

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 **May 2009 (No. 4)****

PREPARED FOR

REC ENGINEERING COMPANY LIMITED

Quality Index

Date	Reference No.	Certified By	Verified By
10 June 2009	TCS00462/08/600/R0018v2	Andrew Lau	Dr. Anne F Kerr



Environmental Team Leader

Independent Environmental Checker

Version No.	Date	Remarks
1	4 June 2009	First Submission
2	10 June 2009	Amended against IEC's comment on 9 June 2009

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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 **fourth** Monthly Environmental Monitoring and Audit (EM&A) Report for **May 2009** presenting the EM&A program conducted from **1 to 31 May 2009** for the Contract No.: DE/2005/05. The EM&A program in **May 2009** covered air quality, construction noise and waste management only.

BREACH OF ACTION AND LIMIT (AL) LEVELS

- ES05. No 24-hour TSP monitoring results that triggered the Action and Limit Level were recorded in this month.
- ES06. No construction noise complaint (an Action Level exceedance) or exceedance of the Limit Level was recorded in this month.

COMPLAINT LOG

- ES07. No environmental complaint was received in this month.

NOTIFICATION OF ANY SUMMONS AND SUCCESSFUL PROSECUTION

- ES08. There was no environmental summons or prosecution notified this month.

REPORTING CHANGES

- ES09. There are no changes in the reporting format or content to be reported in this month.

FUTURE KEY ISSUES

- ES10. Construction activities undertaken in this month will continue in **June 2009**. New construction activities included installation of screens at SPSPS and KTSPS and building services installation works at the transformer Room of Nam Sang Wai SPS. It is considered that those activities may potentially induce environmental impacts regarding air quality, construction noise and construction waste. Environmental mitigation measures will be implemented and maintained according to the Mitigation Implementation Schedule.

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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 **fourth** Monthly Environmental Monitoring and Audit (EM&A) Report for **May 2009** presenting the EM&A program conducted from **1 to 31 May 2009** for the Contract No.: DE/2005/05. The EM&A program in **May 2009** covered air quality, construction noise and waste management only.

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

- 1.03 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

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

Table 1-1 Construction Activities in this Month

Sewage Pumping Station	Construction Activities in this Month
Nam Sang Wai	<ul style="list-style-type: none"> No activity
Sha Po	<ul style="list-style-type: none"> Installation of lifting appliance, building services, fire services, pipework and valves, penstocks installation and ventilation system
Kam Tin	<ul style="list-style-type: none"> Installation of lifting appliance, building services, fire services, pipework and valves, penstocks installation and ventilation system

REPORT STRUCTURE

- 1.05 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
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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](#).

Table 2-1 Works Undertaken and Illustrations of Mitigation Measures

Sewage Pumping Stations	Description of Construction Activities	Environmental Mitigation Measures	EM&A Ref.
Nam Sang Wai	<ul style="list-style-type: none"> No activity as the site had not been handed over to the Contractor 	<ul style="list-style-type: none"> N/A 	-
Sha Po	<ul style="list-style-type: none"> Installation of lifting appliance Building services Fire services Pipework and valves Penstocks installation Ventilation system 	<ul style="list-style-type: none"> 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 Restrict open fires and provide fire fighting equipment in the works area Apply and obtain appropriate waste disposal licenses 	H1 I1 & I2 D5 F9 D1
Kam Tin	<ul style="list-style-type: none"> Installation of lifting appliance Building services Fire services Pipework and valves Penstocks installation Ventilation system 	<ul style="list-style-type: none"> Maximize the use of quiet PME on site Implement trip-ticket system for waste disposal Restrict open fires and provide fire fighting equipment in the works area Conduct noise and dust monitoring as per EM&A Manual during construction Perform weekly inspection with ET and monthly audit with IEC 	B1, B2 D5 F9 I1 & I2 H1

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 summary in the [Table 2-2](#).

Table 2-2 Description of Monitoring Stations

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

- 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 Air Quality

Monitoring Locations	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM5	> 353	> 176	> 500	> 260
AM6	> 329	> 176	> 500	> 260
AM7	> 383	> 157	> 500	> 260

Table 3-3 Action 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 4-1 Status 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 $\pm 2.5\%$ 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 $\pm 2.5\%$ 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 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/Locations

Sewage Pumping Station	Monitoring Station/Location	Description
Air Quality (3 Stations)		
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 Wai
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 24-hour TSP impact monitoring was conducted at the designated stations once every 6 days in compliance with the EM&A Manual (under the DC/2005/02 Contract – Designated Element). In this month, **12** monitoring events of 24-hour TSP monitoring were conducted.
- 5.17 The impact noise monitoring was conducted at the designated stations once every 6 normal working days in compliance with the EM&A Manual under the DC/2005/02 Contract – Designated Element. A total of **12** 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 No 24-hour TSP monitoring result trigger the Action and Limit Level was recorded in this month. Power failure was occurred at AM6 on 13 May 2009 and the scheduled 24-hour TSP monitoring has been affected, re-sampling to make up the lost sample was done on 14 May 2009

Table 5-3 Summary of Air Quality Monitoring Results

Date	24-hour TSP ($\mu\text{g}/\text{m}^3$)		
	AM5	AM6	AM7
7-May-09	103	98	55
13-May-09	107	91 *	65
19-May-09	119	17	68
25-May-09	91	24	42
Average (Range)	105 (91-119)	57 (17-98)	58 (42-68)
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.
 * re-sampling on 14 May 2009 to make up the lost sample.

5.20 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
8-May-09	11:04	45.9	48.7	48.5	51.4	50.3	48.8	49.3	52.3
14-May-09	09:45	46.7	50.2	51.3	48.6	46.7	45.9	48.7	51.7
20-May-09	09:46	45.9	45.3	46.7	48.7	51.3	50.4	48.6	51.6
26-May-09	09:52	48.7	49.2	49.9	50.3	51.4	49.5	49.9	52.9
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	Corrected* Leq30
8-May-09	11:27	59.3	55.7	56.2	55.5	55.0	54.8	56.4	75.0
14-May-09	11:28	56.5	56.4	55.5	54.5	55.7	55.4	55.7	75.0
20-May-09	11:30	60.7	59.3	61.6	57.3	60.0	62.1	60.4	75.0
26-May-09	11:27	63.0	61.9	60.4	62.8	64.0	65.4	63.2	75.0
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

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected* Leq30
8-May-09	09:00	59.4	58.7	58.9	60.3	58.3	57.2	58.9	75.0
14-May-09	09:00	45.7	46.2	46.8	47.9	50.2	48.7	47.9	75.0
20-May-09	11:15	48.7	47.1	50.4	51.7	52.4	50.9	50.5	75.0
26-May-09	09:00	50.4	51.3	50.9	50.5	48.7	47.2	50.0	75.0
Limit Level									75

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

5.21 The tentative monitoring schedule for the coming month (**June 2009**) is shown in **Table 5-7**.

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

Date		Air Quality	Noise Leq 30min
1-June-09	Mon		
2-June-09	Tue		
3-June-09	Wed		
4-June-09	Thu		
5-June-09	Fri		
6-June-09	Sat		
7-June-09	Sun		
8-June-09	Mon		
9-June-09	Tue		
10-June-09	Wed		
11-June-09	Thu		
12-June-09	Fri		
13-June-09	Sat		
14-June-09	Sun		
15-June-09	Mon		
16-June-09	Tue		
17-June-09	Wed		
18-June-09	Thu		
19-June-09	Fri		
20-June-09	Sat		
21-June-09	Sun		
22-June-09	Mon		
23-June-09	Tue		
24-June-09	Wed		
25-June-09	Thu		
26-June-09	Fri		
27-June-09	Sat		
28-June-09	Sun		
29-June-09	Mon		
30-June-09	Tue		

✓	Monitoring Day
	Sunday or Public

WEATHER CONDITIONS DURING THE MONITORING MONTH

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

GRAPHICAL PLOTS OF TRENDS OF MONITORED PARAMETERS

5.23 The graphical plots of air quality and construction noise data are presented in **Annex I**.

WEATHER CONDITIONS THAT AFFECT THE MONITORING RESULTS

5.24 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

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

QA/QC RESULTS AND DETECTION LIMITS

5.26 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 No 24-hour TSP monitoring results that triggered the Action or Limit Level was recorded in this month.
- 6.02 No construction noise complaint 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 complaints 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 **May 2009** include installation of lifting appliances, electrical works, penstock & screen and pipework installation at Sha Po and Kam Tin SPSs. New construction activities included installation of screens at SPSPS and KTSPS and building services installation works at the transformer Room of Nam Sang Wai SPS. 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)	0.005	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 discharged 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 **6, 12, 19 and 26 May 2009** to evaluate the site environmental performance. The monthly site audit by the IEC for **May 2009** was undertaken on **19 May 2009**. No non-compliance or 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

Inspection Date	Inspection/Audit Findings and Recommendation	Rectified on
6 May 2009	Entrance should keep clear and reminded to dispose waste properly.	12 May 2009
12 May 2009	NA	NA
19 May 2009	The contractor was reminded to maintain the site area clean and tidy. (Nam Sang Wai Pumping Station)	26 May 2009
26 May 2009	NA	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

