DRAINAGE SERVICES DEPARTMENT (DSD)
CONTRACT NO. DC/2005/02

CONSTRUCTION OF SEWERS, RISING MAINS
& SEWAGE PUMPING STATION AT KAM TIN, NAM SANG WAI
AND AU TAU IN YUEN LONG

3rd Monthly Construction Phase EM&A Report
JUNE 2006

PREPARED FOR

Leader Civil Engineering Corporation Ltd

Quality Index

Date	Reference No.	Prepared by	Certified by	Verified by
10 July 2006	TCS/00310/06/600/R0055	Ben Tam (Project Supervisor)	Cliff Lam (Project ET Leader)	Dr Anne F Kerr (Project IEC)

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Executive Summary

ES.01 Leader Civil Engineering Corporation Ltd (the Contractor) has been awarded the DSD Contract DC/2005/02 Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long (the Project). The Project requires an Environmental Monitoring and Audit (EM&A) program to be implemented by an Environmental Team (ET) throughout the contract period in compliance with the requirements as stated in the project Environmental Permit (EP-220/2005) and the project's Updated EM&A (Designated Elements) Manual.

ES.02 This is the 3rd Monthly Construction Phase EM&A Report (June 2006, Report No. 3) reporting the environmental impact monitoring and audit (EM&A) conducted from 1 to 30 June 2006. The EM&A in June 2006 covered air quality, noise and waste management.

Breach of Action and Limit (AL) Levels

ES.03 There was no breach of Action or Limit level for air and noise monitoring in this reporting month.

Complaint Log

ES.04 No environmental complaint was received in this reporting month.

Notification of Any Summons and Successful Prosecution

ES.05 There was no environmental summon or prosecution in this reporting month.

Reporting Changes

ES.06 There are no changes to be reported in this reporting month.

Future Key Issues

ES.07 Construction activities to be undertaken in July 2006 include sheetpiling and excavation for the pumping station and jacking pits at Item P3, sheetpiling and shoring installation at Items S4 & S5, setting up pipe jacking at S5. 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 site environmental performance is acceptable.

1.0 BASIC PROJECT INFORMATION

1.01 Leader Civil Engineering Corporation Ltd (the Contractor) has been awarded the DSD Contract DC/2005/02 Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long (the Project). The Project is part of the Yuen Long and Kam Tin Sewerage and Sewage Disposal (YLKTSSD) Scheme. A site layout map showing the site boundary and the work areas is shown in ***Annex A***.

1.02 This 3rd Monthly Construction Phase EM&A Report (June 2006, Report No. 3) summarizes the impact monitoring results and audit findings in the reporting period from 1 to 30 June 2006.

Project Organization

1.03 The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in ***Annex B***.

Construction Program for the Reporting Month

1.04 A construction program showing the construction work undertaken in this reporting month is shown in ***Annex C***. Environmental mitigation measures implemented are shown in ***Table 2-1*.**

Management Structure

1.05 The management structure of the Project is shown in ***Annex B***.

Works Undertaken during the Month

1.06 The construction work undertaken during the reporting month under the Environmental Permit (EP-220/2005) is shown as follows:

Nam Sang Wai Pumping Station (P3)
- Sheet piling
- Excavation and shoring installation

Nam Sang Wai Road (S4)
- Sheet piling

Pok Wai South Road (S5)
- Sheet piling
- Excavation and shoring installation

2.0 ENVIRONMENTAL STATUS

Work Undertaken during the Month with Illustrations

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

Table 2-1 Work Undertaken in June 2006 with Illustrations of Mitigation Measures

Location	Description of Construction Activities	Environmental Mitigation Measures	EM&A Ref.
Nam Sang Wai Pumping Station (P3)	• Sheet Piling • Excavation & Shoring Installation	• Erect 2.4m high noise barrier hoarding around the works area • Remove dust and spray water at the construction access • Cover the stockpiles of dusty material properly • Spray water to all dusty materials immediately before loading and unloading • Wash the wheels of vehicles before leaving the site • Install and use power-operated cover at the dump trucks • Spray water at the pavement breaking locations • Spray the working area of excavation frequently • Maximize the use of quiet PME on site • Apply and obtain appropriate waste disposal licenses • Handle, store and dispose of chemical wastes as per relevant regulations • Implement trip-ticket system for waste disposal • Restrict open fires and provide fire fighting equipment in the works area • Perform weekly inspection with ET and monthly audit with IEC • Conduct noise and dust monitoring as per EM&A manual during construction • Recycle wheel washing water and provide sedimentation tanks for treating site discharge.	A1 & F6 A2 A3 A4 A5 A6 A7 A8 B1, B2 & F5 D1 D2, D3 & D4 D5 F9 H1 I1 & I2 -
Nam Sang Wai Road (S4)	• Sheet Piling	• Remove dust and spray water at the construction access • Wash the wheels of vehicles before leaving the site • Maximize the use of quiet PME on site • Apply and obtain appropriate waste disposal licenses • Handle, store and dispose of chemical wastes as per relevant regulations • Implement trip-ticket system for waste disposal • Restrict open fires and provide fire fighting equipment in the works area • Perform weekly inspection with ET and monthly audit with IEC • Conduct noise and dust monitoring as per EM&A manual during construction	A2 A5 B1, B2 & F5 D1 D2, D3 & D4 D5 F9 H1 I1 & I2
Pok Wai South Road (S5)	• Sheet Piling • Excavation & shoring installation	• Remove dust and spray water at the construction access • Cover the stockpiles of dusty material properly • Spray water to all dusty materials immediately before loading and unloading • Wash the wheels of vehicles before leaving the site • Install and use power-operated cover at the dump trucks • Spray the working area of excavation frequently • Maximize the use of quiet PME on site • Apply and obtain appropriate waste disposal licenses • Handle, store and dispose of chemical wastes as per relevant regulations • Implement trip-ticket system for waste disposal • Restrict open fires and provide fire fighting equipment in the works area • Perform weekly inspection with ET and monthly audit with IEC • Conduct noise and dust monitoring as per EM&A manual during construction • Provide sedimentation tanks for treating site discharge.	A2 A3 A4 A5 A6 A8 B1, B2 & F5 D1 D2, D3 & D4 D5 F9 H1 I1 & I2 -

2.02 Photographic records showing the work activities undertaken at the pumping station and the implemented 2.4m high noise barrier are shown in ***Annex D***.

Project Drawings

2.03 Drawings showing the work areas under EP-220/2003 and the locations of the designated monitoring stations are presented in ***Annex E***.

2.04 There are four designated air quality and four noise monitoring stations under the project EP. In this reporting month, the monitoring was carried out at two designated air (AM1 & AM7) and two noise (NM3 & NM4) monitoring stations.

Station ID	Nature of Premise	Site Work Description	Station Coordinates
AM1	Site Boundary in NSW	Sheetpiling and trench excavation.	835829 N 822910 E
AM7	Site Boundary in NSW		836171 N 822586 E
NM3	Village House in NSW		835808 N 822817 E
NM4	Village House in NSW		835282 N 822811 E

2.05 Monitoring at the remaining two air (AM5 & AM6) and noise (NM6 & NM7) stations will commence once the work areas are handed over to the Contractor (later this year).

3.0 SUMMARY OF EM&A REQUIREMENTS

Monitoring Parameters

3.01 Environmental monitoring and audit requirements are set out in the Updated EM&A manual. Air quality and construction noise have been identified to be the key monitoring parameters during the impact phase for the construction of the project.

3.02 A summary of the impact EM&A requirements for air quality and construction noise as per the project Updated EM&A Manual are shown in ***Table 3-1.***

Table 3-1 Summary of EM&A Requirements

Environmental Aspect	Monitoring Parameters
Air Quality	24-Hr TSP
Construction Noise	Leq 30min during 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

Monitoring Location	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-Hr TSP	24-Hr TSP	1-Hr TSP	24-Hr TSP
AM1	391	184	500	260
AM7	383	204	500	260

Table 3-3 Action and Limit Levels for Construction Noise

Parameter	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hrs 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 F***.

Environmental Mitigation Measures

3.05 The project EIA report has recommended environmental mitigation measures to minimize potential environmental impacts arising from the construction of the project. A full list of the mitigation measures is detailed in ***Annex G***.

Environmental Requirements in Contract Documents

3.06 The environmental requirements in the contract documents generally refer to the compliance of the requirements as stipulated in the project EP and the updated EM&A Manual.

4.0 IMPLEMENTATION STATUS

4.01 The implementation status of environmental protection and pollution control/mitigation measures as recommended in the project EIA report is summarized in ***Table 2-1*** and the implementation schedule as shown in ***Annex G***.

4.02 A summary status of the permits, licences, and/or notifications on environmental protection for this Project in this reporting month is presented in ***Table 4-1***.

Table 4-1 Status of Environmental Licenses and Permits

Item	Item Description	Permit Status
1	Environmental Permit No.: EP-220/2005	Issued in June 2005
2	Air Pollution Control (Construction Dust)	Notified EPD on 24 Dec 2005
3	Chemical Waste Producer Registration	Registration on 27 Jan 2006
4	Water Pollution Control (Discharge license)	Applied to EPD on 7 Feb 2006
5	Account for Disposal of Construction Waste No. 5004959	Registration on 27 Dec 2005
6	Construction Noise Permit (Sheet Piling at NSW Station)	Valid (2 Jun to 12 Dec 2006)
7	Construction Noise Permit (General Works at NSW Station)	Valid (7 Apr to 7 Oct 2006)

5.0 MONITORING RESULTS

MONITORING METHODOLOGY OF AIR QUALITY MONITORING

5.01 The 24-Hr TSP monitoring was carried out by a High volume sampler (HVS) in compliance with the updated EM&A Manual. The HVS employed complied with the PS specifications including.

