/2005/05) as agreed by the Engineer's Representative (ER) and the Independent Environmental Checker (IEC). Locations of the monitoring stations and description are summarised in Table 2-2.

		.9	
Station ID	Nature of Premise	Nearest Sewage Pumping Station	Station Coordinates
AM5	Site Boundary in FKH	Sha Po	835121 N 823515 E
AM6	Site Boundary in KT	Kam Tin	833308 N 823987 E
AM7	Site Boundary in NSW	Nam Sang Wai	836171 N 822586 E
NM3	Village House in NSW	Nam Sang Wai	835808 N 822817 E
NM6	Village House in KT	Kam Tin	833288 N 823999 E
NM7	Village House in FKH	Sha Po	835121 N 823495 E

Table 2-2 Description of Monitoring Stations

2.04 During this month, impact monitoring was carried out at three designated air stations and three noise monitoring locations according to the monitoring schedule.



3.0 SUMMARY OF EM&A REQUIREMENTS

MONITORING PARAMETERS

- 3.01 Environmental monitoring and audit requirements are set out in the EM&A Manual under the DC/2005/02 Contract Designated Element. Air quality and construction noise have been identified as the key monitoring parameters during the construction phase of the project.
- 3.02 A summary of the impact EM&A requirements for air quality and construction noise as per the project EM&A Manual (under the DC/2005/02 Contract Designated Element) are shown in Table 3-1.

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

Environmental Issue	Monitoring Parameters
Air Quality	24-hour TSP
Construction Noise	Leq 30min day time 07:00 to 19:00 (Supplementary L10 and L90 for reference.)

ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

3.03 A summary of the Action/Limit (A/L) Levels for air quality and construction noise is shown in Tables 3-2 and 3-3.

Table 3-2 Action and Limit Levels for A

Monitoring Locations	Action Level (μg/m ³)		Limit Level (µg/m³)	
Monitoring Locations	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM5	> 353	> 176	> 500	> 260
AM6	> 329	> 176	> 500	> 260
AM7	> 383	> 157	> 500	> 260

Table 3-3Action and Limit Levels for Construction Noise

Monitoring Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one or more documented complaints are received	> 75 dB(A)

EVENT AND ACTION PLANS

3.04 An Event Action Plan for air quality and construction noise has been implemented for this project. Details of the Event Action Plan are presented in **Annex E**.

ENVIRONMENTAL MITIGATION MEASURES

3.05 The project EIA report has recommended environmental mitigation measures to minimize the potential impacts arising from the construction of the project. The environmental implementation mitigation schedule is shown in **Annex F**.

ENVIRONMENTAL REQUIREMENTS IN CONTRACT DOCUMENTS

3.06 The environmental requirements in the contract documents conform to the requirements stipulated in the project EP (EP-220/2005) and the EM&A Manual under the DC/2005/02 Contract – Designated Element.



4.0 STATUS OF ENVIRONMENTAL LICENSE AND PERMITS

4.01 The status of permits, licenses, and/or notifications related to environmental protection during this month is presented in Table 4-1.

Table 4-1Status of Environmental Licenses and Permits

Item	Item Description	License/Permit Status
1	Environmental Permit No.: EP-220/2005	Issued in June 2005
2	Account for Disposal of Construction Waste No. 7003733	Registration on 16 May 2008



5.0 MONITORING METHODOLOGY AND RESULTS

MONITORING METHODOLOGY OF AIR QUALITY MONITORING

- 5.01 The 24-hour TSP monitoring was carried out by a High Volume Air Sampler (HVAS) in compliance with the EM&A Manual under the DC/2005/02 Contract Designated Element. The HVAS employed complies with the PS including.
 - Power supply of 220v/50 Hz for 24-hour continuous operation;
 - 0.6-1.7m³/min (20-60 SCFM) adjustable flow rate;
 - A 7-day mechanical timer for 24-hour operation;
 - An elapsed time indicator with ±2 minutes accuracy for 24-hour operation;
 - Minimum exposed area of 63in²;
 - Flow control accuracy of ±2.5% deviation over 24-hour operation;
 - An anodized aluminum shelter to protect the filter and sampler;
 - A motor speed-voltage control to control mass flow rate with accuracy of ±2.5% deviation over 24-hour sampling period;
 - Provision of a flow recorder for continuous monitoring;
 - Provision of a peaked roof inlet;
 - Incorporation with a manometer; and
 - An 8"x10" stainless steel filter holder to hold, seal and easy to change the filter paper.
- 5.02 The filter papers used in 24-hour TSP monitoring were of size 8"x10" and provided by a local HOKLAS-accredited laboratory, ALS Techichem Pty (HK) Limited (HOKLAS No. 66). The filters papers after measurements were returned to the laboratory for the required treatment and analysis. The validation of all monitoring practices and data were following the in-house QA/QC procedures. Blank filters samples were collected and delivered to the HOKLAS-accredited laboratory for QA/QC check.
- 5.03 The meteorological information in this month was obtained from Lau Fau Shan Station of the Hong Kong Observatory (HKO).

METHODOLOGY FOR CONSTRUCTION NOISE MONITORING

- 5.04 Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (Leq) measured in decibels (dB). Supplementary statistical results (L₁₀ and L₉₀) were also obtained for reference.
- 5.05 Hand-held sound level meters and associated acoustical calibrators in compliance with the International Electrotechnical Commission (IEC) Publication 651:1979 (Type 1) and 804:1985 (Type 1) specifications were used for taking the baseline noise measurements.
- 5.06 Windshield was fitted in all measurements. All noise measurements were made with the meter set to Fast response and on the A-weighted equivalent continuous sound pressure level (Leq).
- 5.07 No noise measurement was made in the presence of fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s.

LABORATORY AND MONITORING EQUIPMENT USED

- 5.08 A local HOKLAS-accredited laboratory, ALS Technichem (HK) Pty Ltd (HOKLAS No. 66), is responsible for the analytical testing of the 24-hour TSP filter papers.
- 5.09 Monitoring equipment used in the impact EM&A program is presented in Table 5-1.

 Table 5-1
 Monitoring Equipment Used in Impact EM&A Program

Issue	Parameters	Monitoring Equipment
Air Quality	24-hour TSP	Greasby Anderson GMWS2310 High Volume Air Sampler
Noise	Leq(30mins)	B&K Sound Level Meter (Type 2238) & Acoustics Calibrator (Type 4231)

EQUIPMENT CALIBRATION

5.10 Initial calibration of the HVAS was performed upon installation and thereafter at a six month intervals in accordance with the manufacturer's instruction using the NIST-certified standard



calibrator (Tisch Calibration Kit Model TE-5025A). The calibration data are properly documented and the records are maintained by ET for future reference. No HVAS was required calibration in this month, monitoring equipment of HVS and sound level meter were required to calibrate in next month. Updated calibration schedule is shown in Annex G.

- 5.11 The sound level meters were calibrated using an acoustical calibrator prior to and after measurements. The meters are regularly calibrated in accordance with the manufacturer's instructions. Prior to and following each noise measurement, the accuracy of the sound level meter was checked using an acoustical calibrator generating a known sound pressure level at a known frequency. Measurements were considered valid only if the calibration levels before and after the noise measurement agree to within 1.0 dB.
- 5.12 Calibration certificates of the sound level meters will provide depend on the annual calibration had undertaken.

PARAMETERS MONITORED

5.13 The monitoring parameters in this month were compliance with the EM&A requirements as stipulated in Table 3-1.

MONITORING LOCATIONS

- 5.14 Review the scope of works for this Project, the construction activities only localize at three Sewage Pumping Station (SPS). AM5, AM6 & AM7, are the nearest stations for 24-hour TSP monitoring and NM3, NM6 & NM7 are the nearest locations for construction noise monitoring locations for this Project (Contract No.: DE/2005/05) which were agreed by the Engineer's Representative and the Independent Environmental Checker.
- 5.15 Descriptions of the monitoring stations are summarized in **Table 5-2** and location plan are presented in **Annex D**.

Table 5-2	Air Quality and Construction Noise Monitoring Stations/Loca	ations

Sewage Pumping Station	Monitoring Station/Location	Description	
Air Quality (3 Station	s)		
Sha Po	AM5	Worksite boundary facing Fung Kat Heung	
Kam Tin	AM6	Worksite boundary facing scattered near Route 3	
Nam Sang Wai	AM7	Worksite boundary facing scattered house in Nam Sang Wa	
Construction Noise (3 Locations)			
Sha Po	NM7	Fung Kat Heung	
Kam Tin	NM6	Scattered House near Route 3	
Nam Sang Wai	NM3	Village House in Nam Sang Wai	

MONITORING FREQUENCY AND PERIOD

- 5.16 The impact 24-hour TSP monitoring was conducted at the designated stations once every 6 days in compliance with the updated EM&A Manual. In this month, 6 monitoring events of 24-hour TSP monitoring were successful conducted. However, there are 9 events of 24-hour monitoring were unsuccessful measured due to the power supply issue.
- 5.17 The impact noise monitoring was conducted at the designated stations once every 6 normal working days in compliance with the updated EM&A Manual. Total of 15 monitoring events were carried out in this month.