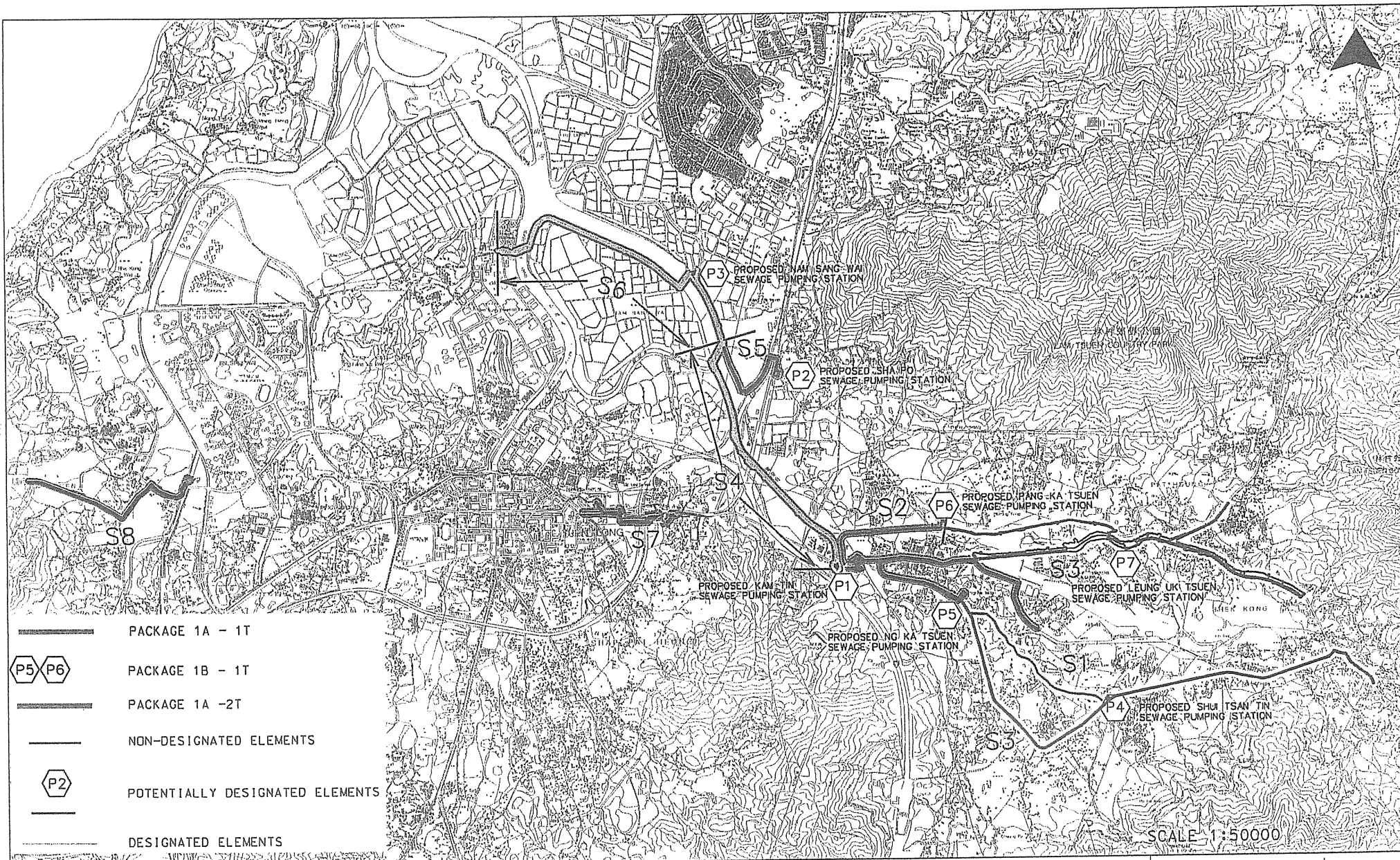


FIGURE 2.1a

ELEMENTS FOR THE YUEN LONG AND KAM TIN SEWERAGE AND SEWAGE DISPOSAL STAGE I

Environmental
Resources
Management

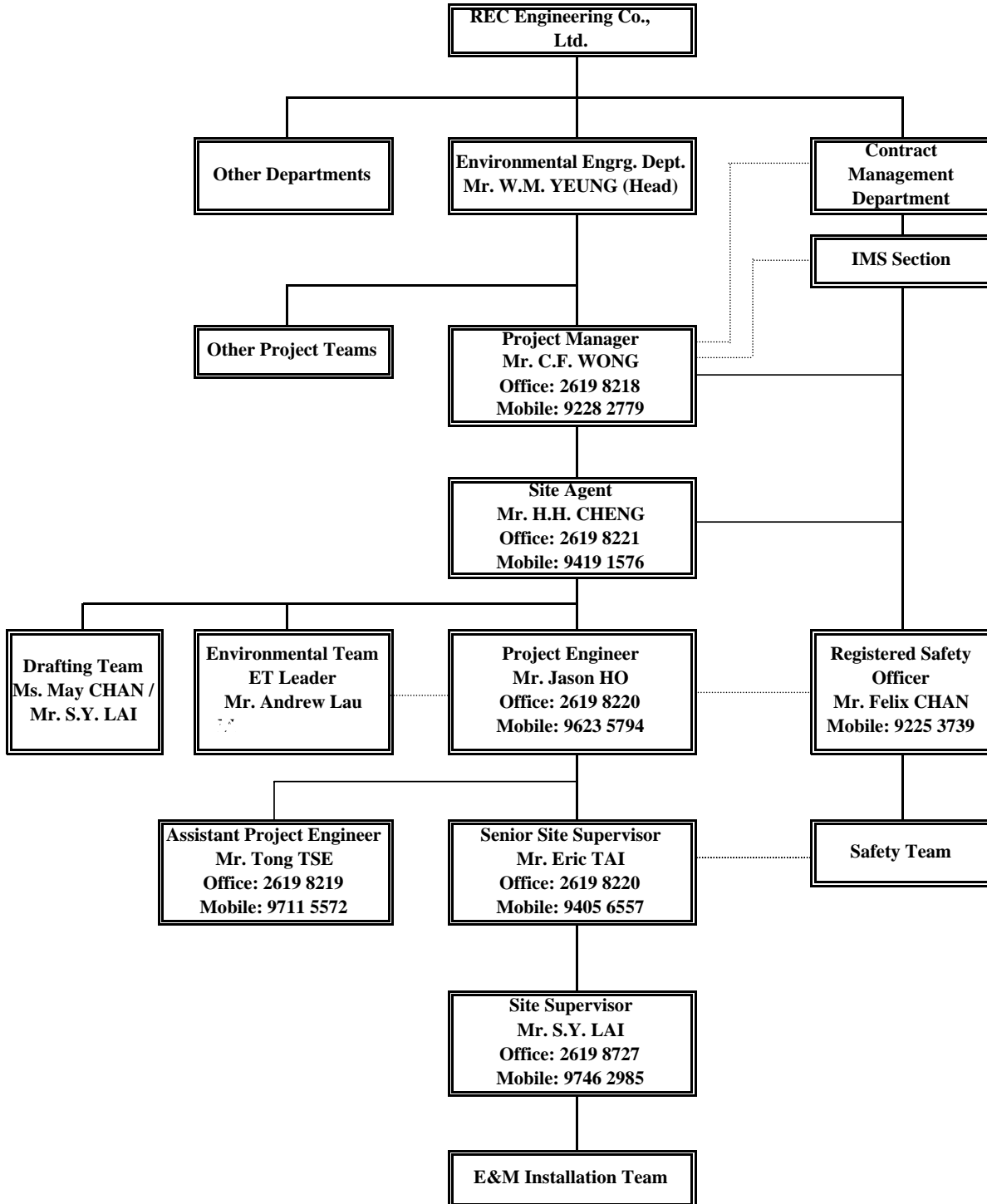


ANNEX B

**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**

Project Organization Chart



Effective Date : 09 February 2009

ANNEX C

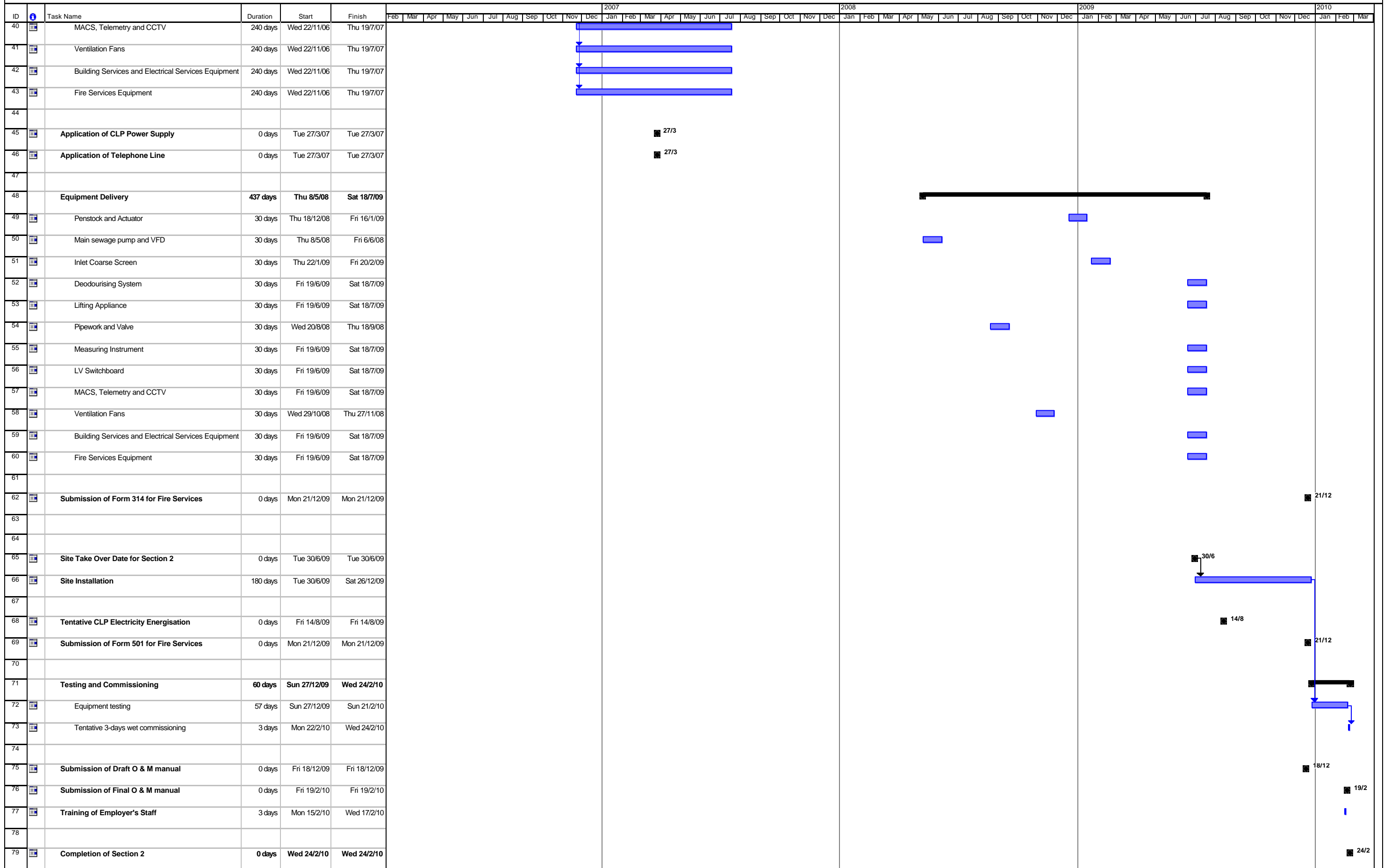
CONSTRUCTION PROGRAM

ID	Task Name	Duration	Start	Finish	2007												2008												2009												2010					
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar				
1	Contract Commencement Date	0 days	Mon 27/3/06	Mon 27/3/06	■ 27/3																																									
2																																														
3	Section 1 Surge Analysis and Drawings Submission	120 days	Mon 27/3/06	Mon 24/7/06	■																																									
4																																														
5	Surge Analysis for 3 SPSs	90 days	Mon 27/3/06	Sat 24/6/06	■																																									
6	Civil Requirement Drawings Submission for 3 nos. Sewage Pumping Stations	90 days	Mon 27/3/06	Sat 24/6/06	■																																									
7	Submission of GA Drawings, Equipment Layout Drawings, Electrical Schematic Drawings, Cable Route Drawings, Electrical Services Drawings and PID	90 days	Mon 27/3/06	Sat 24/6/06	■																																									
8	Resubmission of above items	60 days	Fri 26/5/06	Mon 24/7/06	■																																									
9	Approval of design works	0 days	Mon 24/7/06	Mon 24/7/06	■ 24/7																																									
10																																														
11	Section 2 Works for Nam Sang Wai SPS	1431 days	Mon 27/3/06	Wed 24/2/10	■																																									
12																																														
13	Other Drawings Submission and Approval	180 days	Mon 27/3/06	Fri 22/9/06	■																																									
14																																														
15	Equipment Submission and Approval	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
16	Penstock and Actuator	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
17	Main sewage pump and VFD	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
18	Inlet Coarse Screen	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
19	Deodourising System	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
20	Lifting Appliance	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
21	Pipework and Valve	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
22	Measuring Instrument	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
23	LV Switchboard	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
24	MACS, Telemetry and CCTV	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
25	Ventilation Fans	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
26	Building Services and Electrical Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
27	Fire Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06	■																																									
28																																														
29	Equipment Procurement and Manufacture	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
30	Penstock and Actuator	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
31	Main sewage pump and VFD	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
32	Inlet Coarse Screen	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
33																																														
34																																														
35	Deodourising System	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
36	Lifting Appliance	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
37	Pipework and Valve	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
38	Measuring Instrument	240 days	Wed 22/11/06	Thu 19/7/07	■																																									
39	LV Switchboard	240 days	Wed 22/11/06	Thu 19/7/07	■																																									