- Power supply of 220v/50 hz for 24-hour continuous operation;
- 0.6-1.7 m^3/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-Hr operation;
- Minimum exposed area of 63 in^2;
- Flow control accuracy of ±2.5% deviation over 24-Hr 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-hr 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-Hr 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.

5.03 The meteorological information during the reporting period was obtained from Lau Fau Shan Station of the Hong Kong Observatory (HKO).

MONITORING METHODOLOGY OF 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 (L_{10} and L_{90}) were also obtained for reference.

5.05 Hand-held sound level meters (B&K Model 2238) and associated acoustical calibrators in compliance with the International Electrotechnical Commission (IEC) Publication 651:1979 (Type 1) and 804:1985 (Type 1) specification 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 5 m/s or wind with gusts exceeding 10 m/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-Hr TSP filter papers.

5.09 The 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

Parameters	Monitoring Equipment	
Air Quality	24-Hr TSP	Tisch High Volume Sampler 515N
Noise	Leq30min	B&K Type 2238
	On-site Calibration	B&K Type 4231

EQUIPMENT CALIBRATION

5.10 Initial calibration of the HVS 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***.***

5.11 The sound level meters were calibrated using an acoustic 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 acoustic 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 The calibration certificates of the monitoring equipment used during the impact monitoring program are attached in ***Annex H***.

PARAMETERS MONITORED

5.13 The environmental parameters monitoring in this reporting month is compliance with the monitoring requirements as in Table 3-1.

MONITORING LOCATIONS

5.14 There are four designated air quality and four noise monitoring stations under the project EP. For this reporting month, monitoring was carried out at two designated air (AM1 & AM7) and two noise (NM3 & NM4) monitoring stations. Monitoring at the remaining two air (AM5 & AM6) and noise (NM6 & NM7) stations will commence once the work areas are handed over to the Contractor (later this year). The locations of the designated monitoring stations are shown in ***Table 5-2*** and geographically in ***Annex E***.

Table 5-2 Location of Air Quality and Construction Noise Monitoring Stations

Air Quality (4 Stations)	
AM1	Worksite boundary facing scattered house in Nam Sang Wai
AM5*	Worksite boundary facing Fung Kat Heung
AM6*	Worksite boundary facing scattered near Route 3
AM7	Worksite boundary facing scattered house in Nam Sang Wai
Construction Noise (4 Stations)	
NM3	Village House in Nam Sang Wai
NM4	Village House in Nam Sang Wai
NM6*	Scattered House near Route 3
NM7*	Fung Kat Heung

Remarks: Monitoring at AM5 & AM6 and NM6 & NM7 will commence once the work areas are handed over to the Contractor (later this year).

MONITORING FREQUENCY AND PERIOD

5.15 The impact 24-Hr TSP monitoring was conducted at the designated stations once every 6 days in compliance with the updated EM&A manual. A total of 5 monitoring events were carried out in this reporting month.

5.16 The impact noise monitoring was conducted at the designated stations once every 6 days in compliance with the updated EM&A manual. A total of 5 monitoring events were carried out in this reporting month.

MONITORING RESULTS WITH DATE AND TIME

5.17 The air quality monitoring data for this reporting month are summarized in ***Table 5-3***.

Table 5-3 Summary of Air Quality Monitoring Results

Date	24-Hr TSP (ug/m^3)	
	AM1	AM7
3-Jun-06	34	35
9-Jun-06	67	39
14-Jun-06	41	36
20-Jun-06	81	58
26-Jun-06	59	52
Average (Range)	81.4 (49 - 122)	83.3 (41 - 126)

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

5.19 The impact noise monitoring results are summarized in ***Tables 5-4 & 5-5***.

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
5-Jun-06	15:08	56.2	57.1	56.6	57.8	56.3	58.0	57.1	60.1
10-Jun-06	13:58	53.9	48.8	55.1	52.6	52.7	55.2	53.5	56.5
15-Jun-06	13:49	60.9	60.6	63.4	58.0	56.9	57.6	60.2	63.2
21-Jun-06	13:01	46.1	44.5	45.2	46.1	44.6	47.2	45.7	48.7
27-Jun-06	10:18	52.6	50.6	50	50.9	51.1	52.3	51.3	54.3
Limit Level									**75**

* 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 NM4

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected * Leq30
5-Jun-06	15:24	56.1	56.4	56.2	57.4	57.1	54.6	56.4	59.4
10-Jun-06	14:11	70.8	71.6	68.9	67.9	56.9	59.2	68.4	71.4
15-Jun-06	13:09	62.6	60.3	53.6	58.9	57.1	59.6	59.5	62.5
21-Jun-06	11:27	54.6	52	47.7	49.3	50.1	51.7	51.5	54.5
27-Jun-06	09:41	51.5	62.8	58.2	53.7	53.4	50.4	57.4	60.4
Limit Level									**75**

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

WEATHER CONDITIONS DURING THE MONITORING PERIOD

5.20 The meteorological data on the monitoring dates are summarized in ***Annex I***.

GRAPHICAL PLOTS OF TRENDS OF MONITORED PARAMETERS

5.21 The graphical plots of air quality and construction noise monitoring data are presented in ***Annex J***.

MAJOR ACTIVITY CARRIED OUT DURING THE MONITORING PERIOD

5.22 There were construction activities of sheet piling and trench excavation undertaken during the monitoring period.

WEATHER CONDITIONS THAT MAY AFFECT THE MONITORING RESULTS

5.23 The weather conditions at the time of monitoring were considered acceptable for monitoring activities and did not have significant impact on the monitoring results obtained.

OTHER FACTORS INFLUENCING THE MONITORING RESULTS

5.24 There was no other noticeable external factors generally affecting the monitoring results in this reporting month.

QA/QC RESULTS AND DETECTION LIMITS

5.25 Not applicable.

6.0 REPORT ON NON-COMPLIANCE (NC), COMPLAINTS, NOTIFICATIONS OF SUMMONS (NoS) AND SUCCESSFUL PROSECUTIONS

RECORD OF NON-COMPLIANCE OF ACTION AND LIMIT LEVELS

6.01 There was no Action or Limit Level exceedance in this reporting month.

RECORD OF ENVIRONMENTAL COMPLAINTS RECEIVED

6.02 There was no environmental complaint received in this reporting month.

RECORD OF NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTION

6.03 There was no notification of summon or prosecution received in this reporting month.

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

6.04 No NC, complaints or NoS received in this reporting month.

DESCRIPTION OF FOLLOW-UP ACTIONS TAKEN

6.05 No NC, complaints or NoS received in this reporting month.

7.0 OTHERS

FUTURE KEY ISSUES

7.01 Construction activities to be undertaken in July 2006 include sheetpiling and excavation for the pumping station and jacking pits at Item P3, sheetpiling and shoring installation at Items S4 & S5, setting up pipe jacking at S5. Potential environmental impacts arising from the works include air quality, noise and water quality (including site runoff). Environmental mitigation measures will be properly implemented and maintained as per the Mitigation Implementation Schedule to ensure site environmental performance is acceptable.

SOLID AND LIQUID WASTE MANAGEMENT STATUS

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

Table 7-1 Summary of Quantities of Waste for Disposal

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (tons)	6,035	Tuen Mun 38 Fill Bank
C&D Materials (Non-Inert) (tons)	-	NA
Chemical Waste (Litres)	-	NA
General Refuse (tons)	80	Refuse Collector

Table 7-2 Summary of Quantities of Waste 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 discharged but an estimated volume of 50m^3 of surface runoff was discharged in this reporting month.