MONITORING RESULTS AND SCHEDULE

5.18 Monitoring results in this month for air quality and construction noise were summarized in **Tables 5-3 to 5-6**.



- 5.19 There was no breach of Action or Limit level for air monitoring in this reporting month..
- 5.20 Five (5) events of 24-hour monitoring were unsuccessful due to failure of power supply. The power supply at AM6 had been ceased by the landlord on 9 February 2010 and reconnected on 18 February 2010. Power supply failure continued at AM7 in February 2010. The Contractor had tried to make contact with the landowner regarding the connection of power supply but not successful. Therefore, no air quality monitoring could be carried out at AM7 during this reporting month. The landowner's workshop at AM6 was closed from 4 to 24 February 2010 due to Lunar New Year break, therefore cannot access to the monitoring location.

Table 5-3 Summary of Air Quality Monitorin	na Results
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Date	24-hour TSP (µg/m3)					
Date	AM5	AM6	AM7			
3-Feb-10	132	43	Power failure#			
9-Feb-10	Can't access^	Power failure#	Power failure#			
18-Feb-10	Can't access^	34	Power failure#			
24-Feb-10	Can't access^	29	Power failure#			
Average (Range)	NA	35 (29 – 43)	NA			
Action / Limit	> 237 / >260	> 183 / >260	> 204 / >260			

Notes: All 24-hour TSP monitoring were preset to start at 00:00 on each monitoring date.

Bold and italic denotes exceedance of the Action Level. Bold and underlined denotes exceedance of the Limit Level.

Monitoring was affected due to power failure.

- [^] Cannot access the monitoring location due to Lunar New Year holiday for the landlord's workshop
- 5.21 No construction noise complaint (Action Level) was received and no construction noise monitoring above the Limit Level was recorded in this month.

Table 5-4 Summary of Noise Monitoring Results at NM3

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected* Leq30
4-Feb-10	13:02	56.8	56.1	55.6	57.1	57.9	56.4	56.7	59.7
10-Feb-10	13:40	56.6	54.7	55.3	58.3	56.2	56.5	56.4	59.4
19-Feb-10	11:30	53.8	55.2	54.2	54.7	56.3	53.9	54.8	57.8
25-Feb-10	13:00	52.7	53.1	53.3	55.2	54.1	53.9	53.8	56.8
Limit Le	Limit Level						75		

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

Table 5-5 Summary of Noise Monitoring Results at NM6

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30
4-Feb-10	10:40	63.9	64.1	64.2	63.4	63.7	64.1	63.9
10-Feb-10	13:02	59.4	59.7	59.2	59.3	59.4	59.1	59.4
19-Feb-10	13:02	67.1	69.1	67.9	68.7	68.2	68.1	68.2
25-Feb-10	13:02	62.1	61.9	62.2	61.4	61.7	61.7	61.8
Limit Le	Limit Level							75

Notes: * Noise monitoring was undertaken at the façade, correction was not necessary.

Table 5-6 Summary of Noise Monitoring Results at NM7 Start 2nd 3rd 4th 5th 6th 1st Date Lea30 Time Leq5 Leq5 Leq5 Leq5 Leq5 Leq5 09:30 62.7 64.1 62.3 62.7 6-Jan-10 63.1 63.8 63.2 10:20 61.4 61.1 60.6 60.9 61.6 63.7 61.7 12-Jan-10 08:20 59.1 58.4 59.3 58.9 57.9 18-Jan-10 58.8 58.8 08:40 53.6 53.9 52.7 52.9 53.8 53.4 23-Jan-10 53.1 09:40 56.4 54.9 55.1 57.6 56.9 57.2 56.5 29-Jan-10 Limit Level 75

Note: * Noise monitoring was undertaken at the façade, correction was not necessary



5.22 The tentative monitoring schedule for the coming month (February 2010) is shown in Table 5-7.

Table 5-7 Tentative Schedule of Monitoring for the Next Month

[Date	Air Quality	Noise Leq 30min
Mon	1-Feb-10		
Tue	2-Feb-10		
Wed	3-Feb-10		
Thu	4-Feb-10		
Fri	5-Feb-10		
Sat	6-Feb-10		
Sun	7-Feb-10		
Mon	8-Feb-10		
Tue	9-Feb-10		
Wed	10-Feb-10		
Thu	11-Feb-10		
Fri	12-Feb-10		
Sat	13-Feb-10		
Sun	14-Feb-10		
Mon	15-Feb-10		
Tue	16-Feb-10		
Wed	17-Feb-10		
Thu	18-Feb-10		
Fri	19-Feb-10		
Sat	20-Feb-10		
Sun	21-Feb-10		
Mon	22-Feb-10		
Tue	23-Feb-10		
Wed	24-Feb-10		
Thu	25-Feb-10		
Fri	26-Feb-10		
Sat	27-Feb-10		
Sun	28-Feb-10		

Monitoring Day
Sunday or Public Holiday

WEATHER CONDITIONS DURING THE MONITORING MONTH

5.23 The meteorological data during the monitoring date are summarized in Annex H.

GRAPHICAL PLOTS OF TRENDS OF MONITORED PARAMETERS

- 5.24 The graphical plots of air quality and construction noise data are presented in Annex I. WEATHER CONDITIONS THAT AFFECT THE MONITORING RESULTS
- 5.25 The weather conditions during the monitoring were considered acceptable for monitoring activities and did not have significant impacts on the monitoring results obtained.

OTHER FACTORS INFLUENCING THE MONITORING RESULTS

5.26 There were no other noticeable external factors generally affecting the monitoring results in this month.

QA/QC RESULTS AND DETECTION LIMITS

5.27 Not applicable.



6.0 REPORT ON NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

RECORD OF NON-COMPLIANCE OF ACTION AND LIMIT LEVELS

- 6.01 There was no breach of Action or Limit level for air monitoring in this reporting month.
- 6.02 No construction noise complaint (an Action Level exceedance) or monitoring noise level that exceeded the Limit Level was recorded in this month.

RECORD OF ENVIRONMENTAL COMPLAINTS RECEIVED

6.03 There was no environmental complaint received in this month.

RECORD OF NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTION

6.04 There was no notification of summons or prosecution received in this month.

REVIEW OF REASONS FOR AND IMPLICATIONS OF NC, COMPLAINTS AND NOS

6.05 No complaint or notification of summons was received in this month.

DESCRIPTION OF FOLLOW-UP ACTIONS TAKEN

6.06 As mentioned in Section 6.05, no non-compliance, complaints or notification of summons was received in this month. Therefore, no follow-up action was needed. The Contractor was reminded to implement the environmental mitigation measures presented in Table 2-1 as necessary.



7.0 OTHERS

FUTURE KEY ISSUES

7.01 Construction activities undertaken in February 2010 would be only defects rectification works at both Nam Sang Wai, Sha Po and Kam Tin SPSs as the construction activities at had been substantially completed. Potential environmental impacts arising from the works include air quality, noise and water quality (particularly site runoff). Environmental mitigation measures will be properly implemented and maintained as per the Mitigation Implementation Schedule to ensure that site environmental performance is acceptable.

SOLID AND LIQUID WASTE MANAGEMENT STATUS

7.02 The quantities of waste for disposal or reuse are summarized in Tables 7-1 and 7-2.

Table 7-1 Summary of Waste Quantities for Disposal

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (tons) – Disposed	0	Tuen Mun 38 Fill Bank
C&D Materials (Inert) (tons) – Reused	0	DSD Contract DC/2005/02
C&D Materials (Non-Inert) (tons)	0	NA
General Refuse (tons)	0	Refuse Collector

 Table 7-2
 Summary of Waste Quantities for Reuse/Recycling

Type of Waste	Quantity	Disposal Location
Metals for Recycling (kg)	0	NA
Paper for Recycling (kg)	0	NA
Plastics for Recycling (kg)	0	NA

7.03 There was no site effluent or surface runoff from the Project recorded in this month.

ENVIRONMENTAL INSPECTION AND AUDIT

- 7.04 Representatives of the Engineer, the Contractor and the ET carried out regular weekly site inspection on 3, 11, 19 and 23 February 2010 to evaluate the site environmental performance. No non-compliance but one observation was found in this month.
- 7.05 Summary of observations during the site inspection in this month are presented in Table 7-3.