Date: 24/4/2009

Task Progress Summary Rolled Up Split Rolled Up Progress Project Summary Deadline

Split Milestone Rolled Up Task Rolled Up Milestone External Tasks External Milestone



Date: 24/4/2009

Task: [Blue bar] Progress: [Black bar] Summary: [Grey bar] Rolled Up Split: [Light blue bar] Rolled Up Progress: [Dark grey bar] Project Summary: [Grey bar] Deadline: [Green square]
 Split: [Light blue bar] Milestone: [Black square] Rolled Up Task: [Blue bar] Rolled Up Milestone: [Black square] External Tasks: [Grey bar] External Milestone: [Black square]

ID	Task Name	Duration	Start	Finish	2007												2008												2009												2010											
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar										
80																																																				
81	Section 3 Works for Sha Po SPS	1300 days	Mon 27/3/06	Fri 16/10/09																																																
82																																																				
83	Other Drawings Submission and Approval	180 days	Mon 27/3/06	Fri 22/9/06																																																
84																																																				
85	Equipment Submission and Approval	240 days	Mon 27/3/06	Tue 21/11/06																																																
86	Penstock and Actuator	240 days	Mon 27/3/06	Tue 21/11/06																																																
87	Main sewage pump and VFD	240 days	Mon 27/3/06	Tue 21/11/06																																																
88	Inlet Coarse Screen	240 days	Mon 27/3/06	Tue 21/11/06																																																
89	Deodourising System	240 days	Mon 27/3/06	Tue 21/11/06																																																
90	Lifting Appliance	240 days	Mon 27/3/06	Tue 21/11/06																																																
91	Pipework and Valve	240 days	Mon 27/3/06	Tue 21/11/06																																																
92	Measuring Instrument	240 days	Mon 27/3/06	Tue 21/11/06																																																
93	LV Switchboard	240 days	Mon 27/3/06	Tue 21/11/06																																																
94	MACS, Telemetry and CCTV	240 days	Mon 27/3/06	Tue 21/11/06																																																
95	Calcium Nitrate Dosing System	240 days	Mon 27/3/06	Tue 21/11/06																																																
96	Ventilation Fans	240 days	Mon 27/3/06	Tue 21/11/06																																																
97	Building Services and Electrical Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06																																																
98	Fire Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06																																																
99																																																				
100																																																				
101																																																				
102	Equipment Procurement and Manufacture	240 days	Wed 22/11/06	Thu 19/7/07																																																
103	Penstock and Actuator	240 days	Wed 22/11/06	Thu 19/7/07																																																
104	Main sewage pump and VFD	240 days	Wed 22/11/06	Thu 19/7/07																																																
105	Inlet Coarse Screen	240 days	Wed 22/11/06	Thu 19/7/07																																																
106	Deodourising System	240 days	Wed 22/11/06	Thu 19/7/07																																																
107	Lifting Appliance	240 days	Wed 22/11/06	Thu 19/7/07																																																
108	Pipework and Valve	240 days	Wed 22/11/06	Thu 19/7/07																																																
109	Measuring Instrument	240 days	Wed 22/11/06	Thu 19/7/07																																																
110	LV Switchboard	240 days	Wed 22/11/06	Thu 19/7/07																																																
111	MACS, Telemetry and CCTV	240 days	Wed 22/11/06	Thu 19/7/07																																																
112	Calcium Nitrate Dosing System	240 days	Wed 22/11/06	Thu 19/7/07																																																
113	Ventilation Fans	240 days	Wed 22/11/06	Thu 19/7/07																																																
114	Building Services and Electrical Services Equipment	240 days	Wed 22/11/06	Thu 19/7/07																																																
115	Fire Services Equipment	240 days	Wed 22/11/06	Thu 19/7/07																																																
116																																																				
117	Application of CLP Power Supply	0 days	Tue 27/3/07	Tue 27/3/07																																																
118	Application of Telephone Line	0 days	Tue 27/3/07	Tue 27/3/07																																																
119																																																				

Date: 24/4/2009

Task Progress Summary Rolled Up Split Rolled Up Progress Project Summary Deadline
 Split Milestone Rolled Up Task Rolled Up Milestone External Tasks External Milestone

ID	Task Name	Duration	Start	Finish	2007												2008												2009												2010											
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar										
120	Equipment Delivery	459 days	Tue 19/2/08	Fri 22/5/09																																																
121	Penstock and Actuator	30 days	Mon 9/2/09	Tue 10/3/09																																																
122	Main sewage pump and VFD	30 days	Sat 10/5/08	Sun 8/6/08																																																
123	Inlet Coarse Screen	30 days	Tue 19/2/08	Wed 19/3/08																																																
124	Deodourising System	30 days	Thu 23/4/09	Fri 22/5/09																																																
125	Lifting Appliance	30 days	Thu 5/3/09	Fri 3/4/09																																																
126	Pipework and Valve	30 days	Wed 20/8/08	Thu 18/9/08																																																
127	Measuring Instrument	30 days	Thu 23/4/09	Fri 22/5/09																																																
128	LV Switchboard	30 days	Mon 9/2/09	Tue 10/3/09																																																
129	MACS, Telemetry and CCTV	30 days	Mon 9/2/09	Tue 10/3/09																																																
130	Calcium Nitrate Dosing System	30 days	Mon 27/10/08	Tue 25/11/08																																																
131	Ventilation Fans	30 days	Wed 29/10/08	Thu 27/11/08																																																
132	Building Services and Electrical Services Equipment	30 days	Thu 19/3/09	Fri 17/4/09																																																
133	Fire Services Equipment	30 days	Thu 19/3/09	Fri 17/4/09																																																
134																																																				
135																																																				
136	Submission of Form 314 for Fire Services	0 days	Fri 28/8/09	Fri 28/8/09																																																
137																																																				
138	1st stage Site Take Over Date for Section 3	0 days	Tue 17/2/09	Tue 17/2/09																																																
139	Site Installation at CLP Tx Rm	45 days	Tue 17/2/09	Thu 2/4/09																																																
140																																																				
141	2nd stage Site Take Over Date for Section 3	0 days	Fri 3/4/09	Fri 3/4/09																																																
142	Site Installation at Other Locations	134 days	Fri 3/4/09	Fri 14/8/09																																																
143	Penstock and Actuator	60 days	Mon 20/4/09	Thu 18/6/09																																																
144	Main sewage pump and VFD	30 days	Wed 27/5/09	Thu 25/6/09																																																
145	Inlet Coarse Screen	7 days	Fri 29/5/09	Thu 4/6/09																																																
146	Deodourising System	30 days	Mon 15/6/09	Tue 14/7/09																																																
147	Lifting Appliance	30 days	Mon 27/4/09	Tue 26/5/09																																																
148	Pipework and Valve	30 days	Wed 27/5/09	Thu 25/6/09																																																
149	Measuring Instrument	45 days	Wed 27/5/09	Fri 10/7/09																																																
150	LV Switchboard	15 days	Thu 30/4/09	Thu 14/5/09																																																
151	MACS, Telemetry and CCTV	60 days	Tue 16/6/09	Fri 14/8/09																																																
152	Calcium Nitrate Dosing System	15 days	Fri 26/6/09	Fri 10/7/09																																																
153	Ventilation Fans and air ducts	90 days	Fri 15/5/09	Wed 12/8/09																																																
154	Building Services and Electrical Services Equipment	120 days	Fri 3/4/09	Fri 31/7/09																																																
155																																																				
156	Fire Services Equipment	120 days	Fri 3/4/09	Fri 31/7/09																																																
157																																																				
158																																																				
159	Tentative CLP Electricity Energisation	0 days	Thu 28/5/09	Thu 28/5/09																																																