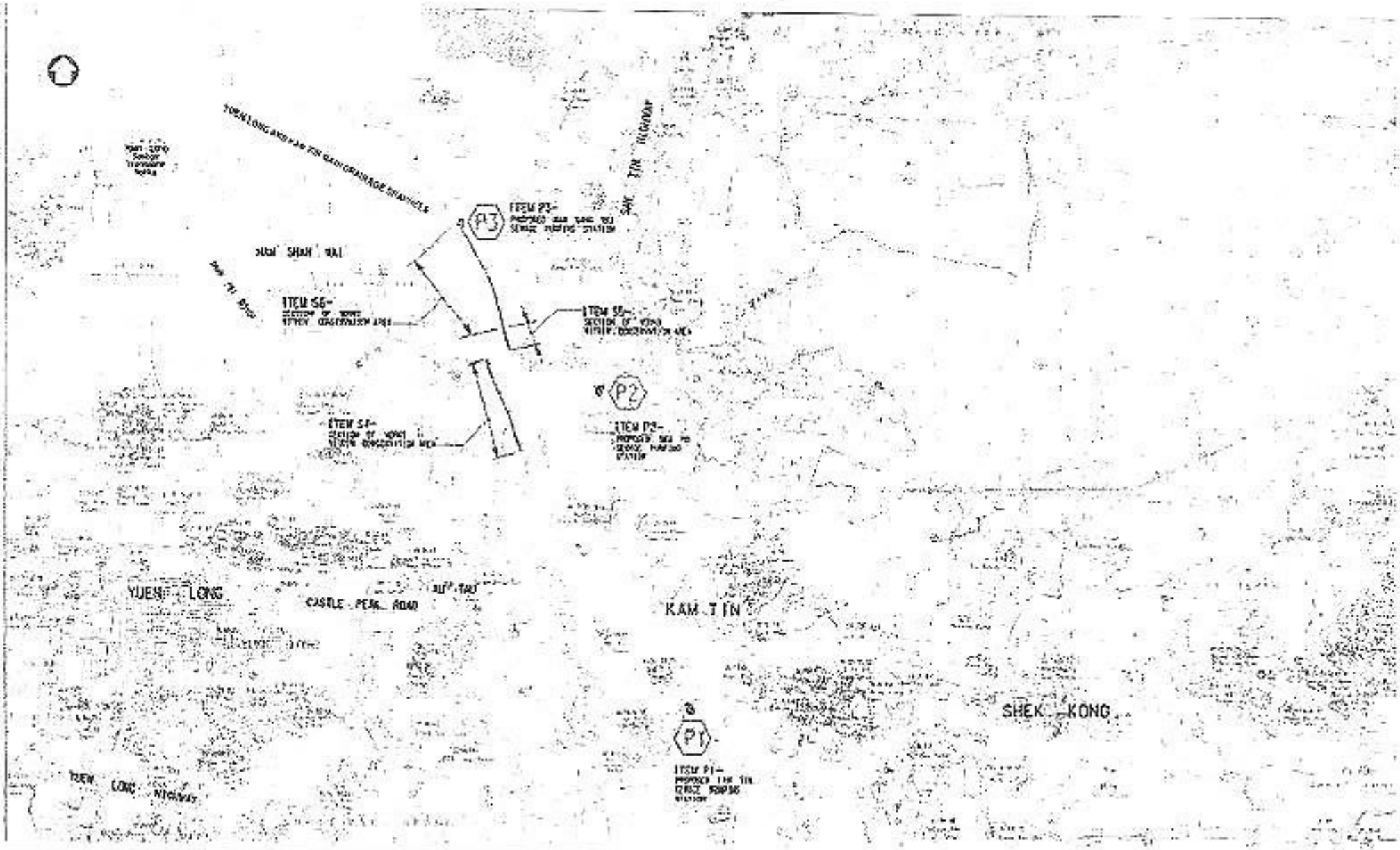
SUBMISSION OF PROFORMA

7.01 Representatives of the Engineer, the Contractor and ET carried out joint site inspection every week to evaluate the site environmental performance. A monthly audit with RE, Contractor, IEC and ET was carried out on 22 June 2006. No non-compliance was noted and one observation was recorded.

7.02 Proforma of the weekly ET site inspection and monthly IEC audit activities are presented in ***Annex K***.

Annex A

Project Site Layout



AUES	Designated Project Area under the Updated EM&A Manual and the Environmental Permit (EP-220/2005)	Figure No.	Scale
		1.2	NTS

Annex B

Project Organization and Management Structure

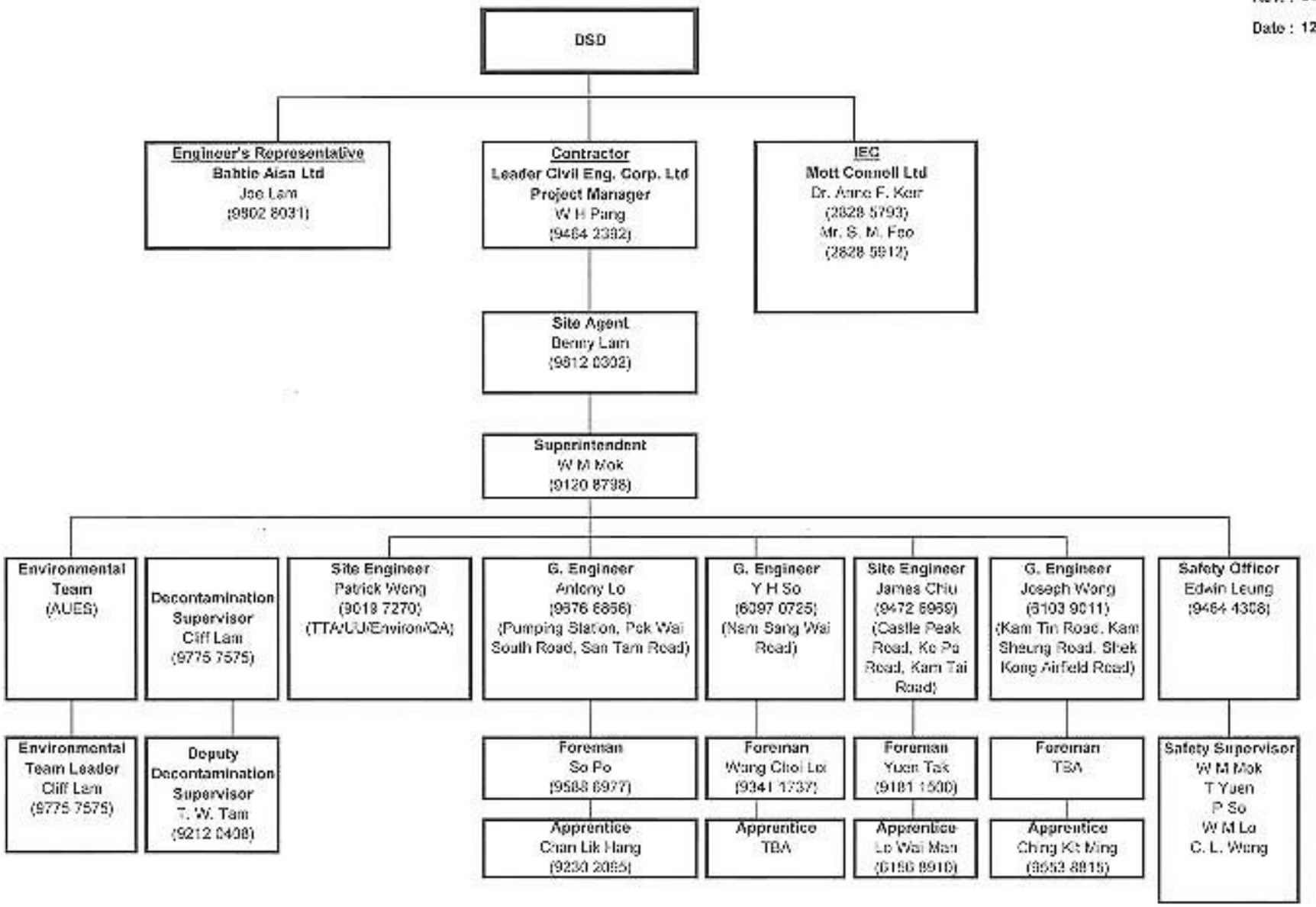
DSD Contract No. DC/2005/02

Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long

Project Environmental Organization Chart

Rev. : 01

Date : 12-May-06



Annex C

Construction Program

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
Submission								
Design Submission								
SUN1400	Design Submit Temp Work - Kam Tin PStation	30	124d	30	08MAY06 A	24JUL06	22MAY06 A	19DEC06
SUN1500	Approve Temp Work - Nam Sang Wai PStation	0	1d	95	01MAR06 A	26JUN06	01MAR06 A	29JUN06
SUN2300	Approve Temp Work - Trenchless Replaying	0	-62d	80	06APR06 A	26JUN06	06APR06 A	15APR06 *
Method Statement Submission								
SUD1500	Approve Temp Work - Nam Sang Wai PStation	0	1d	95	01MAR06 A	26JUN06	01MAR06 A	29JUN06
SUD1600	Approve Temp Work - Trenchless Replaying	0	-62d	80	06APR06 A	26JUN06	06APR06 A	15APR06 *
Preliminaries								
PRS900	Deliver Ductile Iron Pipe	300	35d	11	28APR06 A	12NOV06	28APR06 A	27DEC06
PRS100	Deliver Precast Concrete Pipe	450	55d	12	04APR06 A	25OCT06	24APR06 A	27DEC06
PRS800	Deliver Vitrified Clay Pipe	600	23d	9	10APR06 A	28NOV06	15APR06 A	27DEC06
PRS400	Structural Monitoring by ISE	835	16d	12	06APR06 A	06DEC06	06APR06 A	27DEC06
PRS500	Environmental monitoring by ET	814	1d	14	06APR06 A	23OCT06	06APR06 A	24OCT06
Section 3 - Nam Sang Wai Sewage Pumping Station								
Portion C								
Ground Investigation								
S3CG1200	Prepare & Submit Draft Final Report	0		100	27APR06 A	26JUN06 A	27APR06 A	26JUN06 A
S3CG1300	Comment on Draft Final Report from the Engineer	5	122d	10	27JUN06 A	05JUL06	27JUN06 A	25NOV06
Site Clearance								
S3CG1000	Remove Ext. Storm water Drain	0		100	08MAY06 A	15JUN06 A	08MAY06 A	15JUN06 A
S3CG1100	Remove Ext. Septic Tank & Soakway Pit	0		100	10MAY06 A	20JUN06 A	10MAY06 A	20JUN06 A
Earthworks								
S3CG1000	Drive Sheetpile	35		100	06APR06 A	24JUN06 A	06APR06 A	24JUN06 A
S3CG1100	Excavate to Level of 1st Layer of Walling	5	1d	90	15JUN06 A	20JUN06	15JUN06 A	30JUN06
Geotechnical works								
S3CP1000	Monitoring of Instruments	632	17d	17	06APR06 A	25MAR08	06APR06 A	18APR08
Section 4 - Sewers & RM in Portion D, F, G, H, I								
Portion F								
Ground Investigation								
S4FB1020	Boreholes & Instrumentation (H2 - H1)	0		100	11MAY06 A	05JUN06 A	11MAY06 A	05JUN06 A
S4FB1040	Boreholes & Instrumentation (H3 - H2)	0		100	22MAY06 A	07JUN06 A	22MAY06 A	07JUN06 A
S4FB1140	Boreholes & Instrumentation (H7 - H5)	4		100	29MAY06 A	12JUN06 A	29MAY06 A	12JUN06 A