Table 7-3	Summary of the Site Observations
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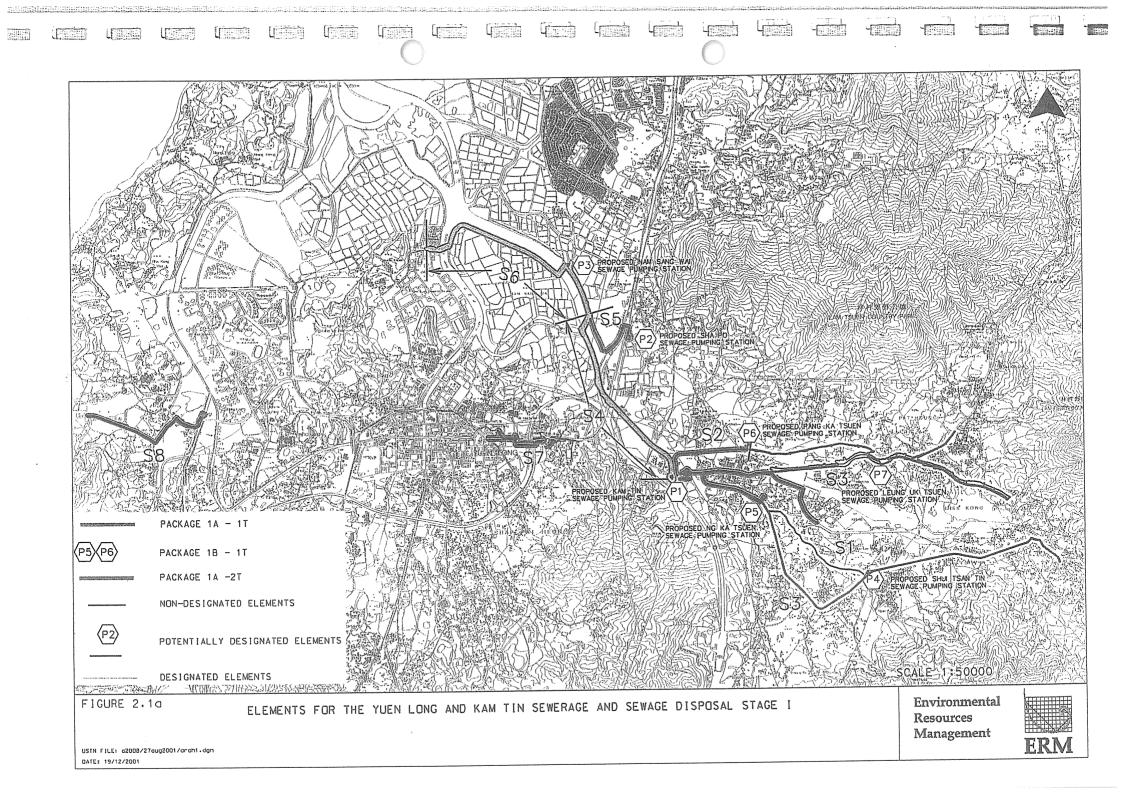
Inspection Date	Inspection/Audit Findings and Recommendation	Rectified on
3 February 2010	Nil	NA
11 February 2010	Nil	NA
19 February 2010	C&D waste cumulated at Nam San Wai Pumping station.	13 February 2010
*23 February 2010	Nil	NA

Note: * Joint IEC Monthly Site Audit. Please refer to DC/2005/02 Monthly EM&A Report (Designated Element) for details of the site audit.



ANNEX A

PROJECT SITE LAYOUT

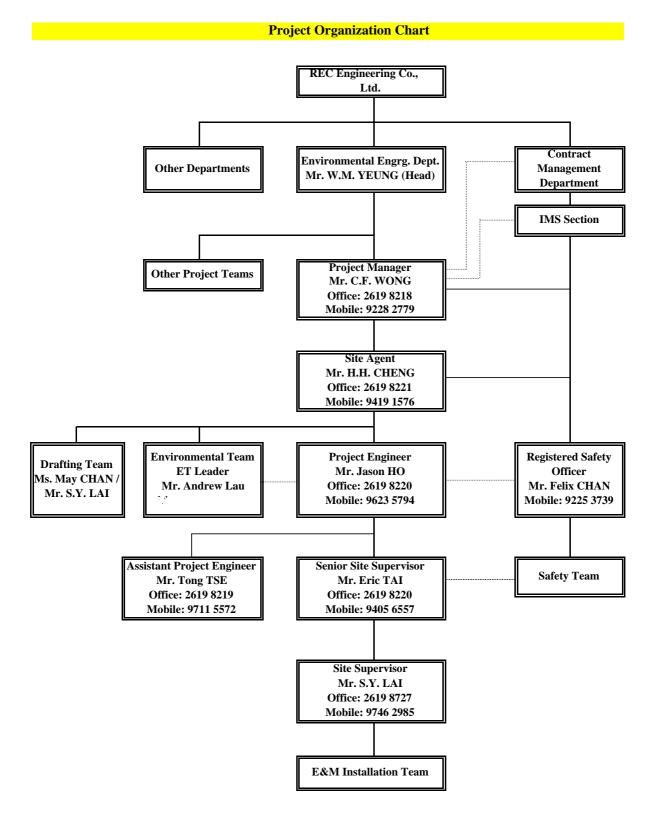




ANNEX B

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

Contract No. DE/2005/05 S&I of E&M Equipment for Nam Sang Wai, Sha Po and Kam Tin Sewage Pumping Stations