Date: 24/4/2009

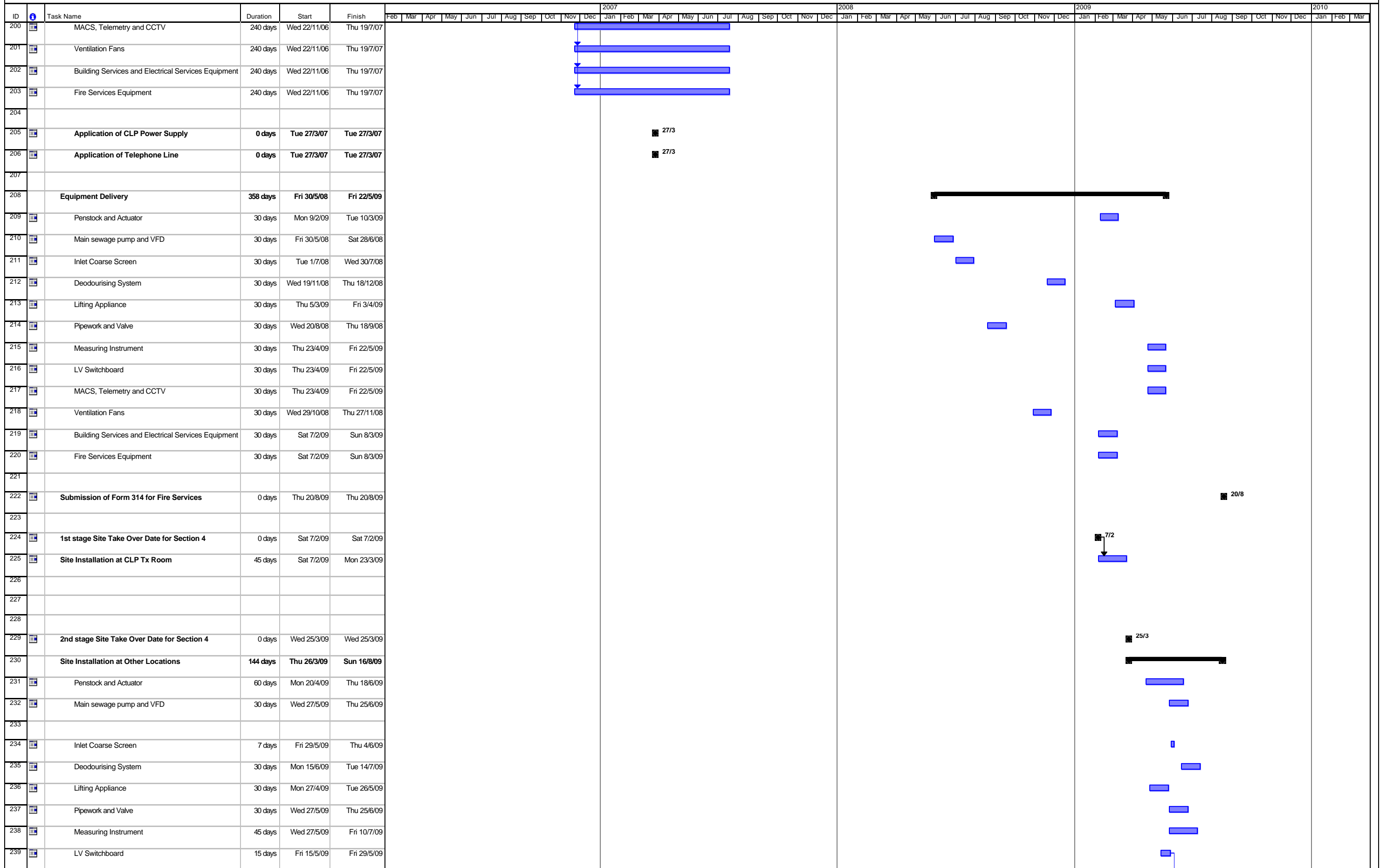
Task Progress Summary Rolled Up Split Rolled Up Progress Project Summary Deadline

Split Milestone Rolled Up Task Rolled Up Milestone External Tasks External Milestone

ID	Task Name	Duration	Start	Finish	2007												2008												2009												2010		
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
160	Submission of Form 501 for Fire Services	0 days	Fri 28/8/09	Fri 28/8/09																																							
161																																											
162	Testing and Commissioning	60 days	Tue 18/8/09	Fri 16/10/09																																							
163	Equipment testing	57 days	Tue 18/8/09	Tue 13/10/09																																							
164	Tentative 3-days wet commissioning	3 days	Wed 14/10/09	Fri 16/10/09																																							
165																																											
166	Submission of Draft O & M manual	0 days	Fri 28/8/09	Fri 28/8/09																																							
167	Submission of Final O & M manual	0 days	Fri 16/10/09	Fri 16/10/09																																							
168	Training of Employer's Staff	3 days	Tue 6/10/09	Thu 8/10/09																																							
169																																											
170	Completion of Section 3	0 days	Thu 29/10/09	Thu 29/10/09																																							
171																																											
172	Section 4 Works for Kam Tin SPS	1303 days	Mon 27/3/06	Tue 20/10/09																																							
173																																											
174	Other Drawings Submission and Approval	180 days	Mon 27/3/06	Fri 22/9/06																																							
175	Surge analysis report submission and approval	120 days	Mon 27/3/06	Mon 24/7/06																																							
176																																											
177	Equipment Submission and Approval	240 days	Mon 27/3/06	Tue 21/11/06																																							
178	Penstock and Actuator	240 days	Mon 27/3/06	Tue 21/11/06																																							
179	Main sewage pump and VFD	240 days	Mon 27/3/06	Tue 21/11/06																																							
180	Inlet Coarse Screen	240 days	Mon 27/3/06	Tue 21/11/06																																							
181	Deodourising System	240 days	Mon 27/3/06	Tue 21/11/06																																							
182	Lifting Appliance	240 days	Mon 27/3/06	Tue 21/11/06																																							
183	Pipework and Valve	240 days	Mon 27/3/06	Tue 21/11/06																																							
184	Measuring Instrument	240 days	Mon 27/3/06	Tue 21/11/06																																							
185	LV Switchboard	240 days	Mon 27/3/06	Tue 21/11/06																																							
186	MACS, Telemetry and CCTV	240 days	Mon 27/3/06	Tue 21/11/06																																							
187	Ventilation Fans	240 days	Mon 27/3/06	Tue 21/11/06																																							
188	Building Services and Electrical Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06																																							
189	Fire Services Equipment	240 days	Mon 27/3/06	Tue 21/11/06																																							
190																																											
191	Equipment Procurement and Manufacture	240 days	Wed 22/11/06	Thu 19/7/07																																							
192	Penstock and Actuator	240 days	Wed 22/11/06	Thu 19/7/07																																							
193	Main sewage pump and VFD	240 days	Wed 22/11/06	Thu 19/7/07																																							
194	Inlet Coarse Screen	240 days	Wed 22/11/06	Thu 19/7/07																																							
195	Deodourising System	240 days	Wed 22/11/06	Thu 19/7/07																																							
196	Lifting Appliance	240 days	Wed 22/11/06	Thu 19/7/07																																							
197	Pipework and Valve	240 days	Wed 22/11/06	Thu 19/7/07																																							
198	Measuring Instrument	240 days	Wed 22/11/06	Thu 19/7/07																																							
199	LV Switchboard	240 days	Wed 22/11/06	Thu 19/7/07																																							

Date: 24/4/2009

Task		Progress		Summary		Rolled Up Split		Rolled Up Progress		Project Summary		Deadline	
Split		Milestone		Rolled Up Task		Rolled Up Milestone		External Tasks		External Milestone			



Date: 24/4/2009

Task: [Blue bar] Progress [Black bar] Summary [Grey bar] Rolled Up Split [Light blue bar] Rolled Up Progress [Dark grey bar] Project Summary [Light grey bar] Deadline [Green icon]

Split [Light blue bar] Milestone [Black square] Rolled Up Task [Blue bar] Rolled Up Milestone [Black square] External Tasks [Grey bar] External Milestone [Black square]

ANNEX D

LOCATION OF MONITORING STATIONS



FIGURE 3.7b

LOCATION OF DUST MONITORING STATION (AM5)

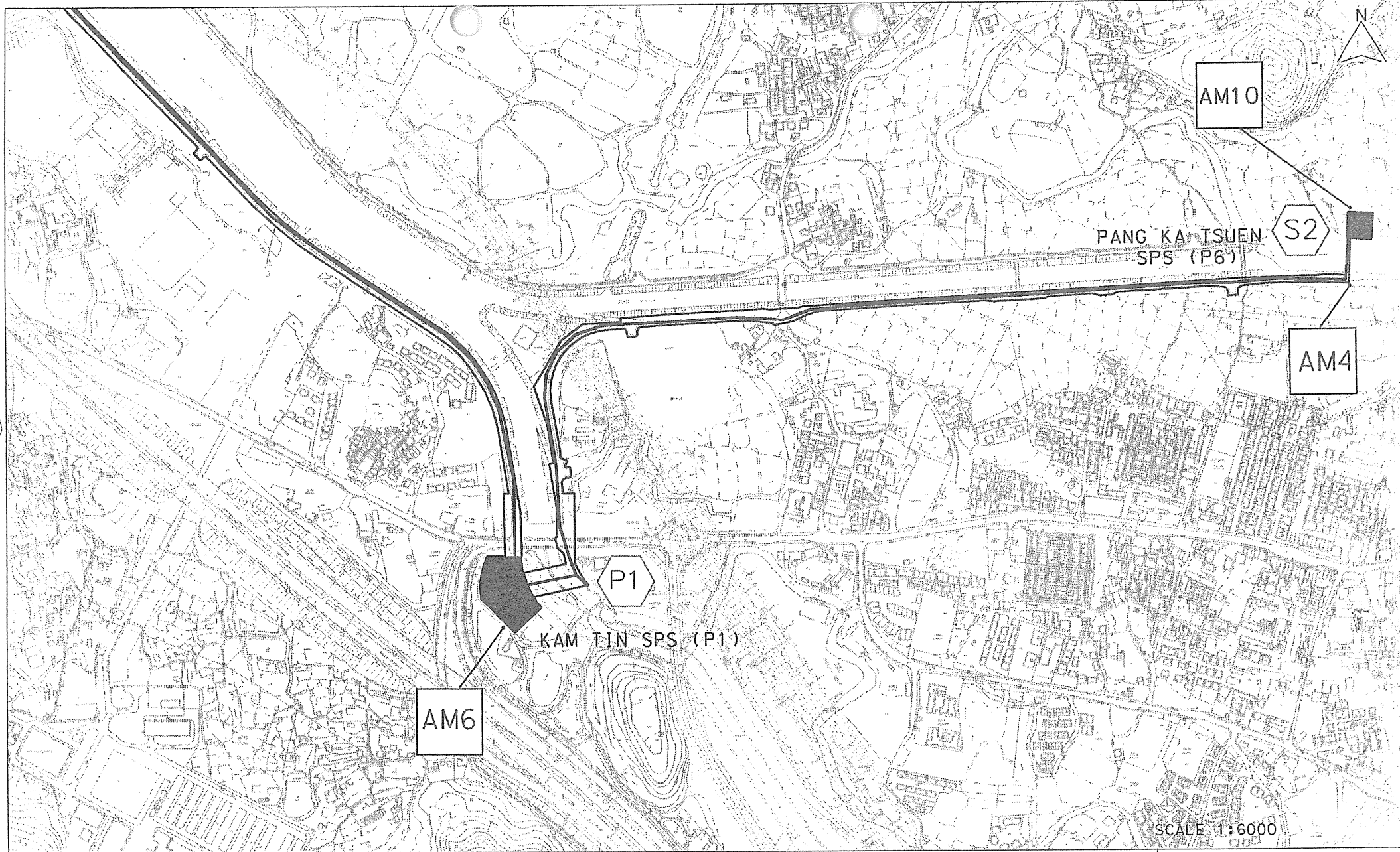


FIGURE 3.7a

LOCATION OF DUST MONITORING STATIONS (AM4, AM6 & AM10)