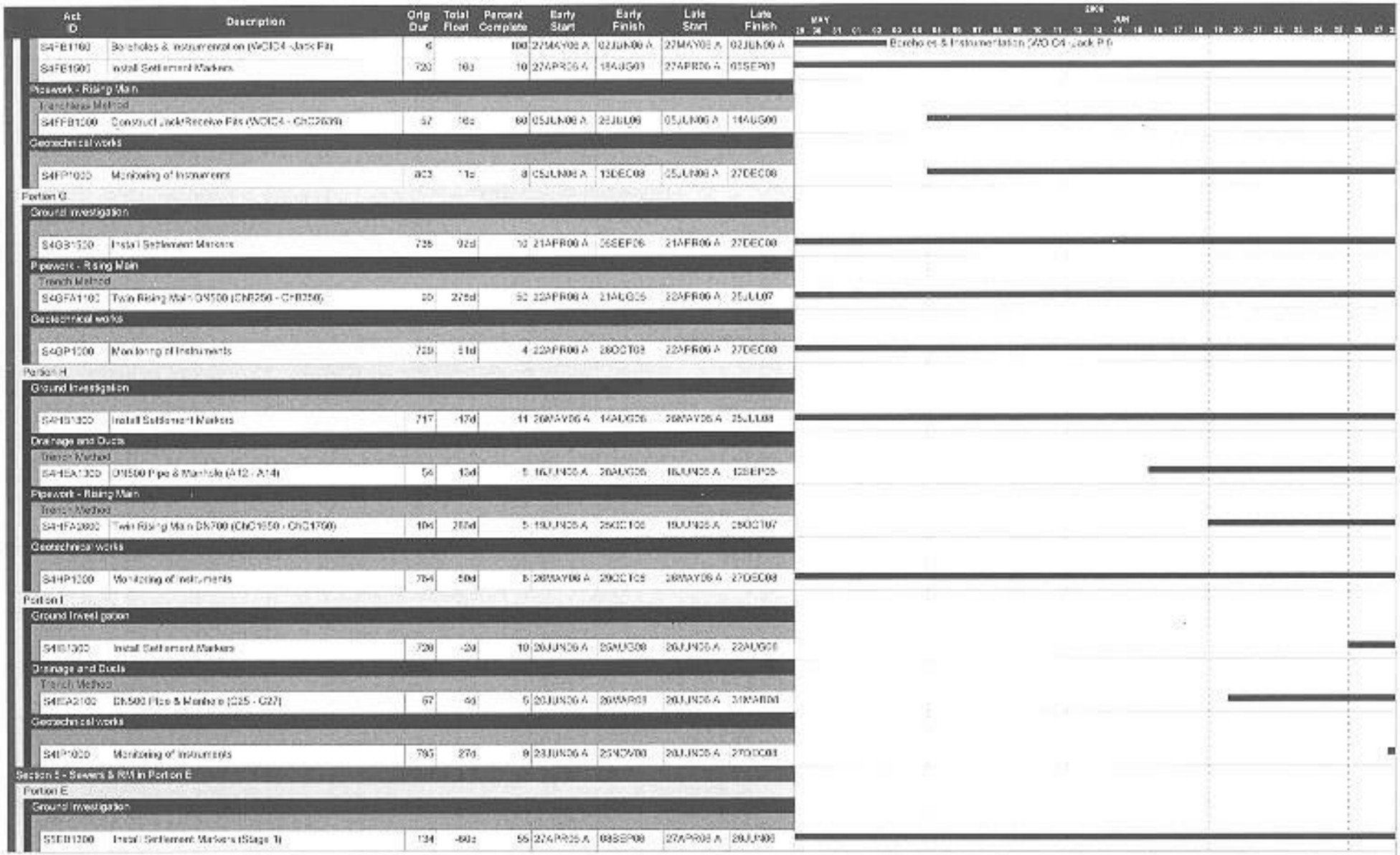
Boreholes & Instrumentation (H2 - H1)
Boreholes & Instrumentation (H3 - H2)
Boreholes & Instrumentation (H7 - H5)

Start date	10DEC05
Finish date	25MAR08
Data date	26JUN06
Run date	10JUL06
Page number	14

Leader Civil Engineering Corp. Ltd.
DSD Contract No. DC/2005/02
Master Programme WP01 Rev. 2 (29 May 2006 - 28 June 2006)

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

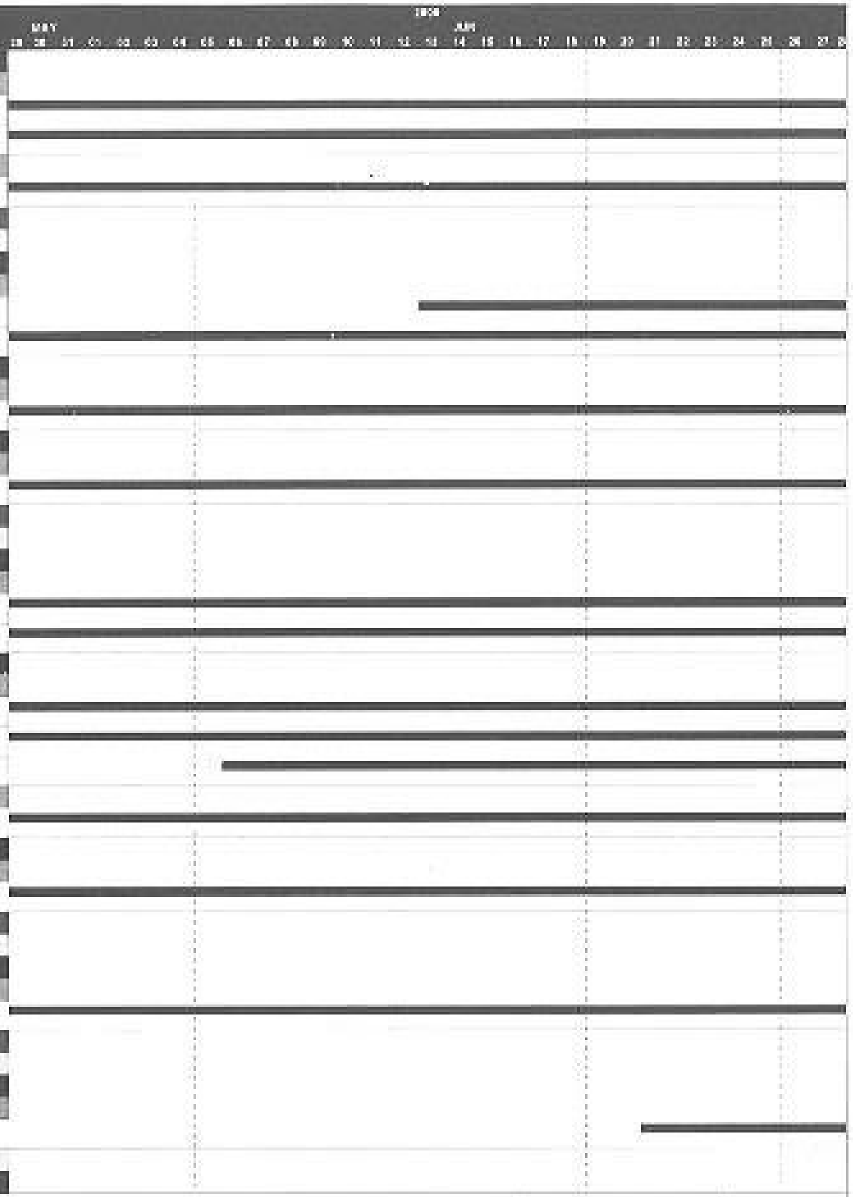
LEADER



Start date	1DEC05
Finish date	28MAR09
Data date	29JUN06
Run date	10JUL06
Page number	2A

Leader Civil Engineering Corp. Ltd.
DSD Contract No. DC/2005/02
Master Programme WP01 Rev. 2 (29 May 2006 - 28 June 2006)

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
Pipework - Rising Main								
Trench Method								
S5EFA2900	Twin Rising Main DN900 (ChA1150 - ChA1800)	32	-99d	5	17APR06 A	05AUG06	17APR06 A	24MAY06
S5EFA4000	Twin Rising Main DN900 (ChA1700 - ChA1750)	32	-80d	5	17APR06 A	05AUG06	17APR06 A	23MAY06
Trenchless Method								
S5EFB1000	Construct Jack/Receive Pits (ChA18 - ChA208)	42	-44d	40	17APR06 A	15AUG06	17APR06 A	23JUN06
Section 6 - Sewers in Portion J								
Portion J								
Ground Investigation								
S6JB1040	Boreholes & Instrumentation (D6 - D7)	15	15d	50	13JUN06 A	18JAN07	18JUN06 A	05FEB07
S6JB1900	Install Settlement Marker 1st Stage	741	-52d	10	20APR06 A	11SEP08	20APR06 A	12JUL08
Drainage and Ducts								
Trench Method								
S6JEA1200	DN1050 Pipe & Manhole (D4 - D5)	100	128d	50	21APR06 A	19OCT06	21APR06 A	10MAR07
Geotechnical works								
S6JP1000	Monitoring of Instruments	791	38d	8	04MAY06 A	10NOV08	04MAY06 A	27DEC08
Section 7 - Sewers in Portion K								
Portion K								
Ground Investigation								
S7KB1000	Boreholes & Instrumentation (M13 - M14)	16	4d	50	09MAY06 A	03JUL06	09MAY06 A	13JUL06
S7KB1500	Install Settlement Markers	402	-17d	18	01MAY06 A	30JUL07	09MAY06 A	10JUL07
Drainage and Ducts								
Trench Method								
S7KEA1200	DN750 Pipe & Manhole (M5 - M6)	78	-7d	10	19MAY06 A	22MAY07	19MAY06 A	14MAY07
S7KEA1600	DN900 Pipe & Manhole (M11 - M12)	90	93d	40	24MAY06 A	31AUG06	24MAY06 A	11OCT06
S7KEA1700	DN900 Pipe & Manhole (M12 - M13)	78	19d	10	06JUN06 A	30JAN07	06JUN06 A	24FEB07
Trenchless Method								
S7KEB1100	Construct Jack/Receive Pits (M8 - M20)	30	-17d	6	25APR06 A	21AUG06	25APR06 A	01AUG06
Geotechnical works								
S7KP1000	Monitoring of Instruments	427	35d	16	27MAY06 A	05SEP07	27MAY06 A	18OCT07
Section 8 - Preservation and Protection of Trees								
All Portions								
Landscape Softworks and Establishment Works								
S8QR1100	Preservation & Protection of Preserved Trees	861	0	12	10APR06 A	27DEC08	10APR06 A	27DEC08
Decontamination Works								
General Submission								
S9L1400	Prepare & Submit CAR & RAP - Portion F/G/H	18	40d	50	21JUN06 A	17JUL06	21JUN06 A	01SEP06
Portion G								
Ground Investigation								