Effective Date : 09 February 2009

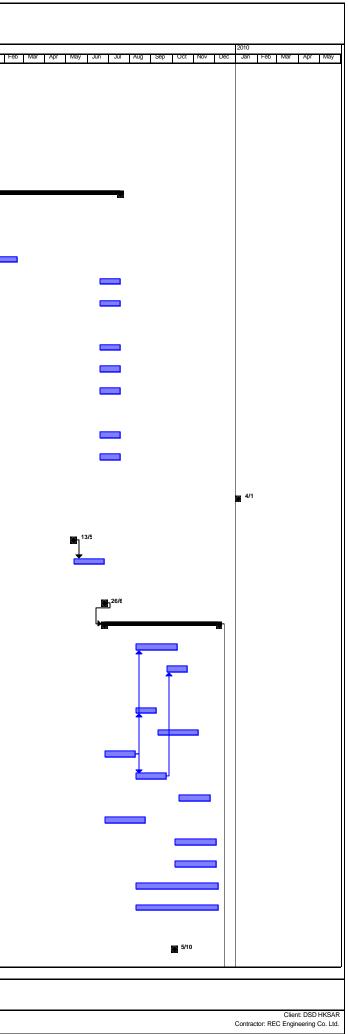


ANNEX C

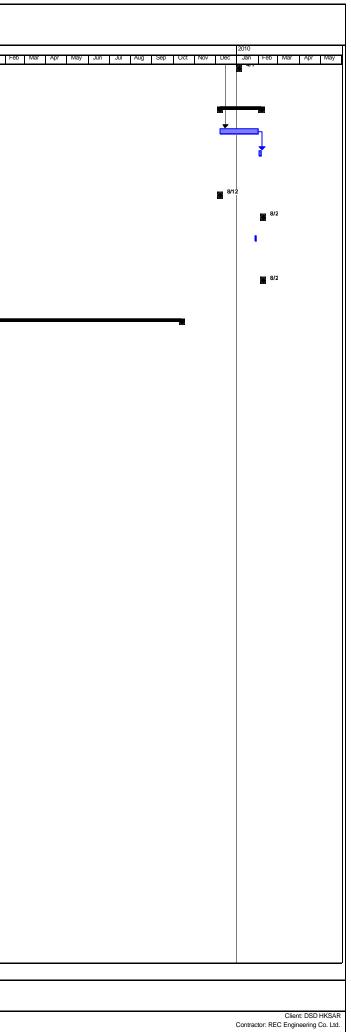
CONSTRUCTION PROGRAM

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- -		Inlet Coarse Screen	240 days	Mon 27/3/06	Tue 21/11/06			
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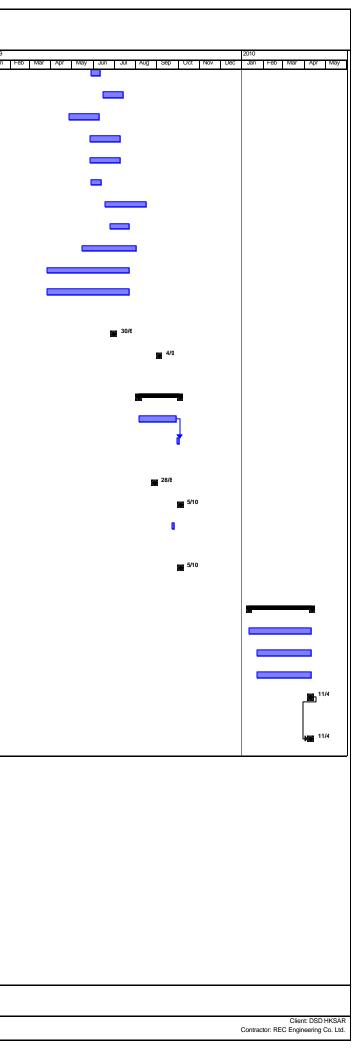
1 Task Name	Duration	Start	Finish	2007 Feb I Mar I Abr I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jan I Feb I Mar I and I May I Jun I Jun I Seb I Oct I Nov I Like I Jun I Aug I Jun I Jul I Aug I Seb I Oct I Nov I Like I Jun I Aug I Jun I Jun I Jun I Jun I Seb I Oct I Nov I Like I Jun I Jun I Jun I Jun I Seb I Oct I Nov I Like I Jun	2008 C. Jan Feb I Mar Fabr I May Jun I Jul Faud Seb I Oct I Nov Dec	2009 C. Jan Teb Mar Apr May Lin Lin Lin Eaur Sas Cortexes
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Calcium Nitrate Dosing System	240 days	Wed 22/11/06	Thu 19/7/07			
Ventilation Fans	240 days	Wed 22/11/06	Thu 19/7/07			
Building Services and Electrical Services	240 days	Wed 22/11/06	Thu 19/7/07			
Equipment Fire Services Equipment	240 days	Wed 22/11/06	Thu 19/7/07			
Application of CLP Power Supply	0 days	Tue 27/3/07	Tue 27/3/07	27/3		
Application of Telephone Line	0 days	Tue 27/3/07	Tue 27/3/07	2//3		
Equipment Delivery	459 days	Tue 19/2/08	Fri 22/5/09		-	
Penstock and Actuator	30 days	Mon 9/2/09				
Main sewage pump and VFD		Sat 10/5/08				
Inlet Coarse Screen		Tue 19/2/08				
Deodourising System	-	Thu 23/4/09				
Lifting Appliance	30 days				_	
Pipework and Valve		Wed 20/8/08				
Measuring Instrument		Thu 23/4/09				
LV Switchboard	30 days	Mon 9/2/09	Tue 10/3/09			
MACS, Telemetry and CCTV	30 days	Mon 9/2/09	Tue 10/3/09			
Calcium Nitrate Dosing System	30 days	Mon 27/10/08	Tue 25/11/08			
Ventilation Fans	30 days	Wed 29/10/08	Thu 27/11/08			
Building Services and Electrical Services Equipment	30 days	Thu 19/3/09	Fri 17/4/09			
Fire Services Equipment	30 days	Thu 19/3/09	Fri 17/4/09			
Submission of Form 314 for Fire Services	0 days	Mon 14/9/09	Mon 14/9/09			14/9
1st stage Site Take Over Date for Section 3	0 days	Tue 17/2/09	Tue 17/2/09			■ 1 ^{17/2}
Site Installation at CLP Tx Rm	45 days	Tue 17/2/09	Thu 2/4/09			
2nd stage Site Take Over Date for Section 3	0 days	Fri 3/4/09	Fri 3/4/09			1 /1/1
Site Installation at Other Locations	133 days	Fri 3/4/09	Thu 13/8/09			₩ ₩ ₩₩₩₩
Penstock and Actuator	60 days	Mon 20/4/09	Thu 18/6/09			
Main sewage pump and VFD	45 days	Mon 4/5/09	Wed 17/6/09			
Inlet Coarse Screen	14 days	Fri 29/5/09	Thu 11/6/09			
Deodourising System	60 days	Mon 15/6/09	Thu 13/8/09			
Lifting Appliance	35 days	Mon 27/4/09	Sun 31/5/09			
Pipework and Valve	30 days	Mon 4/5/09	Tue 2/6/09			
Measuring Instrument	45 days	Wed 27/5/09	Fri 10/7/09			
7 ILV Switchboard	30 days	Thu 30/4/09	Fri 29/5/09			
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- -		Tentative CLP Electricity Energisation	0 days	Wed 15/7/09	Wed 15/7/09			15/7
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Market Schwarz Andersonstrating of Market Schwar		Testing and Commissioning	60 days	Fri 14/8/09	Mon 12/10/09			
- -		Equipment testing	56 days	Fri 14/8/09	Thu 8/10/09			
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2	Deodourising System		Wed 22/11/06 Thu 19/7/07	
3	Lifting Appliance		Wed 22/11/06 Thu 19/7/07	
4	Pipework and Valve		Wed 22/11/06 Thu 19/7/07	
5	Measuring Instrument		Wed 22/11/06 Thu 19/7/07	
ô 🌆	LV Switchboard	240 days	Wed 22/11/06 Thu 19/7/07	
	MACS, Telemetry and CCTV	240 days	Wed 22/11/06 Thu 19/7/07	
	Ventilation Fans	240 days	Wed 22/11/06 Thu 19/7/07	
	Building Services and Electrical Services Equipment	240 days	Wed 22/11/06 Thu 19/7/07	
	Fire Services Equipment	240 days	Wed 22/11/06 Thu 19/7/07	
	Application of CLP Power Supply	0 days	Tue 27/3/07 Tue 27/3/07	■ 27/3
3	Application of Telephone Line	0 days	Tue 27/3/07 Tue 27/3/07	27/3
4				
5	Equipment Delivery	358 days	Fri 30/5/08 Fri 22/5/09	
	Penstock and Actuator	30 days	Mon 9/2/09 Tue 10/3/09	
	Main sewage pump and VFD	30 days	Fri 30/5/08 Sat 28/6/08	
	Inlet Coarse Screen	30 days	Tue 1/7/08 Wed 30/7/08	
	Deodourising System	30 days	Wed 19/11/08 Thu 18/12/08	
	Lifting Appliance	30 days	Thu 5/3/09 Fri 3/4/09	
	Pipework and Valve		Wed 20/8/08 Thu 18/9/08	
2				
	Measuring Instrument			
3	LV Switchboard		Thu 23/4/09 Fri 22/5/09	
			Thu 23/4/09 Fri 22/5/09	
	Ventilation Fans		Wed 29/10/08 Thu 27/11/08	
	Building Services and Electrical Services Equipment	30 days	Sat 7/2/09 Sun 8/3/09	
	Fire Services Equipment	30 days	Sat 7/2/09 Sun 8/3/09	
	Submission of Form 314 for Fire Services	0 days	Fri 4/9/09 Fri 4/9/09	
	1st stage Site Take Over Date for Section 4	0 days	Sat 7/2/09 Sat 7/2/09	
	Site Installation at CLP Tx Room	45 days	Sat 7/2/09 Mon 23/3/09	
4				
5				
.6	2nd stage Site Take Over Date for Section 4	0 days	Wed 25/3/09 Wed 25/3/09	
7	Site Installation at Other Locations	144 days	Thu 26/3/09 Sun 16/8/09	
8	Penstock and Actuator	60 days	Mon 20/4/09 Thu 18/6/09	
,				
	Main sewage pump and VFD	30 days	Wed 27/5/09 Thu 25/6/09	
0				