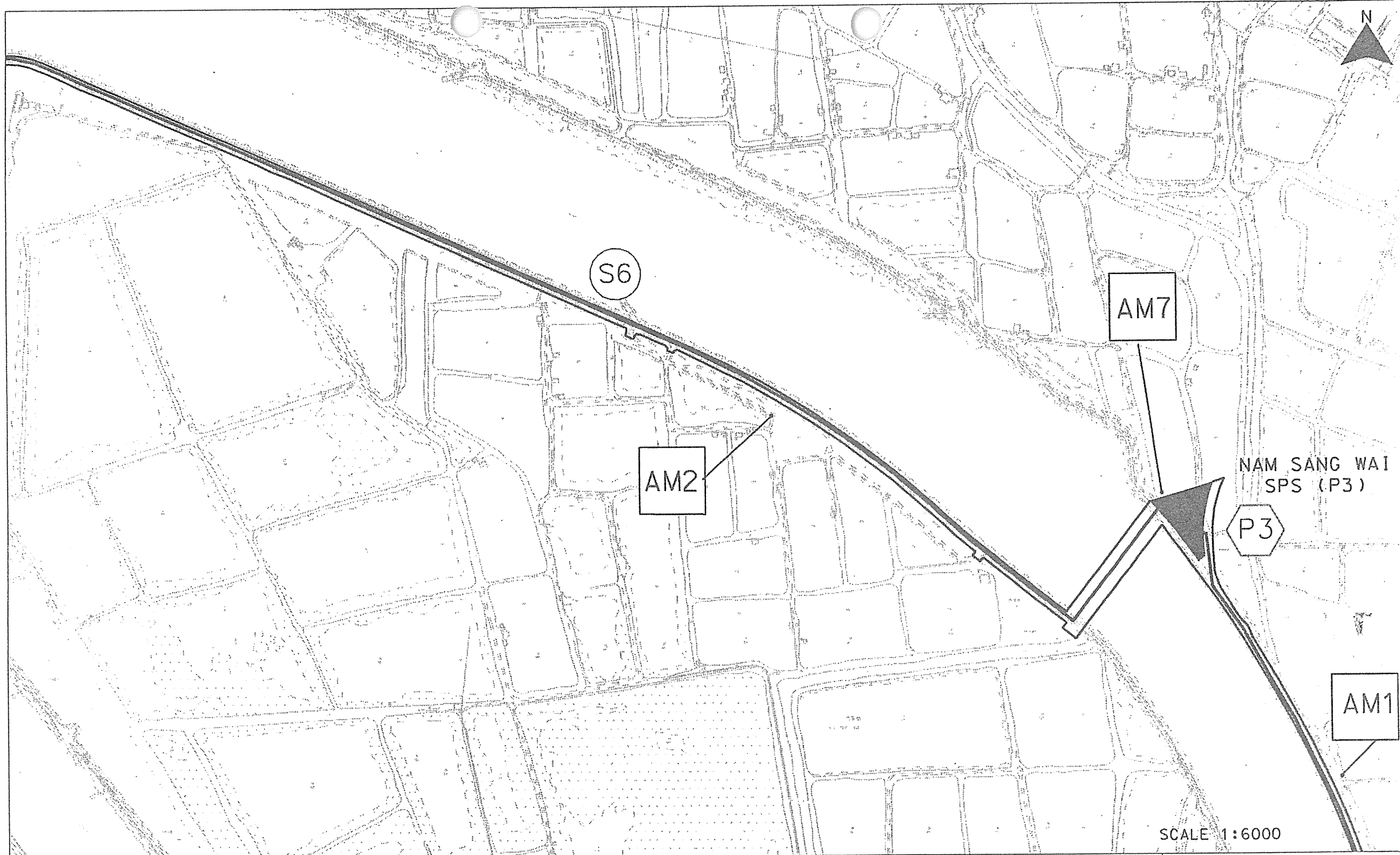


FIGURE 3.7c

LOCATION OF DUST MONITORING STATIONS (AM1, AM2 & AM7)

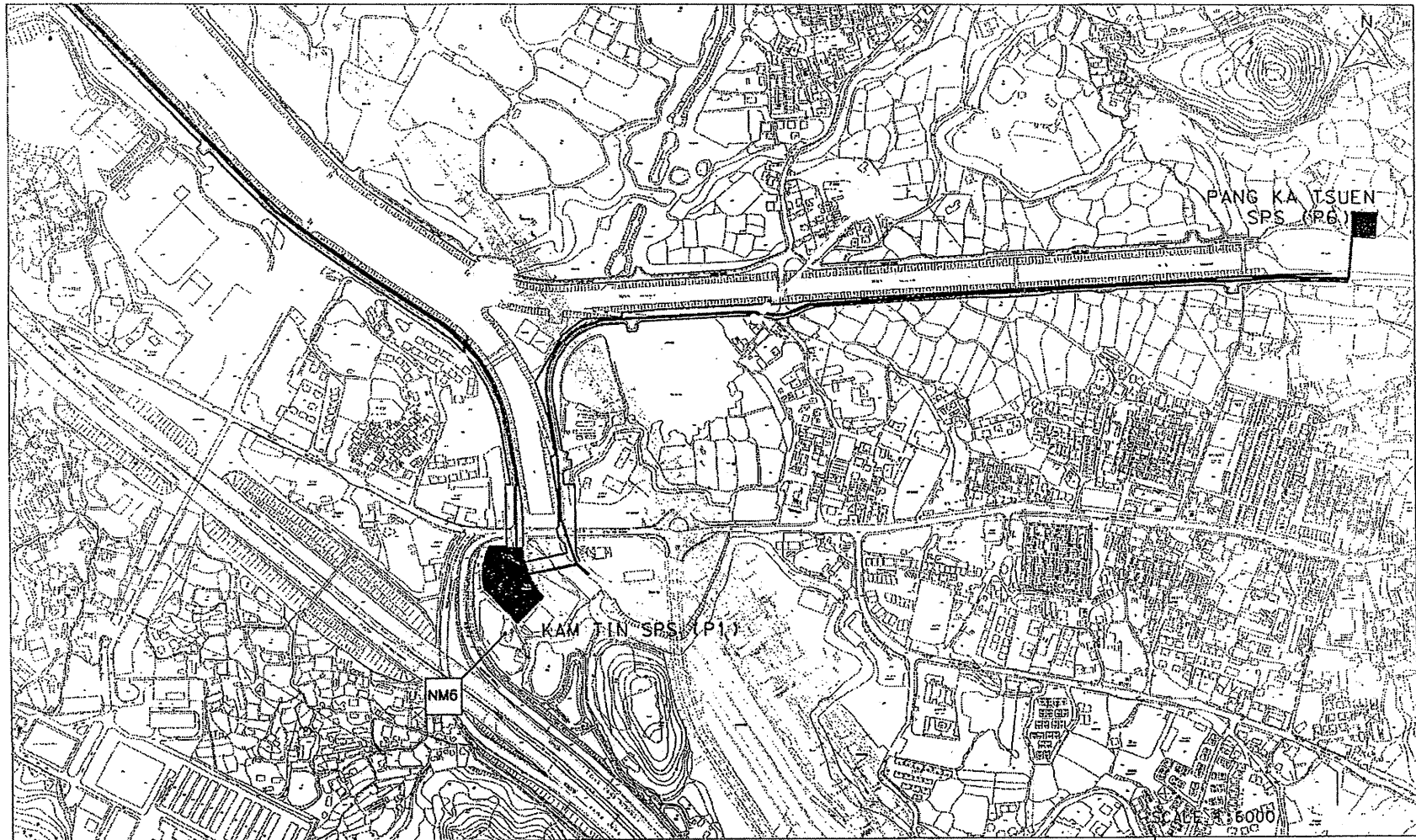


FIGURE C7

LOCATION OF NOISE MONITORING STATIONS (NM1, NM6, NM8, NM9)

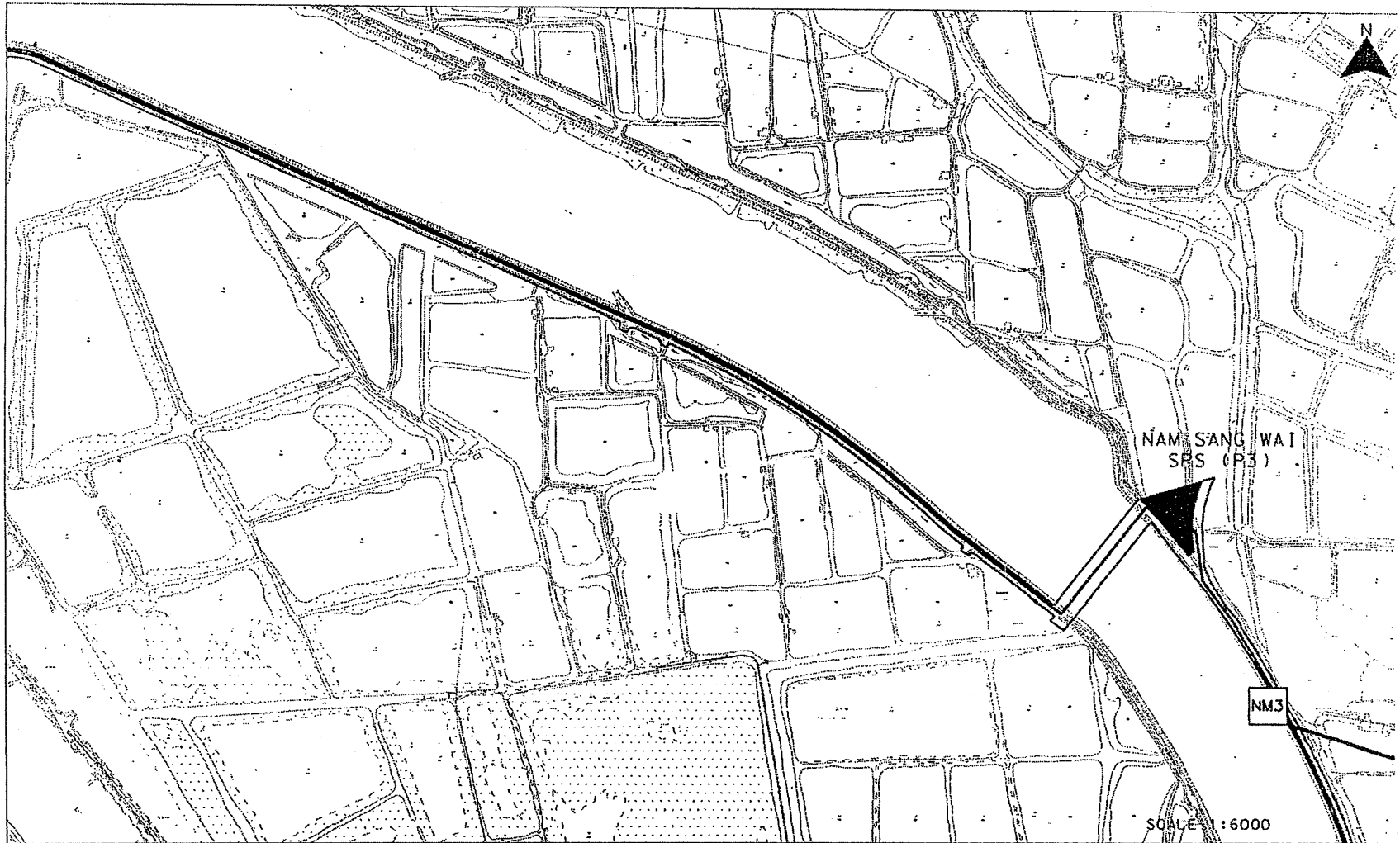


FIGURE C8

LOCATION OF NOISE MONITORING STATIONS (NM3, NM5)