Start date	15DEC05
Finish date	03MAR09
Data date	29JUN06
Run date	10JUL06
Page number	3A

Leader Civil Engineering Corp. Ltd.
DSD Contract No. DC/2005/02
Master Programme WP01 Rev. 2 (29 May 2006 - 28 June 2006)

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

LEADER

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
SI-SB1000	Trial Pits	7		100	01JUN06 A	06JUN06 A	01JUN06 A	07JUN06 A
SI-SB1100	Drill Boreholes	3		100	07JUN06 A	09JUN06 A	07JUN06 A	09JUN06 A
SI-SB1200	Testing of Soil Samples	15		100	10JUN06 A	23JUN06 A	10JUN06 A	23JUN06 A
Portion H								
Ground Investigation								
SI-B1100	Drill Boreholes	35		100	05JUN06 A	06JUN06 A	05JUN06 A	05JUN06 A
SI-B1200	Testing of Soil Samples	30	31d	50	07JUN06 A	06JUL06	07JUN06 A	11AUG06

May 28 29 30 31 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Jun 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Trial Pits

Drill Boreholes

Testing of Soil Samples

Drill Boreholes

Start date 29MAY06
Finish date 03NOV06
Data date 29JUN06
Run date 10JUL06
Page number 4A

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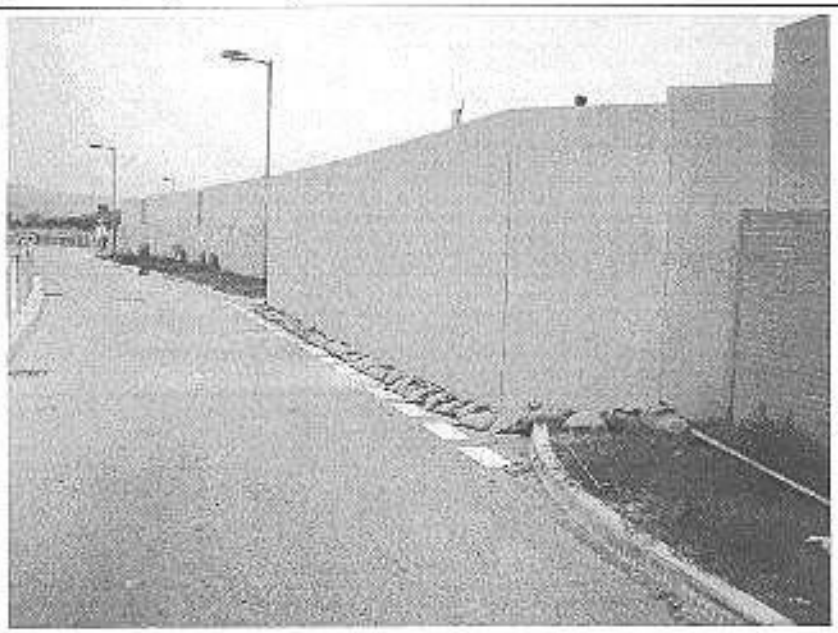
DSD Contract No. DC/2005/02
Master Programme WP01 Rev. 2 (29 May 2006 - 28 June 2006)

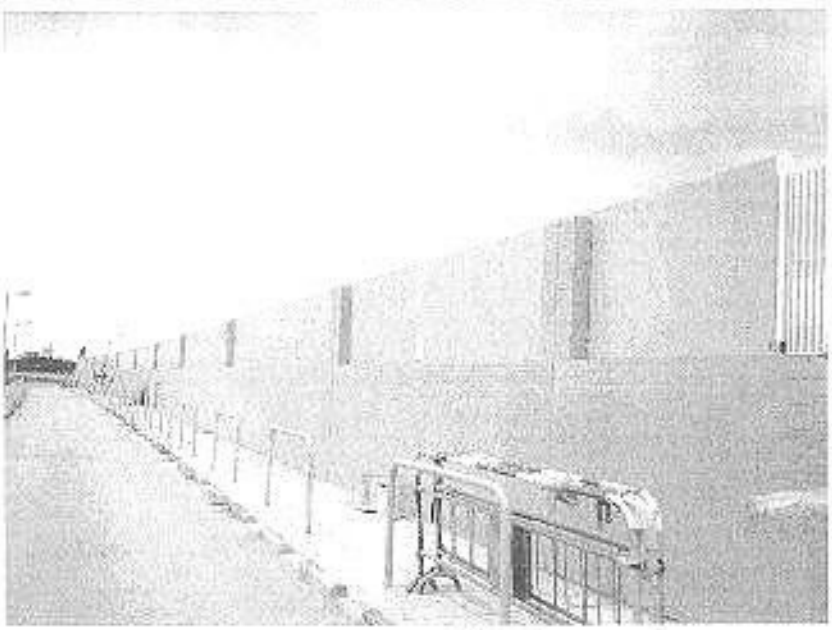
Early bar
Progress bar
Critical activity
Summary activity
Start milestone activity
Finish milestone activity