Decodourising SystemImage: Constraint of the systemImage: Constraint of the systemImage: Constraint of the systemDecodourising System30 daysMon 15/6/09Tue 14/7/0Lifting Appliance45 daysWed 27/5/09Fri 107/0Pipework and Valve45 daysWed 27/5/09Fri 107/0Measuring Instrument45 daysWed 27/5/09Fri 12/6/0LV Switchboard15 daysFri 29/5/09Fri 12/6/0LV Switchboard15 daysFri 29/5/09Fri 12/6/0MACS, Telemetry and CCTV60 daysWed 24/6/09Thu 23/7/0Calcium Nitrate Dosing System30 daysWed 24/6/09Thu 23/7/0Suilding Services and Electrical Services120 daysThu 26/3/09Thu 23/7/0Suilding Services Equipment120 daysThu 26/3/09Thu 23/7/0ative CLP Electricity Energisation0 daysTri 4/9/09Fri 4/9/09mission of Form 501 for Fire Services0 daysWed 5/8/09Sat 3/10/0Requipment testing56 daysWed 5/8/09Sat 3/10/0Inscion of Draft O & M manual0 daysFri 28/8/09Fri 28/8/0nission of Final O & M manual0 daysWed 23/9/09Fri 25/9/0pletion of Section 40 daysMon 5/10/09Mon 5/10/09sion of Workshop Equipment for Nam Sang Wai90 daysTue 12/1/10Sun 11/4/1			isk Name	Duration	Start	Finish
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Pipework and Valve 45 days Wed 27/5/09 Fri 10/7/09 Measuring Instrument 45 days Wed 27/5/09 Fri 10/7/09 LV Switchboard 15 days Fri 29/5/09 Fri 12/6/09 MACS, Telemetry and CCTV 60 days Thu 18/6/09 Sun 16/8/09 Calcium Nitrate Dosing System 30 days Wed 24/6/09 Thu 23/7/09 Ventilation Fans and air ducts 80 days Fri 15/5/09 Sun 2/8/09 Building Services and Electrical Services 120 days Thu 26/3/09 Thu 23/7/09 Equipment 120 days Thu 26/3/09 Thu 23/7/09 Fire Services Equipment 120 days Thu 26/3/09 Thu 23/7/09 mission of Form 501 for Fire Services 0 days Tre 30/6/09 Tre 30/6/09 mission of Form 501 for Fire Services 0 days Fri 4/9/09 Sat 3/10/09 Equipment testing 60 days Wed 5/8/09 Sat 3/10/09 Insision of Draft O & M manual 0 days Fri 28/8/09 Fri 28/8/09 mission of Final O & M manual 0 days Mon 5/10/09 Mon 5/10/09 mission of Final O & M manual 0 days Mon 5/10/09 <td< td=""><td>53 📰</td><td></td><td>Deodourising System</td><td>30 days</td><td>Mon 15/6/09</td><td>Tue 14/7/09</td></td<>	53 📰		Deodourising System	30 days	Mon 15/6/09	Tue 14/7/09
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	.78		Provision of Workshop Equipment for Nam Sang Wai SPS	90 days	Tue 12/1/10	Sun 11/4/10
	79		Provision of Portable and Miscellaneous Equipment for 3 SPSs	79 days	Sat 23/1/10	Sun 11/4/10
ision of minimum spare parts for 3 SPSs 79 days Sat 23/1/10 Sun 11/4/10	80 🛅		Provision of minimum spare parts for 3 SPSs	79 days	Sat 23/1/10	Sun 11/4/10
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	81 🛅		Completion of Section 5	0 days	Sun 11/4/10	Sun 11/4/10
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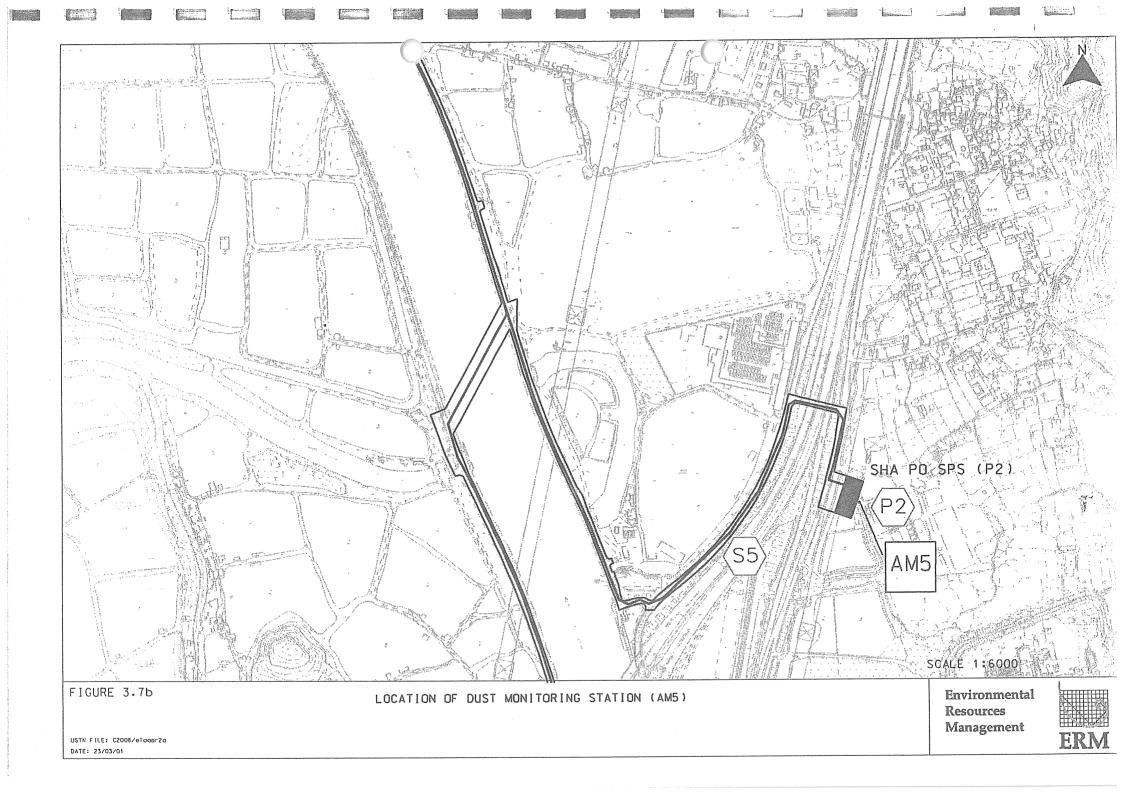
Date: 24/4/2009	Task Split	Progress Milestone	 Summary Rolled Up Task	Rolled Up Sp Rolled Up Mi	Rolled Up Progress External Tasks		Project Summary External Milestone	 Deadline	8	
						Page 7				