USTN FILE: C2008/EMSA/EMSA-C8
DATE: 23/08/2001

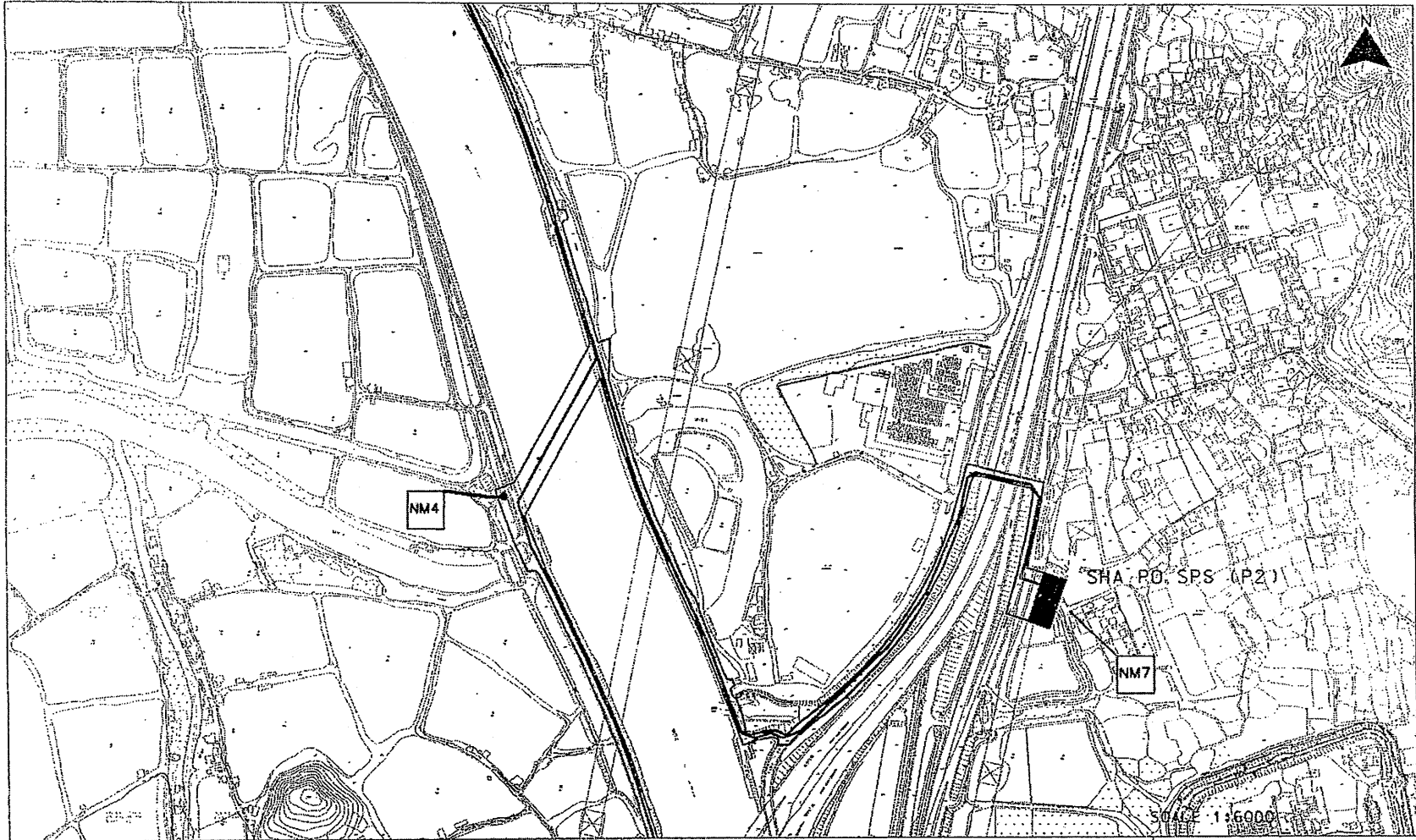


FIGURE C9

LOCATION OF NOISE MONITORING STATIONS (NM4, NM7)

US1N FILE: C2006/EMAA/EMAA-09
DATE: 23/05/2001

ANNEX E

EVENT AND ACTION PLAN

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
<i>Action Level</i>				
Exceedance for one sample	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	ACTION			
	ET Leader	IEC	Engineer	Contractor
<i>Limit Level</i>				
Exceedance for one sample	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 Noise				
EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. If repeat measurements confirm exceedance ,increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 5. If exceedance stops, inform Contractor and cease additional noise monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Check and confirm Contractors proposed remedial actions and working methods are appropriate 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Inform complainant of actions taken, if necessary 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Liaise with Engineer and IEC to develop appropriate remedial measures to reduce noise impact 3. Amend working methods and remedial proposals if required by the Engineer or IEC 4. Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat measurements to confirm findings 3. Increase the monitoring frequency to daily 4. Discuss remedial actions with IEC, Engineer and the EPD 5. Assess the efficacy of remedial measures and keep the Contractor informed 6. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 7. If exceedance stops, inform the Contractor and cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Discuss with Contractor and Engineer on possible remedial measures 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Ensure remedial measures are properly implemented 5. If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated 6. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if possible 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 6. 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	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
CONSTRUCTION PHASE										
3.5	A3	AIR QUALITY - Construction Phase The following measures are enforceable under the <i>Air Pollution Control (Construction Dust) Regulations</i> Use of vehicles <ul style="list-style-type: none"> where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; 	To control potential dust impacts from vehicle movements.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			<i>Part IV, Clause 21, (1), Air Pollution Control (Construction Dust) Regulations</i>
3.5	A4	Power-driven drilling, and cutting <ul style="list-style-type: none"> water should be continuously sprayed on the surface where any mechanical breaking operation that causes dust emission is carried out, unless the process is accompanied by the operation of an effective dusty extraction and filtering device; 	To control potential dust impacts during mechanical breaking.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			<i>Part IV, Clause 22, Air Pollution Control (Construction Dust) Regulations</i>
4.7.1	B1	NOISE - Construction Phase General Site Clearance – Demolition Works <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997 (Examples of these PME are shown in Table F2),</i> 	To control potential noise impacts during site clearance and demolition works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			<i>Annex 5 of EIAO-TM</i>
4.7.1	B3	Sewers and Rising Mains using Open Trench Method <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,</i> 	To control potential noise impacts during excavation works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			<i>Annex 5 of EIAO-TM</i>
4.7.1	B4	<ul style="list-style-type: none"> Use of handheld breakers for all initial road opening activities, when breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached. 	To control potential noise impacts during road opening activities.	Where there are NSRs located within 50m of the line of sight. Throughout the full duration of the road opening activities.	The Contractor		✓			
4.7.1	B5	<ul style="list-style-type: none"> Use of movable noise barriers or 3 sided enclosures for all initial road opening activities (breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached), where there are NSRs located within 50m of the line of sight from the works area. 	To control potential noise impacts during road opening activities.	Where there are NSRs located within 50m of the line of sight. Throughout the full duration of the road opening activities.	The Contractor		✓			
4.7.1	B6	Sewers and Rising Mains using Pipe Jacking Method <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,</i> 	To control potential noise impacts from PME during construction works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			<i>Annex 5 of EIAO-TM</i>
4.7.1	B7	Road Pavement and Finishes <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on</i> 	To control potential noise impacts from PME during pavement and finish works	Site wide and throughout the full duration of the	The Contractor		✓			<i>Annex 5 of EIAO-TM</i>

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		<i>Construction Open Sites, BS 5228: Part 1: 1997,</i>		construction contract.						
6.6.2	D1	<p>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,</p> <ul style="list-style-type: none"> Chemical Waste Producer and Chemical Waste Disposal Licence (<i>Waste Disposal (Chemical Waste) (General) Regulations</i>); and Dumping Licence (<i>Land (Miscellaneous Provisions) Ordinance (Cap 28)</i>) 	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	✓	✓			<i>Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste)(General) Regulation (Cap 354), the Land (Miscellaneous Provisions) Ordinance (Cap 28)</i>
6.6.2	D5	<p><i>Management of Waste Disposal</i> 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 <i>Land (Miscellaneous Provisions) Ordinance (Cap28)</i> and the <i>Works Bureau Technical Circular No. 5/99.</i></p> <p><i>Waste Management Plan</i></p>	To monitor the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping.	To be implemented at all worksites throughout the full duration of the construction phase.	The Engineer/ Contractor		✓			<i>Land (Miscellaneous Provisions) Ordinance (Cap 295) and Works Bureau Technical Circular No. 5/99.</i>
6.6.1 and 6.6.2	D6	<p>A Waste Management Plan (WMP) should be prepared and this WMP should be submitted to the Engineer for approval.</p> <ul style="list-style-type: none"> 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		✓			<i>Works Bureau Technical Circular No 29/2000-Waste Management Plan</i>
3.7	H1	<p>EM&A REQUIREMENTS - Construction Phase <i>Air Quality</i> 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).</p> <p><i>Sewer in Au Tau Area (S7)</i></p> <ul style="list-style-type: none"> Worksite boundary near San Yuen Long Centre (AM7) <p><i>Construction Noise</i></p>	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		✓			<i>Air Pollution Control (Construction Dust) Regulations</i>
4.9.1	I2	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).	Installations of the noise monitoring stations to ensure the action and limit levels are not exceeded.	At specified noise monitoring locations throughout the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer					Noise Control Ordinance

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		<ul style="list-style-type: none"> • (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

Items	Aspect	Description of Equipment	Serial No.	Date of Calibration	Date of Next Calibration
1		Greasby Anderson GMWS2310 High Volume Sampler	(AM5)	1 Apr 09	1 Jul 09
2		Greasby Anderson GMWS2310 High Volume Sampler	(AM6)	1 Apr 09	1 Jul 09
3		Greasby Anderson GMWS2310 High Volume Sampler	1283 (AM7)	1 Apr 09	1 Jul 09
4	Noise	Bruel & Kjaer 4231 Acoustical Calibrator	2326408	28 Apr 09	28 Apr 10
5		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.