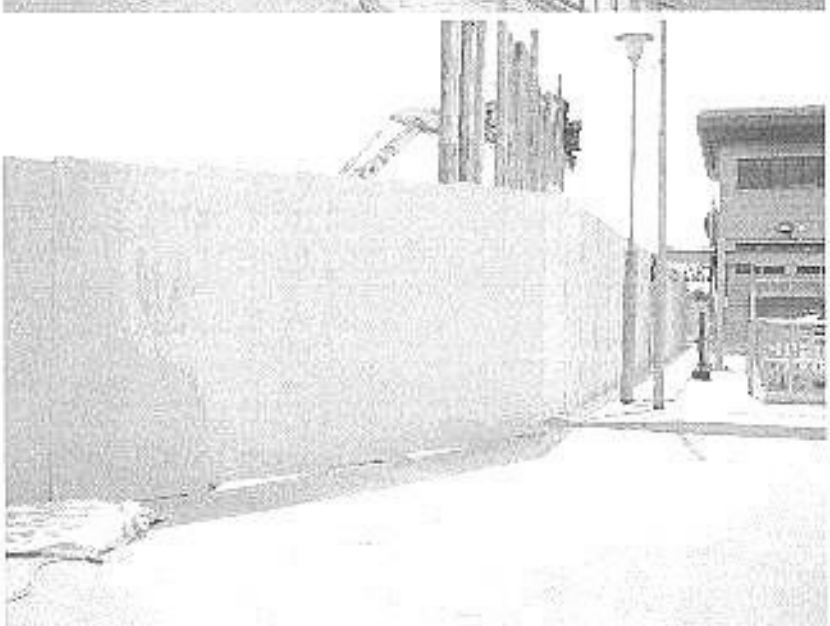
LEADER

Annex D

Photographical Records – Noise Barrier On-Site

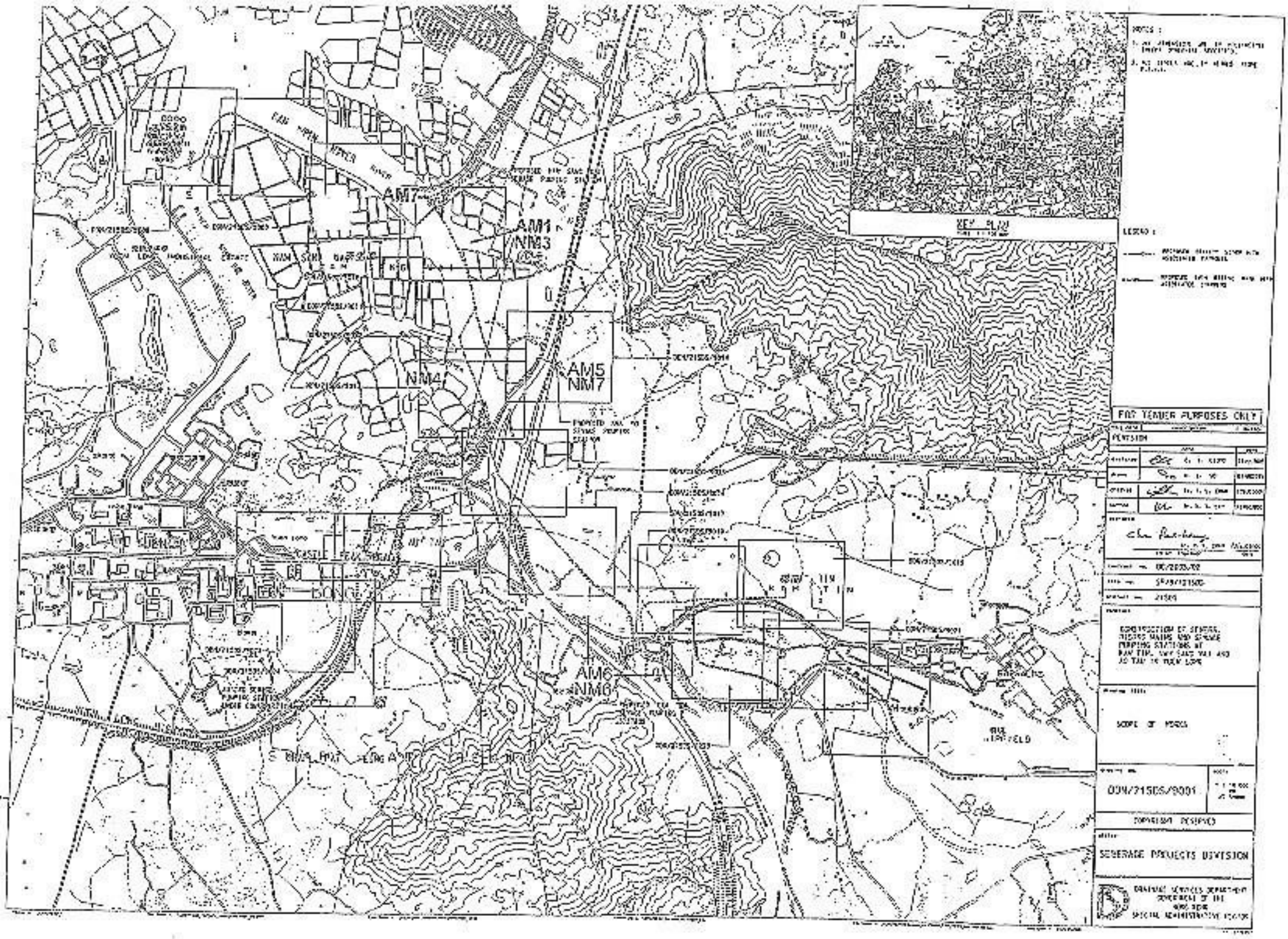






Annex E

Locations of Monitoring Stations


AM7
AM1
NM3
AM5
NM7
NM4
AM6
NM6
FOR TENDER PURPOSES ONLY
DRAINAGE SERVICES DEPARTMENT
SEWERAGE PROJECTS DIVISION

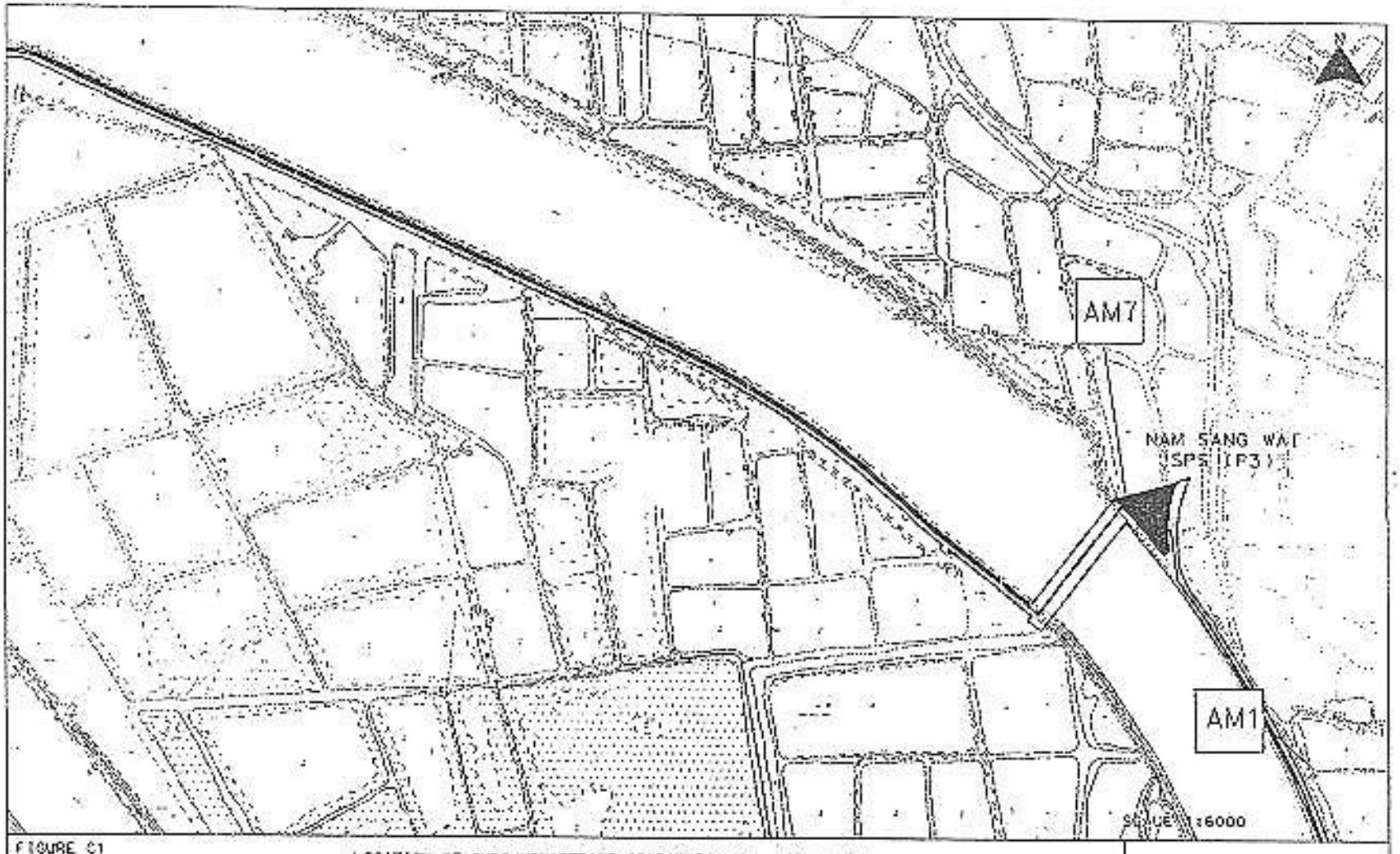


FIGURE C1

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

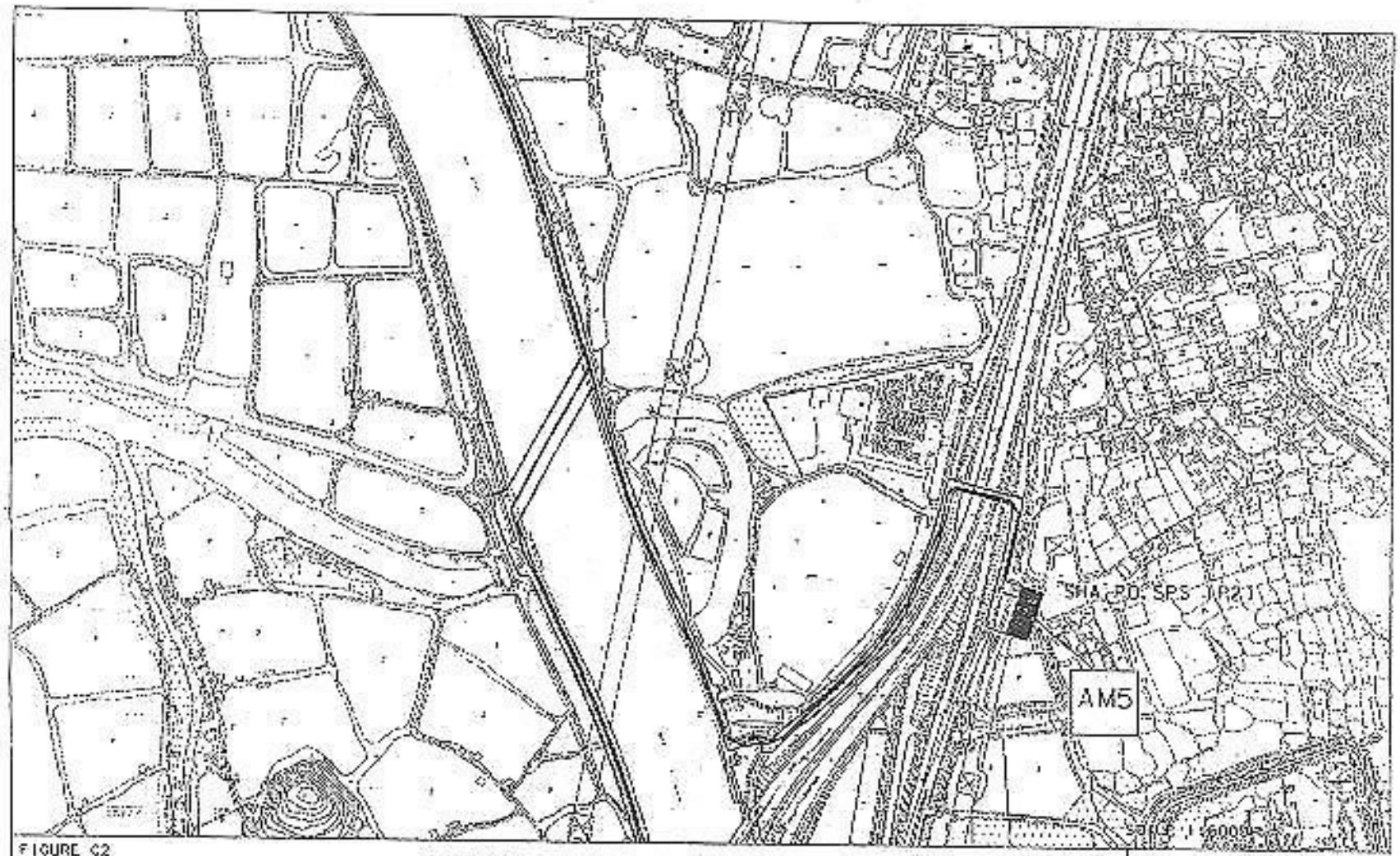


FIGURE C2

LOCATION OF DUST MONITORING STATION (AM5)