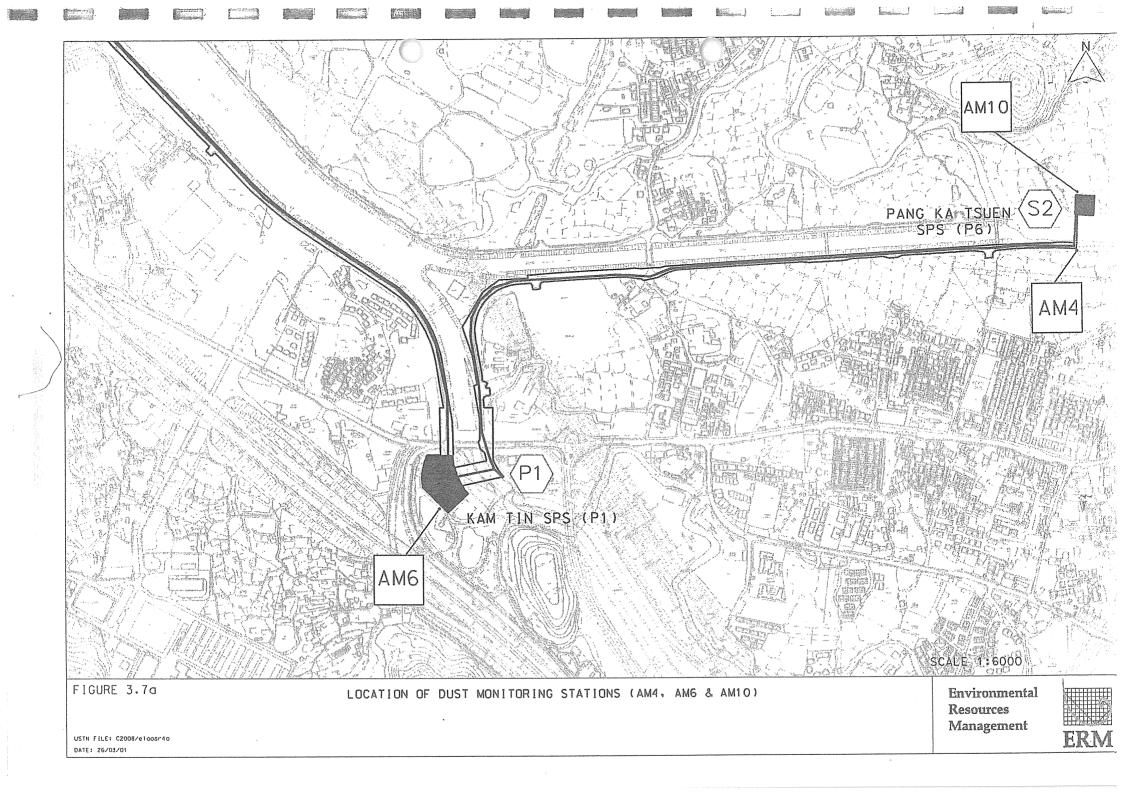


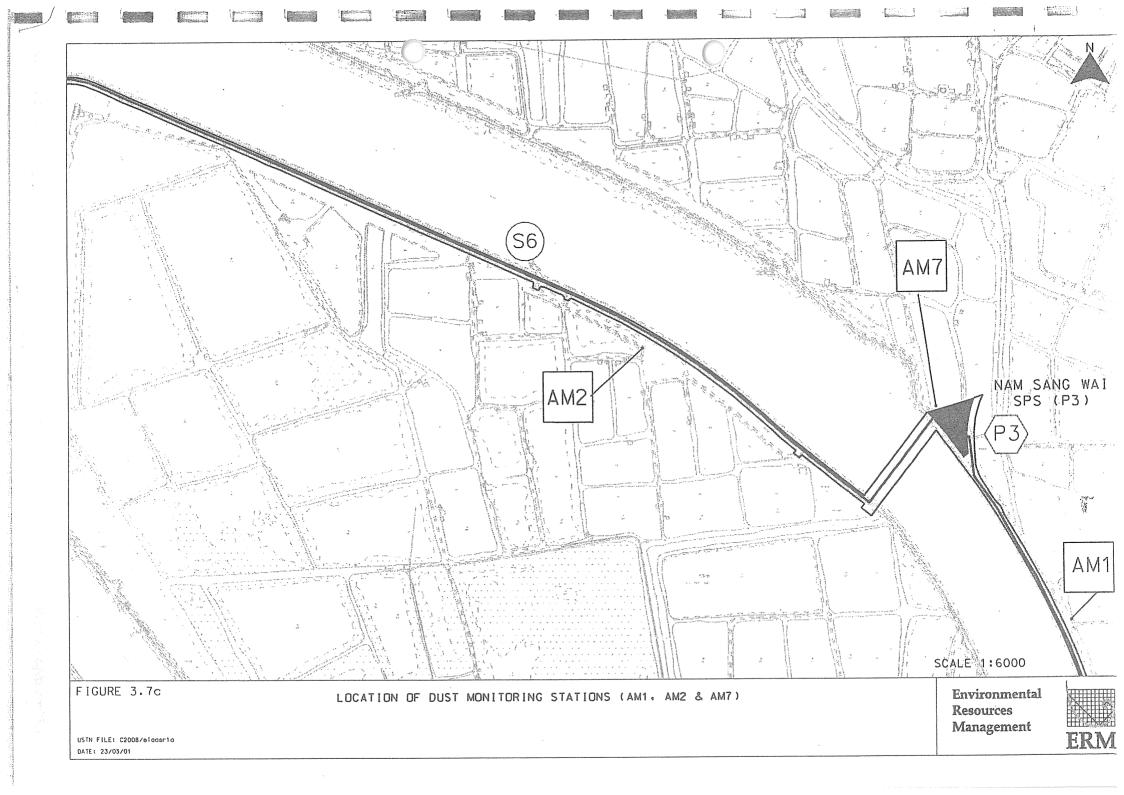


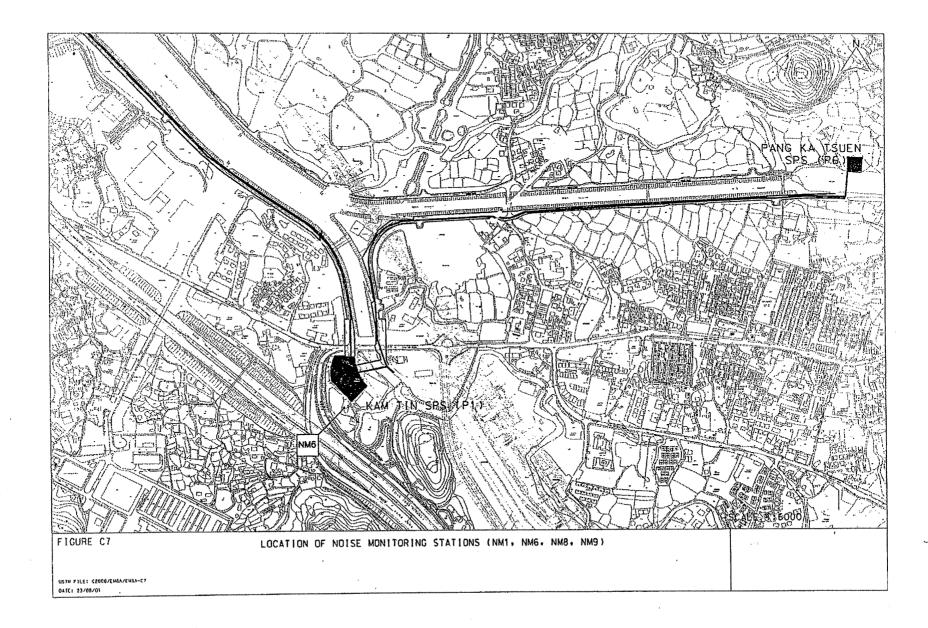
ANNEX D

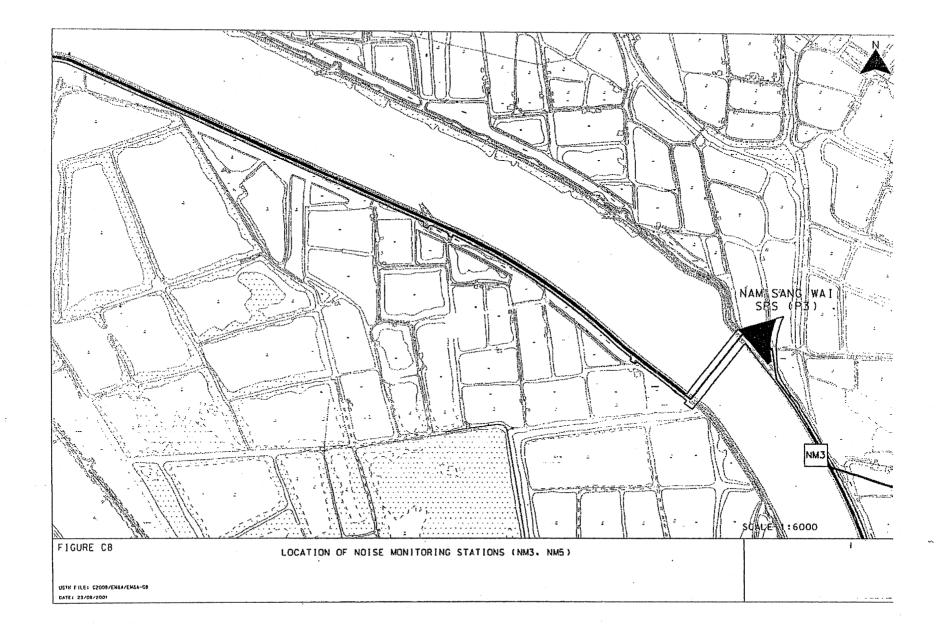
LOCATION OF MONITORING STATIONS

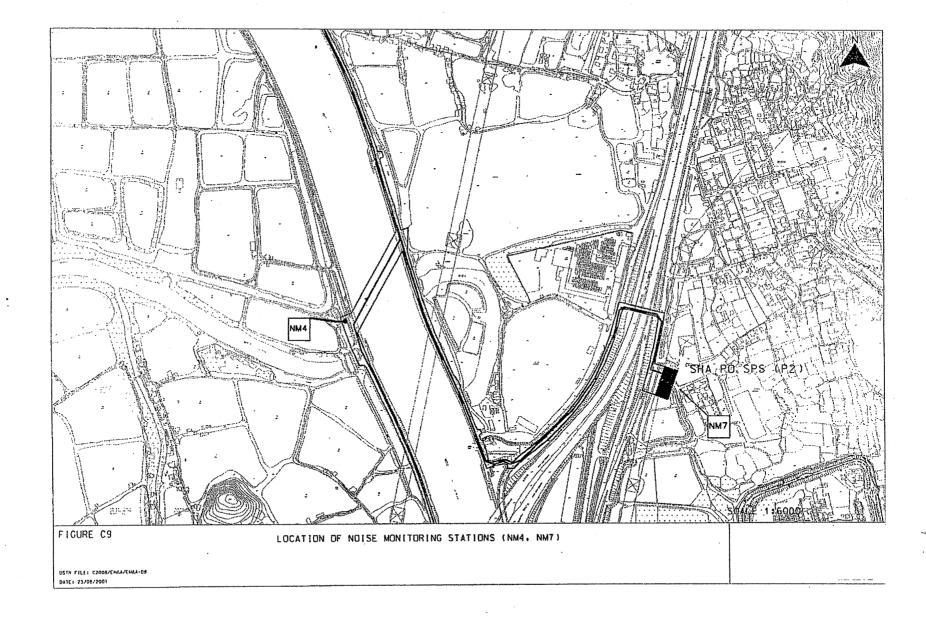














ANNEX E

EVENT AND ACTION PLAN



Event and Action Plan for Construction Phase Air Quality

EVENT		AC	CTION	
	ET Leader	IEC	Engineer	Contractor
Action Level				
Exceedance for one sample	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings Increase monitoring frequency to daily Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and working methods are appropriate 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Inform complainant of actions taken, if necessary 	 Rectify any unacceptable practice Liaise with Engineer and IEC to develop appropriate remedial measures to reduce dust impact Amend working methods and remedial proposals if required by the Engineer or IEC Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed Discuss remedial actions with IEC and Contractor If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented Inform complainant of actions taken, if necessary. 	 Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions



Event and Action Plan for Construction Phase Air Quality

EVENT		A	CTION	
	ET Leader	IEC	Engineer	Contractor
Limit Level				
Exceedance for one sample	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings Increase monitoring frequency to daily Assess efficacy of remedial measures and keep the Contractor, IEC, Engineer and EPD informed 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and working methods are appropriate Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC, Ensure remedial measures are properly implemented Inform complainant of actions taken, if necessary. 	 Take immediate action to avoid further exceedance Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions
Exceedance for two or more consecutive samples	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed Discuss remedial actions with IEC and Contractor If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring. 	 Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated Inform complainant of actions taken, if necessary. 	 Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions



EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Limit Level				
Exceedance for one sample	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings If repeat measurements confirm exceedance ,increase monitoring frequency to daily Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed If exceedance stops, inform Contractor and cease additional noise monitoring 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and working methods are appropriate 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Inform complainant of actions taken, if necessary 	 Rectify any unacceptable practice Liaise with Engineer and IEC to develop appropriate remedial measures to reduce noise impact Amend working methods and remedial proposals if required by the Engineer or IEC Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily Discuss remedial actions with IEC, Engineer and the EPD Assess the efficacy of remedial measures and keep the Contractor informed If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring. 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated Inform complainant of actions taken, if necessary. 	 Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions Stop the relevant portion of work as determined by the Engineer until the exceedance is abated