ANNEX H

METEOROLOGICAL DATA

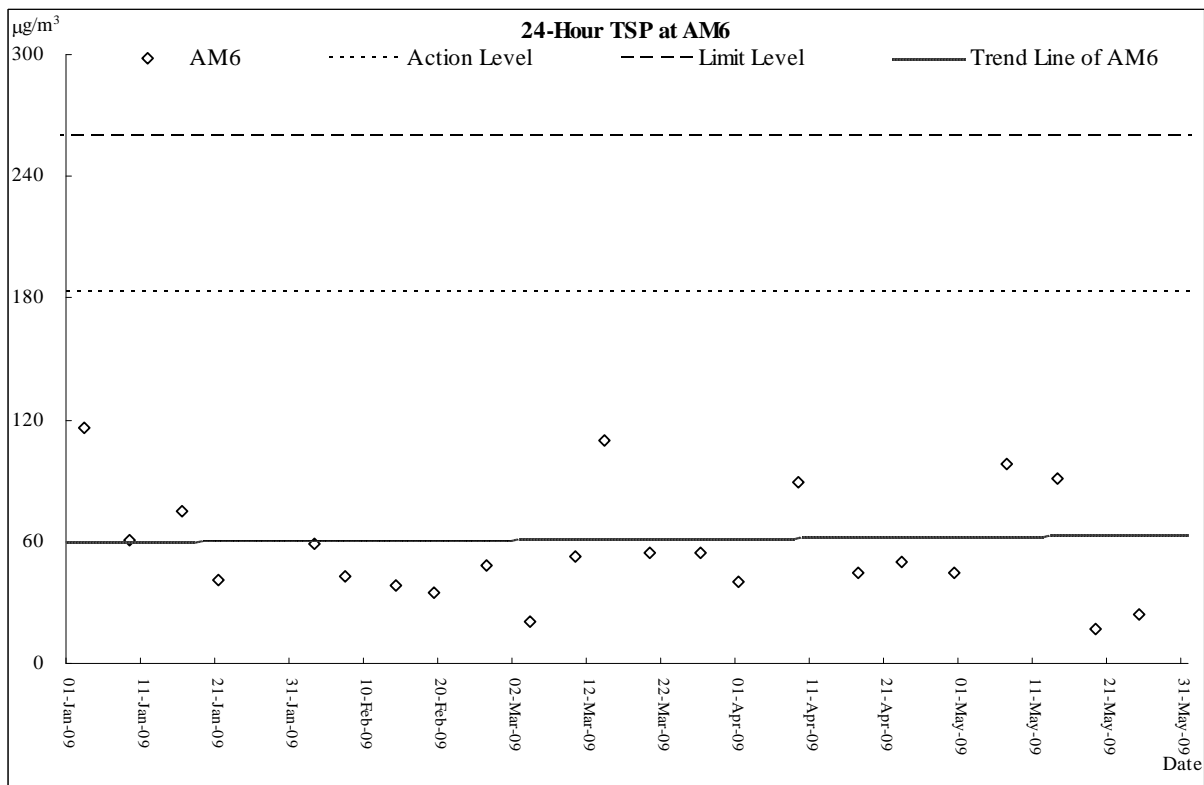
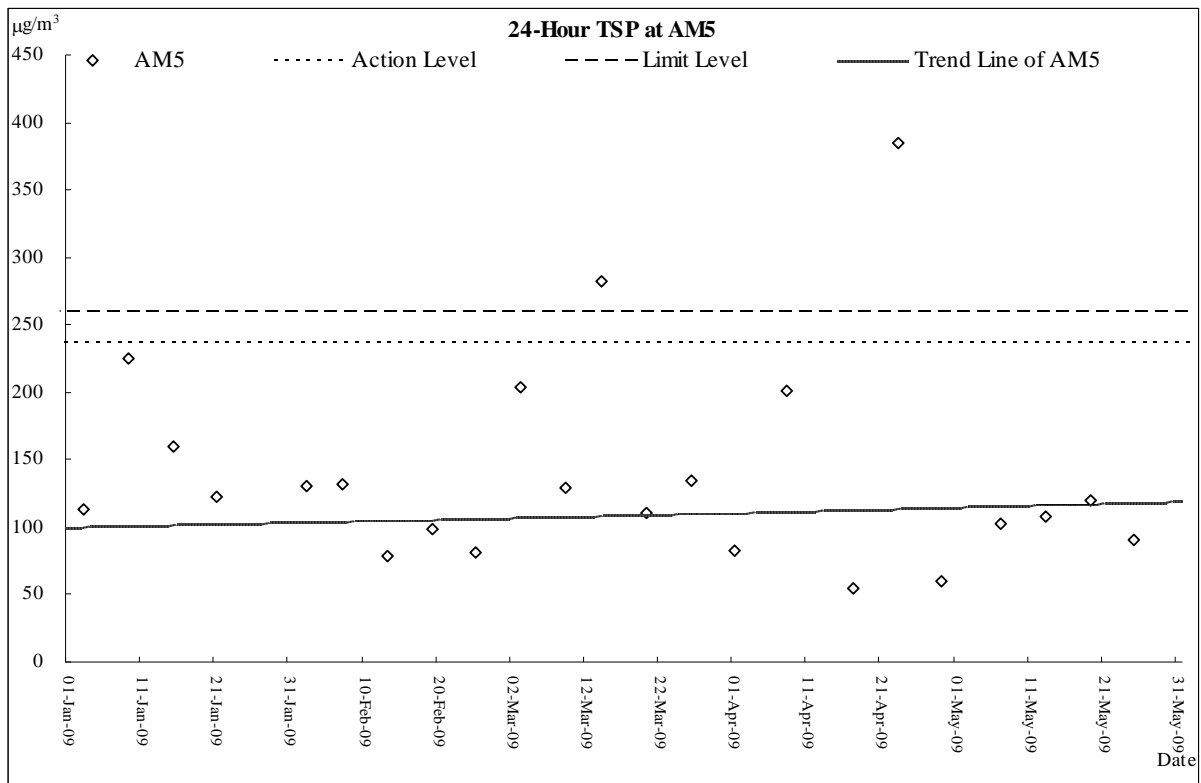
Meteorological Data Extracted From the HK Observatory at Lau Fau Shan Weather Station

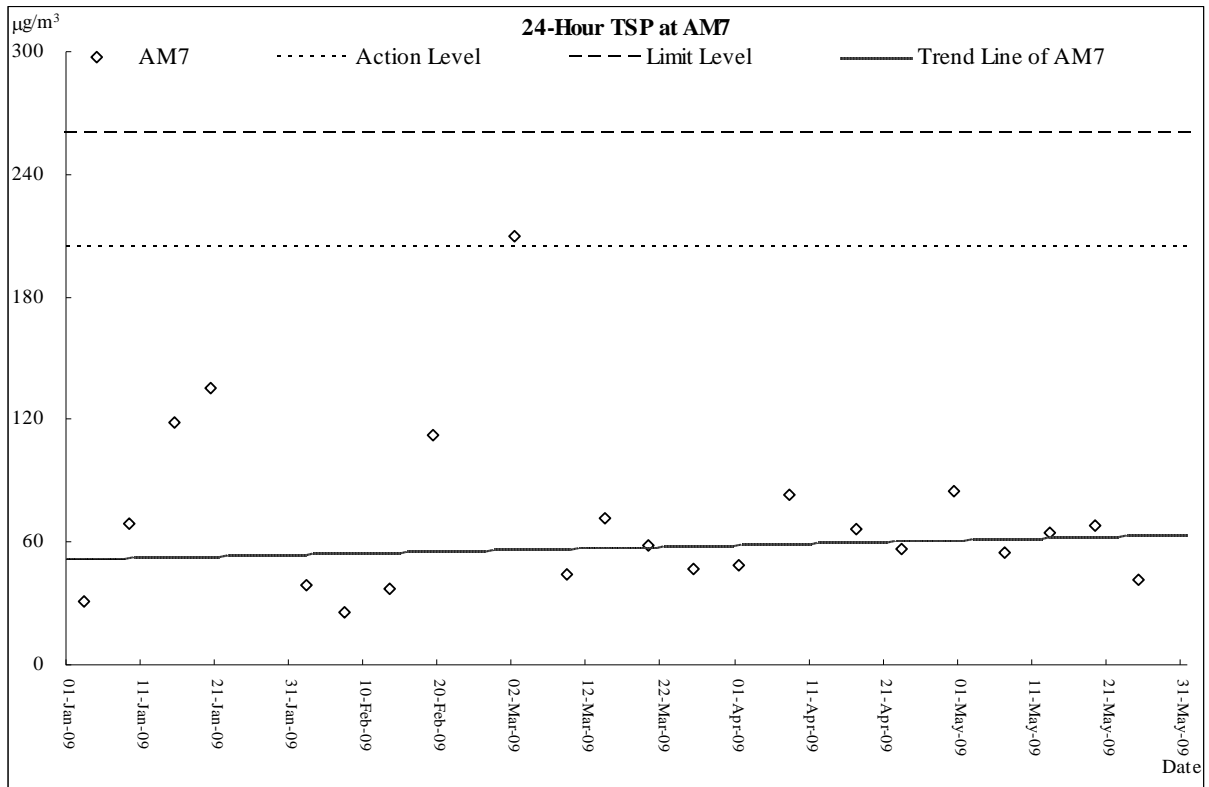
Date		Weather	Lau Fau Shan Weather Station				
			Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-May-09	Fri	Holiday					
2-May-09	Sat	Holiday					
3-May-09	Sun	Holiday					
4-May-09	Mon	cloudy/sunny periods/moderate	0.3	25.1	12.5	71	E
5-May-09	Tue	fine/dry/moderate/fresh	0	24.9	11.2	66	E/NE
6-May-09	Wed	fine/dry/moderate/fresh	0	24.5	13	59	E/NE
7-May-09	Thu	sunny/very dry/fine/moderate/fresh	0	24.6	15	45.7	E
8-May-09	Fri	fine/dry/moderate/fresh	0	25.2	12	49.7	E/SE
9-May-09	Sat	fine/dry/cloudy/moderate	Trace	25.4	12.5	65	E/NE
10-May-09	Sun	cloudy/sunny periods/showers/moderate	Trace	27.2	11.5	67.2	E/SE
11-May-09	Mon	sunny periods/cloudy/moderate	0	26.8	6	76.5	E/NE
12-May-09	Tue	fine/hot/light winds	0	26.6	12.5	75.5	S/SE
13-May-09	Wed	fine/hot/cloudy/light winds/moderate	Trace	27.4	13	74.5	S/SE
14-May-09	Thu	cloudy/sunny intervals/fresh	T	27.3	15	69.3	E/SE
15-May-09	Fri	sunny periods/cloudy/moderate	0	27.6	10.5	69	E/NE
16-May-09	Sat	cloudy/rain/moderate/	0.1	26.4	11.5	65	S/SE
17-May-09	Sun	sunny periods/a few showers/moderate	0.2	28.3	14	78	W/SW
18-May-09	Mon	sunny periods/hot/moderate	0	29.6	10.5	79.5	W/SW
19-May-09	Tue	cloudy/showers/sunny periods/moderate	0.3	30.3	14.5	67	S/SE
20-May-09	Wed	cloudy/showers/sunny periods/moderate	10.9	26.9	19.5	79.5	S/SE
21-May-09	Thu	sunny intervals/shower/squally	1.4	27.5	3	83	E/SE
22-May-09	Fri	cloudy/a few showers/squally	2.3	28.8	12.7	73.5	E/NE
23-May-09	Sat	overcast/rain/squally	62.3	25.2	16.5	76.2	E/NE
24-May-09	Sun	cloudy/showers/squally	61.2	24.8	18.5	91.7	E/NE
25-May-09	Mon	showers/squally thunderstorm/showers/fresh	29.8	25.5	18.5	87	E/NE
26-May-09	Tue	cloudy/a few showers/moderate	20.2	26.2	12.7	86	E
27-May-09	Wed	cloudy/showers/sunny intervals/moderate	39.2	28	12	78.5	E/NE
28-May-09	Thu	Holiday					
29-May-09	Fri	cloudy/rain/moderate/fresh	5.5	21.8	14.5	78	E/NE
30-May-09	Sat	cloudy/sunny periods/dry/moderate	0	24.8	10	73.5	E
31-May-09	Sun	fine/light winds	0	26.6	13.7	65	S/SE