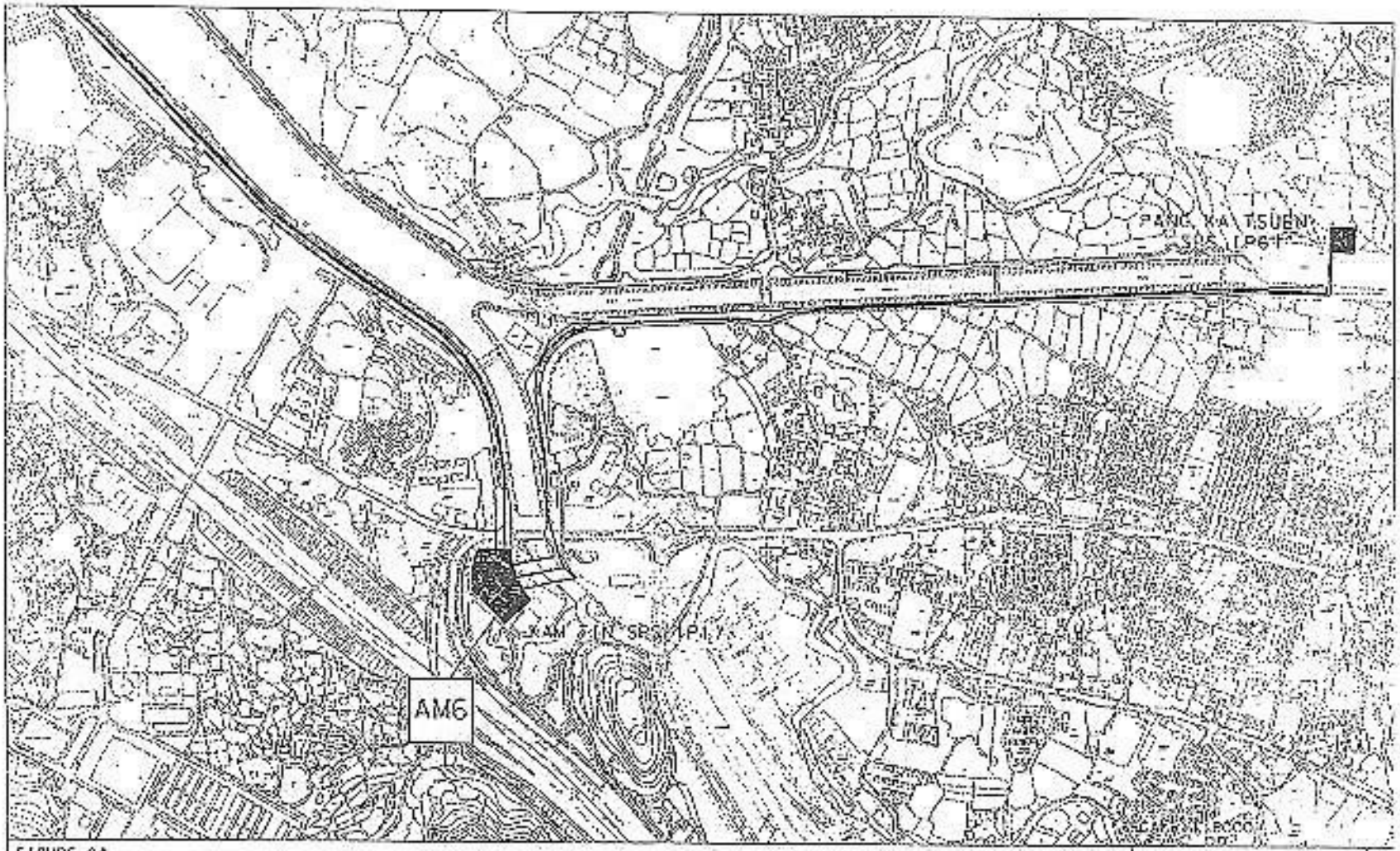


FIGURE C4

LOCATION OF DUST MONITORING STATIONS (AM6, AM8 & AM10)

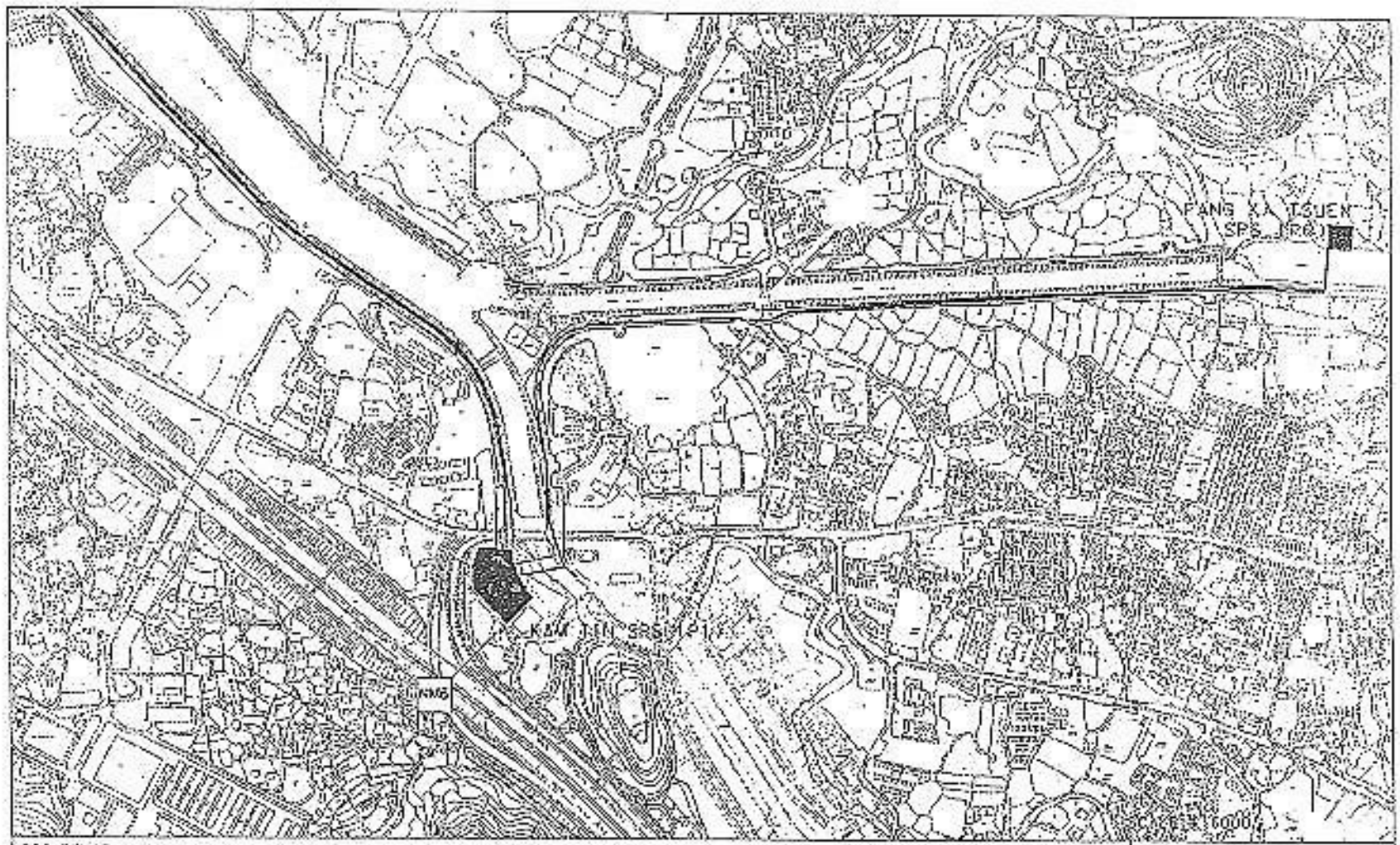


FIGURE C7

LOCATION OF NOISE MONITORING STATIONS (KM1, KM6, KM8, KM9)

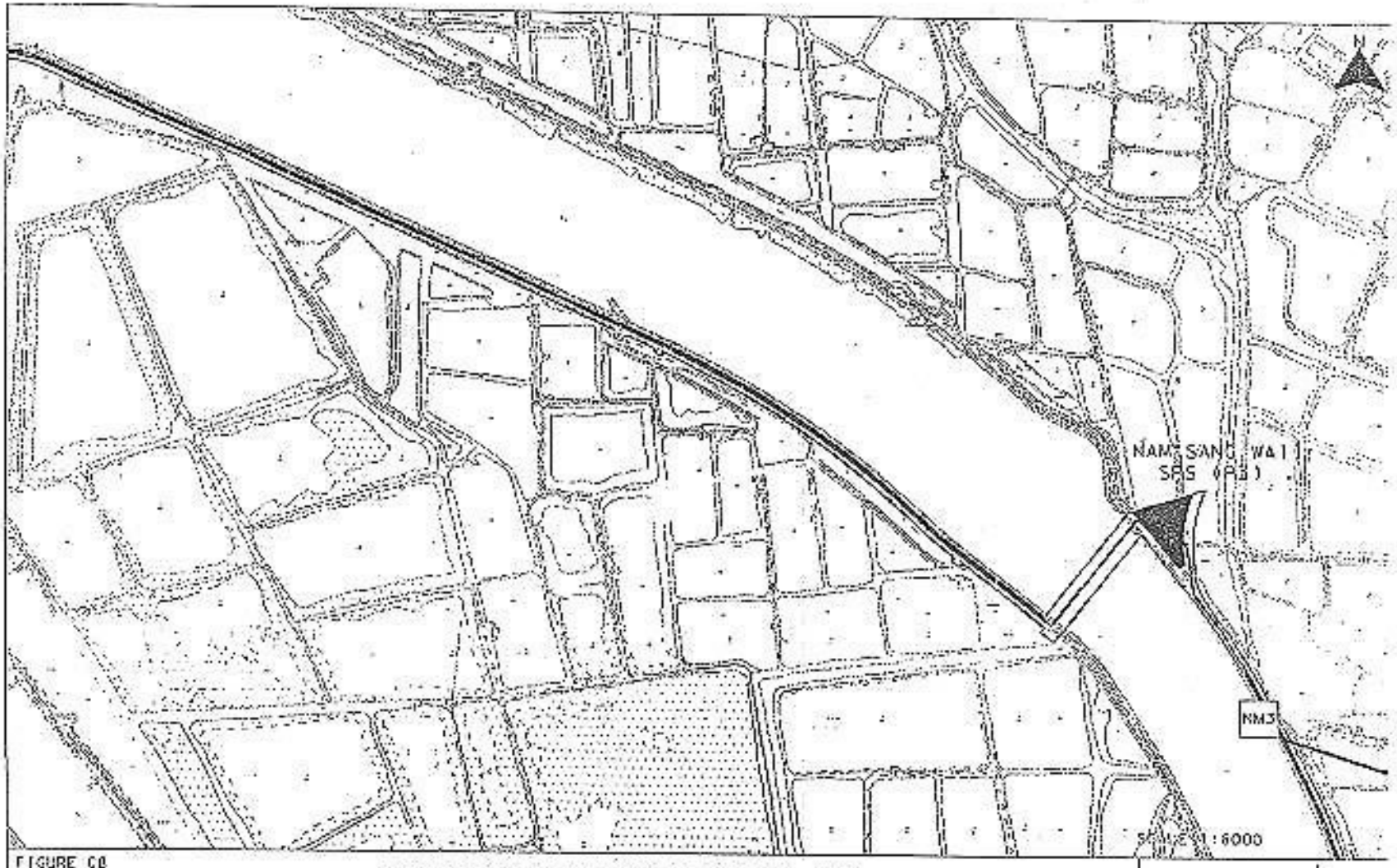


FIGURE C8

LOCATION OF NOISE MONITORING STATIONS (NM3, NM5)