ANNEX F

MITIGATION IMPLEMENTATION SCHEDULE



EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Stage	tage**			Relevant Legislation & Guidelines
						Des	С	0	Dec	
		CONSTRUCTION PHASE								
		AIR QUALITY - Construction Phase								
		The following measures are enforceable under the Air								
		Pollution Control (Construction Dust) Regulations								
		Use of vehicles								
3.5	A3	• where a vehicle leaving a construction site is carrying a	To control potential dust		The Contractor		\checkmark			Part IV, Clause 21, (1), Air
		load of dusty materials, the load should be covered	impacts from vehicle	throughout the full						Pollution Control
		entirely by clean impervious sheeting to ensure that the	movements.	duration of the						(Construction Dust)
		dusty materials do not leak from the vehicle;		construction contract.						Regulations
		Power-driven drilling, and cutting					,			
3.5	A4	• water should be continuously sprayed on the surface	To control potential dust		The Contractor		\checkmark			Part IV, Clause 22, Air
		where any mechanical breaking operation that causes	impacts during mechanical	throughout the full						Pollution Control
		dust emission is carried out, unless the process is	breaking.	duration of the						(Construction Dust)
		accompanied by the operation of an effective dusty		construction contract.						Regulations
		extraction and filtering device;								
		NOISE - Construction Phase								
		General Site Clearance – Demolition Works								
4.7.1	B1	• Use of quiet PME which meet the SWLs taken from	To control potential noise		The Contractor		\checkmark			Annex 5 of EIAO-TM
		British Standard, Noise and Vibration Control on	impacts during site clearance	throughout the full						
		Construction Open Sites, BS 5228: Part 1: 1997	and demolition works	duration of the						
		(Examples of these PME are shown in Table F2),		construction contract.						
471	D2	Sewers and Rising Mains using Open Trench Method	To control not official maine	C:4	The Contractor		1			America State CELAO TM
4.7.1	B3	• Use of quiet PME which meet the SWLs taken from	To control potential noise		The Contractor		\checkmark			Annex 5 of EIAO-TM
		British Standard, Noise and Vibration Control on	impacts during excavation works.	throughout the full duration of the						
		Construction Open Sites, BS 5228: Part 1: 1997,	WORKS.	construction contract.						
4.7.1	B4	• Use of handheld breakers for all initial road opening	To control potential noise		The Contractor		1			
4.7.1	DŦ	activities, when breaking tarmac/concrete road surface to	impacts during road opening	located within 50m of	The Contractor		ř			
		a depth of 300mm or when granular material is reached.	activities.	the line of sight.						
		a deput of soonini of when grandrar material is reached.		Throughout the full						
				duration of the road						
				opening activities.						
4.7.1	B5	• Use of movable noise barriers or 3 sided enclosures for	To control potential noise	Where there are NSRs	The Contractor		\checkmark			
		all initial road opening activities (breaking	impacts during road opening	located within 50m of						
		tarmac/concrete road surface to a depth of 300mm or	activities.	the line of sight.						
		when granular material is reached), where there are NSRs		Throughout the full						
		located within 50m of the line of sight from the works		duration of the road						
		area.		opening activities.						
		Sewers and Rising Mains using Pipe Jacking Method					1	1		
4.7.1	B6	• Use of quiet PME which meet the SWLs taken from	To control potential noise		The Contractor		\checkmark	1		Annex 5 of EIAO-TM
		British Standard, Noise and Vibration Control on	impacts from PME during	throughout the full						
		Construction Open Sites, BS 5228: Part 1: 1997,	construction works	duration of the						
Ļ	L			construction contract.				1		
		Road Pavement and Finishes						1		
4.7.1	B7	• Use of quiet PME which meet the SWLs taken from	To control potential noise		The Contractor		\checkmark	1		Annex 5 of EIAO-TM
		British Standard, Noise and Vibration Control on	impacts from PME during	throughout the full						
<u> </u>	<u> </u>		pavement and finish works	duration of the						<u> </u>

Z:\Jobs\2008\TCS00462 (DE-2005-05)\600\Monthly\February 2010 (No. 13)\R0042v2.doc Action-United Environmental Services and Consulting



EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent		Implement Stage**			Relevant Legislation & Guidelines
						Des	С	0	Dec	
		Construction Open Sites, BS 5228: Part 1: 1997,		construction contract.						
6.6.2	D1	 WASTE - Construction Phase The Contractor shall obtain the necessary waste disposal permits from the appropriate authorities for the disposal of chemical and C&D waste, Chemical Waste Producer and Chemical Waste Disposal Licence (Waste Disposal (Chemical Waste) (General) Regulations); and Dumping Licence (Land (Miscellaneous Provisions) 	To monitor the collection, handling and disposal of chemical waste and C&D waste, and in compliance with relevant Hong Kong Standards and Regulations.	Site wide and throughout the full duration of the construction contract.	The Contractor	~	~			Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste)(General) Regulation (Cap 354), the Land (Miscellaneous Provisions) Ordinance (Cap 28))
		Ordinance (Cap 28))								<i>…</i>
6.6.2	D5	Management of Waste Disposal A trip-ticket system should be established which monitors the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping, in accordance with Land (Miscellaneous Provisions) Ordinance (Cap28) and the Works Bureau Technical Circular No. 5/99. Waste Management Plan	To monitor the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly- tipping.	all worksites throughout the full duration of the construction phase.	Contractor		~			Land (Miscellaneous Provisions) Ordinance (Cap 295) and Works Bureau Technical Circular No. 5/99.
6.6.1 and 6.6.2	D6	 A Waste Management Plan (WMP) should be prepared and this WMP should be submitted to the Engineer for approval. Different types of waste should be segregated and stored in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. An on-site temporary storage area should be provided. A recording system for the amount of wastes generated, recycled and disposal (including the disposal sites) should be proposed. Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling. 	To control the disposal of and management of waste.	To be implemented at all worksites throughout the full duration of the construction phase.	The Contractor		×			Works Bureau Technical Circular No 29/2000-Waste Management Plan
3.7	HI	 EM&A REQUIEMENTS - Construction Phase Air Quality Subject to the Environmental Protection Departments (EPDs) agreement, construction phase dust monitoring shall be undertaken at the following locations in accordance with the recommendations of the EIA (NDE). Sewer in Au Tau Area (S7) Worksite boundary near San Yuen Long Centre (AM7) Construction Noise 	Installations of the dust monitoring stations to ensure the action and limit levels are not exceeded.	At specified dust monitoring locations for the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer /DSD		•			Air Pollution Control (Construction Dust) Regulations
4.9.1	12	Subject to the Environmental Protection Departments (EPDs) agreement, construction phase noise monitoring shall be undertaken at the following locations in accordance with the recommendations of the EIA (NDE).	monitoring stations to ensure the	monitoring locations throughout the duration						Noise Control Ordinance



EM&A Ref		Objectives of the Recommended Measures & Main Concerns	Location measure	of the	Implementation Agent	Implementation Stage**		Relevant Guidelines	Legislation	&		
						Des	С	0	Dec			
	• (NM3) Sun Yuen Long Centre;											
	• (NM6) Kam Tin San Tsuen;											
	• (NM7) Scattered House at Kam Sheung Road near Kam											
	Tin Shi											
	• and at any additional locations, where considered											
	necessary, in agreement with EPD											

Des = Design, C = Construction, O = Operation, Dec = Decommissioning



ANNEX G

EQUIPMENT CALIBRATION CERTIFICATES



Equipment Calibration List for DSD Contract No. DE/2005/05 Supply and Installation of E&M Equipments for Nam Sang Wai, Sha Po and Kam Tin Sewage Pumping Stations

Item	Aspect	Description of Equipment	Serial No.	Date of Calibration	Date of Next Calibration
1*		Greasby Anderson GMWS2310 High Volume Sampler	(AM5)	1 Feb 10	1 Apr 10
2*	TSP	Greasby Anderson GMWS2310 High Volume Sampler	(AM6)	1 Feb 10	1 Apr 10
3#		Greasby Anderson GMWS2310 High Volume Sampler	1283 (AM7)	2 Oct 09	Upon power supply resume
4	Noise	Bruel & Kjaer 4231 Acoustical Calibrator	2326408	28 Apr 09	28 Apr 10
5	noise	Bruel & Kjaer 2238 Integrating Sound Level Meter	T212509	28 Apr 09	28 Apr 10

Note: Calibration certificates will only be provided if monitoring equipment is re-calibrated or new.

*Calibration done in this month, see calibration certificate attached.