ANNEX I

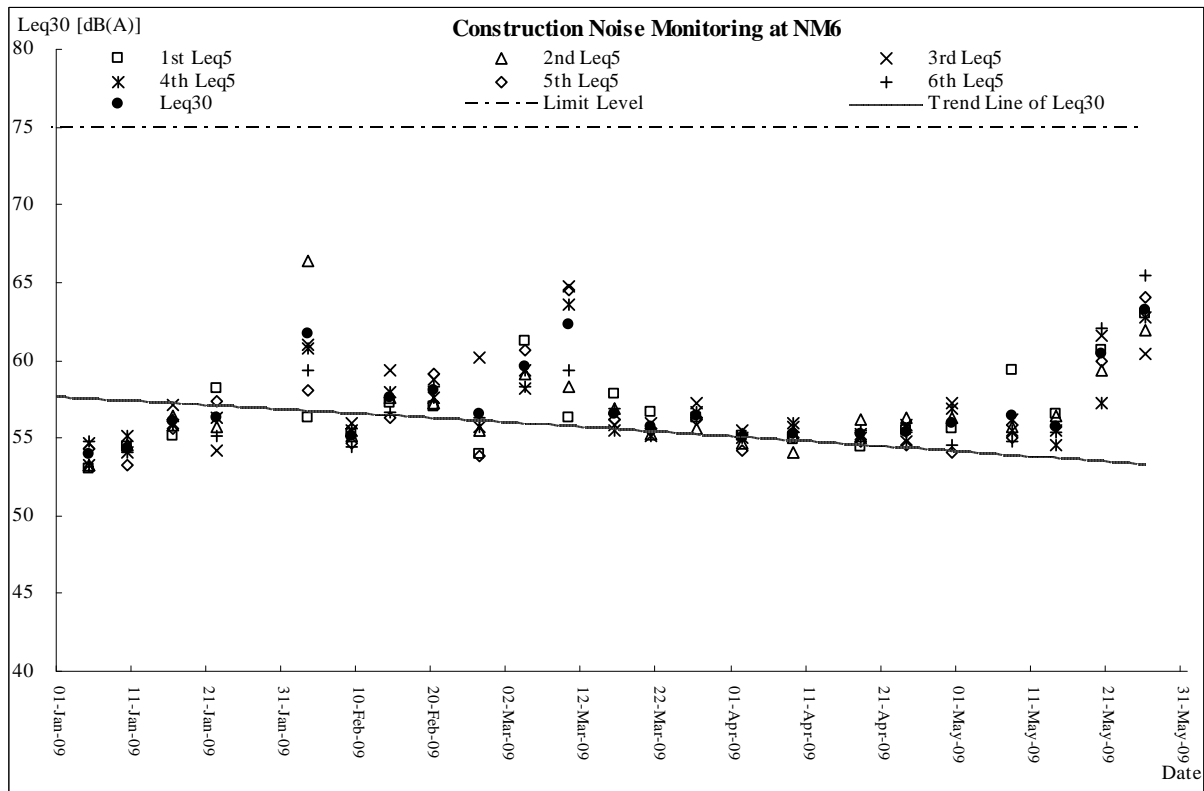
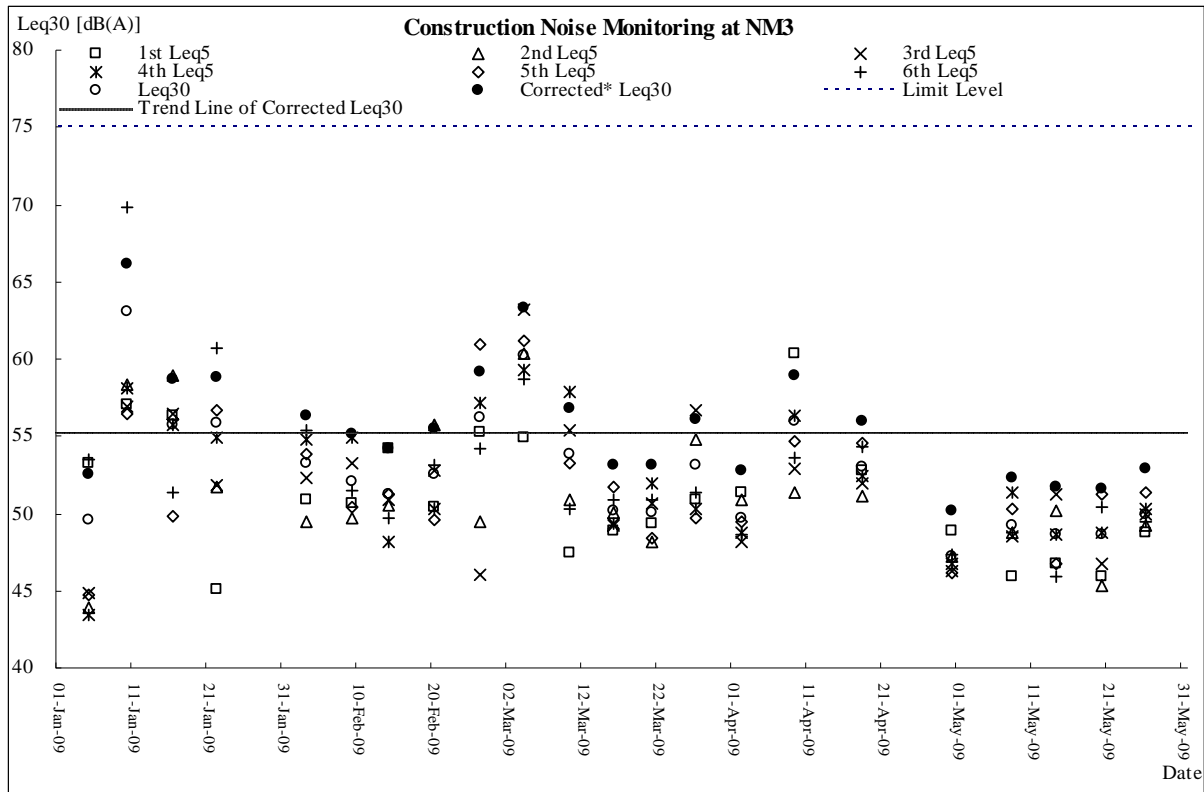
GRAPHICAL PLOTS OF AIR QUALITY AND CONSTRUCTION NOISE MONITORING RESULTS

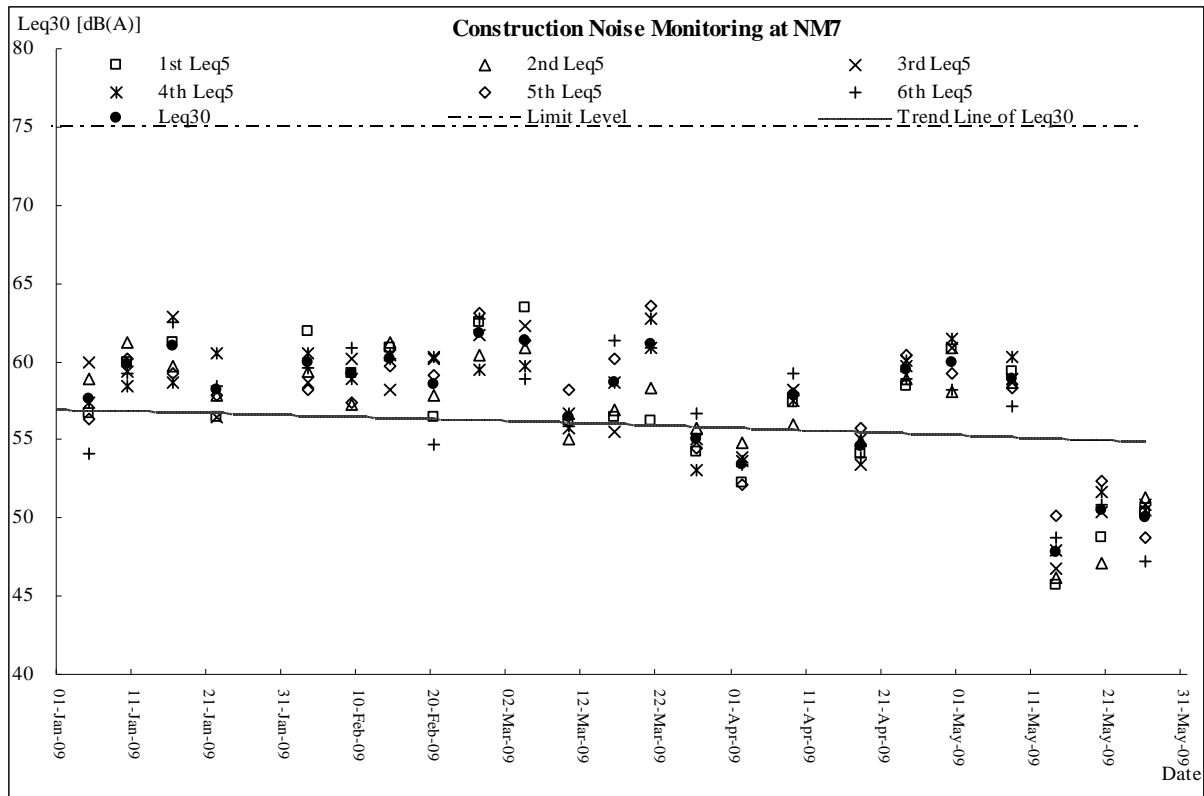
Air Quality Monitoring Results





Construction Noise Monitoring Results





ANNEX J

RESPONSE TO COMMENTS

Project: 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

Comment From: IEC [Received from E-mail on 9 June 2009]

Report/Document Monthly Environmental Monitoring and Audit (EM&A) Report for May 2009 (R0018 Version 1)

Items	Section / Paragraph	Comments	ET's Response
1	Annex G table	It looks like that item 4 and 5 have been replaced by item 6 and 7 which are more relevant to the report. Item 4 and 5 can be removed.	Amended.
2	Annex G	The calibration certifications are missing in Annex G.	The calibration certifications have been provided in the last report.
3	Section 5.19	The power failure of 24-hr TSP sampling at AM6 has not been reported. Please included as appropriate.	Done.