**Calibration will be done in next month.

No power was received starting from 16 November 2009 till present, thus equipment could not be re-calibrated.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Location II		oumping St AM5	tation		Date of Calibration: 1-Feb-10 Next Calibration Date: 1-Apr-10 Technician: Mr. Ben Tam							
					CONDIT							
		Sea Level Tem	Pressure perature		1015.1 21.6		Corrected Pressure (mm Hg) 761.325 Temperature (K) 295					
				C	ALIBRATIO	N ORIFICE						
				Make-> Model-> Serial # ->	515N		Qstd Slope -> 2.01546 Qstd Intercept -> -0.02851					
					CALIBR	ATION						
Plate		H2O (R)	H20	Qstd	1	IC	LINEAR					
No. 18 13 10 7 5	(in) 5.2 4.3 3.3 2.2 1.3	(in) 5.2 4.3 3.3 2.2 1.3	(in) 10.4 8.6 6.6 4.4 2.6	(m3/min) 1.625 1.479 1.297 1.062 0.819	(chart) 47 42 34 26 18	corrected 47.58 42.52 34.42 26.32 18.22	REGRESSION Slope = 36.8205 Intercept = -12.4481 Corr. coeff. = 0.9987					
5 1.3 1.3 2.6 0.819 Calculations : Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b] IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)] Qstd = standard flow rate IC = corrected chart respones I = actual chart response m = calibrator Qstd slope b = calibrator Qstd intercept Ta = actual temperature during calibration (deg K) Pstd = actual pressure during calibration (mm Hg) For subsequent calculation of sampler flow: 1/m((1)[Sqrt(298/Tav)(Pav/760)]-b)					50.00 40.00 30.00 20.00 0.00 10.00	·	FLOW RATE CHART					
m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature Pav = daily average pressure						0	0.5 1 1.5 2 Standard Flow Rate (m3/min)					

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Location I		g Car Sh AM 6	op (Scat	tered House	1	Next Calibra T	alibration: 1-Feb-10 ation Date: 1-Apr-10 echnician: Mr. Ben '				
					CONDI	FIONS					
	Se	a Level I Temp	Pressure perature	. ,	1015.1 21.6		Corrected Pressure (mm Hg) 761.32 Temperature (K) 29				
				CA	LIBRATIC	N ORIFICE					
				Make-> Model-> Serial # ->	515N	Qstd Slope -> 2.015 Qstd Intercept -> -0.02					
					CALIBR	ATION					
Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected		NEAR RESSION			
18 13 10	5.3 3.8 2.9	5.3 3.8 2.9	10.6 7.6 5.8	1.640 1.391 1.217	50 40 32	50.62 40.50 32.40	Slope Intercep	e = 37.4367 t = -11.5320 f = 0.9976			
7 5	1.6 0.9	1.6 0.9	3.2 1.8	0.908 0.684	23 14	23.29 14.17					
5 0.9 0.9 1.8 0.684 Calculations : Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b] IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)] Qstd = standard flow rate IC = corrected chart respones I = actual chart response m = calibrator Qstd slope b = calibrator Qstd intercept Ta = actual temperature during calibration (deg I Pstd = actual pressure during calibration (mm Hş For subsequent calculation of sampler flow: 1/m((I)[Sqrt(298/Tav)(Pav/760)]-b) m = sampler slope b = sampler intercept I = chart response					- 00.0⊈ • 00.0⊊ • 00.01		FLOW RATE CHAI				
Tav = dail Pav = dail	ly average	-			0.00 -	000 0	୍ତି - Standard Flow ନେର୍ଭତ (m3	/min)1.500 2.000			



ANNEX H

METEOROLOGICAL DATA



Meteorological Data Extracted From the HK Observatory at Lau Fau Shan Weather Station

			Total	Lau Fau Shan Weather Station						
	Date	Weather	Rain fall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction			
Mon	1-Feb-10	Mainly cloudy and misty with one or two light rain patches.	0	21.4	10.5	80	W/SW			
Tue	2-Feb-10	Cloudy and misty with a few rain patches.	Trace	0	12.2	82.5	E/NE			
Wed	3-Feb-10	Mainly cloudy and misty with a few light rain patches.	Trace	25.2	15.5	75	E/NE			
Thu	4-Feb-10	Cloudy with light rain. Fresh easterly winds	0.4	19.4	12	80.5	E/NE			
Fri	5-Feb-10	Moderate to fresh easterly winds.	Trace	20.9	14	75.5	E			
Sat	6-Feb-10	Cloudy with mist and one or two light rain patches.	Trace	19.4	15.2	82.5	E/NE			
Sun	7-Feb-10	Cloudy with a few rain patches.	94.1	17.6	12.2	95.5	E/SE			
Mon	8-Feb-10	Moderate to fresh easterly winds	7.1	19.1	11.5	91	E/NE			
Tue	9-Feb-10	Foggy with a few light rain patches at first.	0	23.8	18.5	80.5	S/SE			
Wed	10-Feb-10	Moderate to fresh easterly winds.	Trace	25.2	16.7	7	S/SE			
Thu	11-Feb-10	Mainly cloudy with light rain.	Trace	25.6	19	76	S/SW			
Fri	12-Feb-10	Cloudy to overcast with a few rain patches.	Trace	17	24	74	NE			
Sat	13-Feb-10	Holiday								
Sun	14-Feb-10	Holiday								
Mon	15-Feb-10	Holiday								
Tue	16-Feb-10	Holiday								
Wed	17-Feb-10	Moderate to fresh northerly winds.	1	7.9	18.2	83.5	N/NE			
Thu	18-Feb-10	It will be cold and cloudy with a few light rain patches.	0.8	8.1	17.7	69.5	NE			
Fri	19-Feb-10	Mainly cloudy with a few rain patches at first.	3.7	7.7	13.5	88	N/NE			
Sat	20-Feb-10	Cloudy with mist. A few showers at first.	Trace	11.9	8.8	72.5	N/NE			
Sun	21-Feb-10	Moderate east to northeasterly winds.	Trace	16.2	9	73.5	E/NE			
Mon	22-Feb-10	Cloudy.Sunny periods during the day.	0.1	18.6	8.2	82.2	N/NW			
Tue	23-Feb-10	Cloudy with mist patches. Sunny intervals during the day.	0	20.3	11.5	79.5	E/SE			
Wed	24-Feb-10	Mainly cloudy with a few showers.	Trace	23.2	22.2	78.5	S/SE			
Thu	25-Feb-10	Misty tomorrow morning. Sunny periods during the day.	0.4	24.8	13.5	82	S/SE			
Fri	26-Feb-10	Sunny intervals with one or two showers.	0.3	25.2	13.5	84	S/SE			
Sat	27-Feb-10	Mainly cloudy with fog patches.	Trace	25.7	13.2	81.2	S/SE			
Sun	28-Feb-10	Light to moderate southerly winds.	Trace	26	19.5	75.5	S/SE			

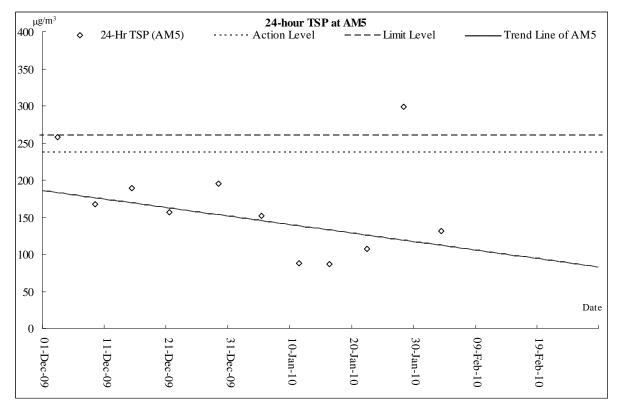


ANNEX I

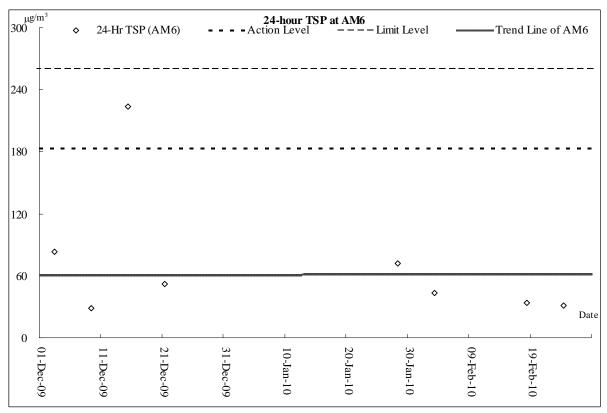
GRAPHICAL PLOTS OF AIR QUALITY AND CONSTRUCTION NOISE MONITORING RESULTS



ΔIJFS



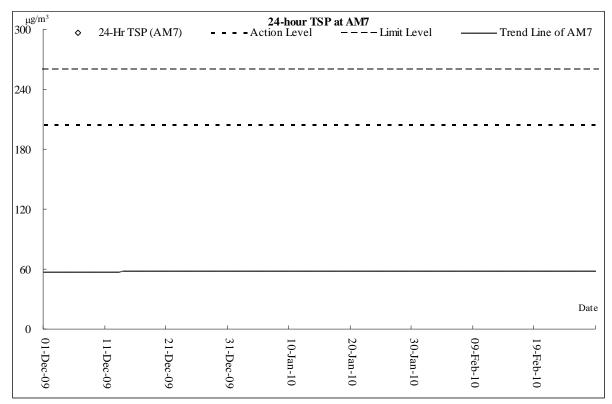
Note: cannot access the monitoring location between 4 and 24 February 2010 due to Lunar New Year holiday landowner's workshop closed therefore no result on plotting is shown.



Note: power failure occurred on 29 December 2009 and 5, 11, 16, 22 January and 9 February 2010 therefore no result on plotting is shown.







Note: power failure occurred between 16 November 2009 and 28 February 2010, therefore no result on plotting is shown.



Construction Noise Monitoring Results