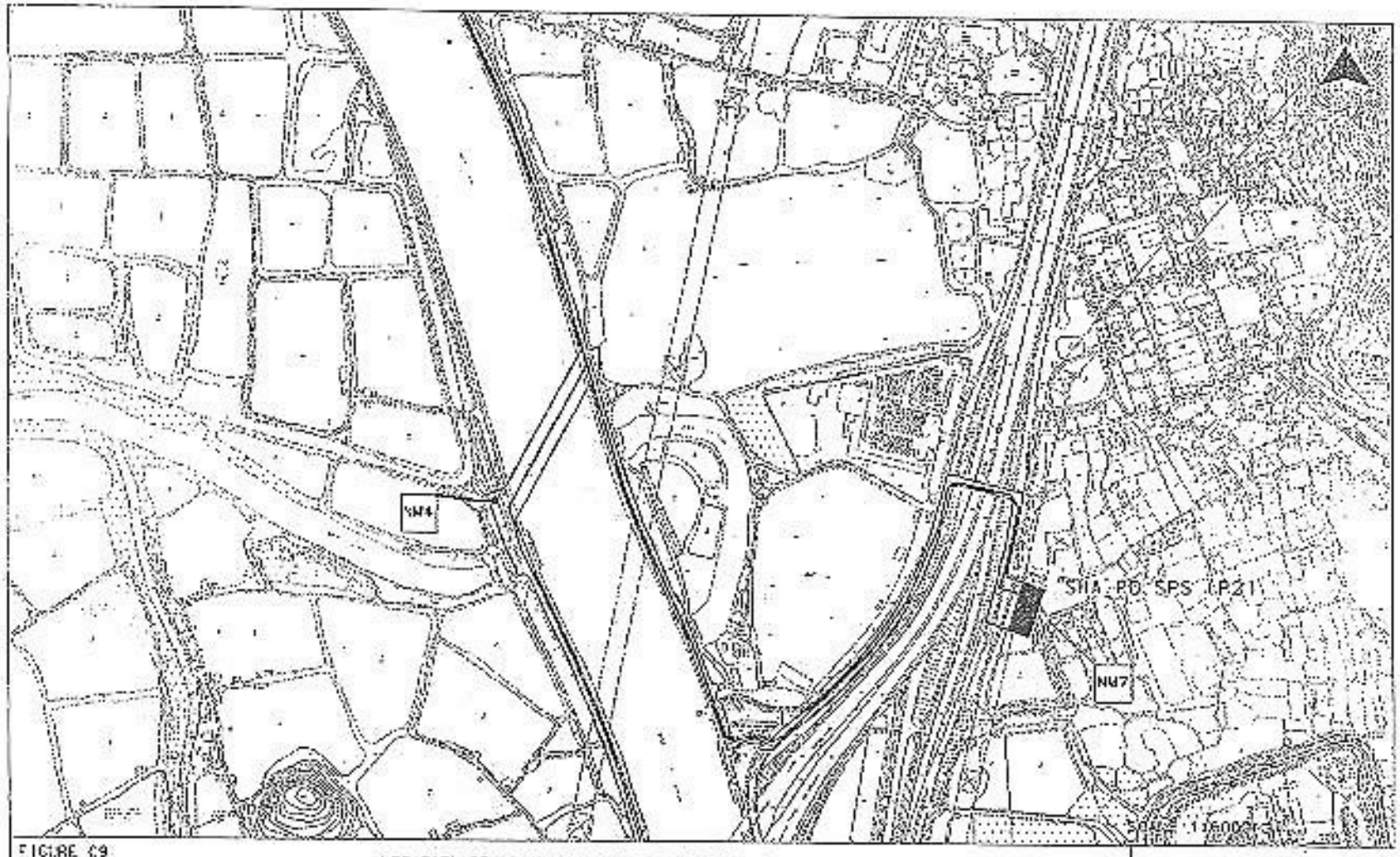


FIGURE C9

LOCATION OF NOISE MONITORING STATIONS (NM4, NM7)

Annex F

Event and Action Plan

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Action Level				
Exceedance for one sample	1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. Increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed	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	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	1. Rectify any unacceptable practice 2. Liaise with Engineer and IEC to develop appropriate remedial measures to reduce dust 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	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 to assess the efficacy of remedial measures and keep the Contractor informed 4. Discuss remedial actions with IEC and Contractor 5. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 6. If exceedance stops, inform the Contractor and cease additional monitoring	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	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. Inform complainant of actions taken, if necessary.	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 Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions
Limit Level				

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Exceedance for one sample	1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. Increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, Engineer and EPD informed	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 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed	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. Inform complainant of actions taken, if necessary.	1. Take immediate action to avoid further exceedance 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
Exceedance for two or more consecutive samples	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 to assess the efficacy of remedial measures and keep the Contractor informed 4. Discuss remedial actions with IEC and Contractor 5. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 5. If exceedance stops, inform the Contractor and cease additional monitoring.	1. Discuss with Contractor and Engineer on possible remedial measures 2. Check and confirm Contractors proposed remedial measures are appropriate 3. Determine the efficacy of remedial actions and keep the Engineer informed	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.	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

Event and Action Plan for Construction Noise				
EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Limit Level				
Exceedance for one sample	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	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	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	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	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.	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	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.	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 G

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								
		AIR QUALITY - *Construction Phase* The following measures are enforceable under the *Air Pollution Control (Construction Dust) Regulations* Site boundary and entrance								
3.5	A1	• where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the boundaries of the seven pumping stations sites and the works area where the Engineer's site office and the Contractor's site office erected;	To prevent access to the site and control potential dust impacts from construction works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part III, Clause 13 (c), Air Pollution Control (Construction Dust) Regulations*
		Access Road								
3.5	A2	• the portion of any road leading only to a construction site that is within 30 m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials;	To control potential dust impacts from vehicle movements.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part III, Clause 14, (b), Air Pollution Control (Construction Dust) Regulations*
		Stockpiling of Dusty Materials								
3.5	A3	• any stockpile of dusty materials should be either covered entirely by impervious sheeting and placed in an area sheltered on the top and the 3 sides or sprayed with water so as to maintain the entire surface wet;	To control potential dust impacts during excavation and stockpiling activities.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part IV, Clause 18, (a, b & c), Air Pollution Control (Construction Dust) Regulations*
		Loading, unloading or transfer of dusty materials								
3.5	A4	• all dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading and unloading so as to maintain the dusty materials wet;	To control potential dust impacts during material handling and truck movements.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part IV, Clause 19, Air Pollution Control (Construction Dust) Regulations*
		Use of vehicles								
3.5	A5	• every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site;	To control potential dust impacts from vehicle movements.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part IV, Clause 21, (1), Air Pollution Control (Construction*

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	
3.5	A6	• 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 during material transportation.	Site wide and throughout the full duration of the construction contract	The Contractor		✓			*Dust) Regulations Part IV, Clause 21, (2), Air Pollution Control (Construction Dust) Regulations*
		Power-driven drilling, and cutting								
3.5	A7	• 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		✓			*Part IV, Clause 22, Air Pollution Control (Construction Dust) Regulations*
		Excavation and earth moving								
3.5	A8	• the working area of excavation should be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet;	To control potential dust impacts arising from excavation works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Part IV, Clause 24, Air Pollution Control (Construction Dust) Regulations*
		Construction of the superstructure of a building								
3.5	A9	• where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the round floor level of the SPS, or if a canopy is provided a the first floor level, from the first floor level, up to the highest level of the scaffolding; and	To control potential dust impacts from SPS building construction works.	Full duration of SPS construction contract.	The Contractor		✓			*Part I, Clause 6, (a), Air Pollution Control (Construction Dust) Regulations*
3.5	A10	• any skip hoist for material transport should be totally enclosed by the impervious sheeting.	To control potential dust impacts during material transportation.	Full duration of SPS construction contract.	The Contractor		✓			*Part I, Clause 6, (b), Air Pollution Control (Construction Dust) Regulations*

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	
		NOISE - *Construction Phase*								
		General Site Clearance – Demolition Works								
4.7.1	B1	• Use of quiet PME which meet the SWLs taken from British Standard, *Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997 (Examples of these PME are shown in Table F2).*	To control potential noise impacts during site clearance and demolition works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
		Construction of Sewage Pumping Stations P1, P2 & P3								
4.7.1	B2	• Use of quiet PME which meet the SWLs taken from British Standard, *Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,*	To minimise potential noise impacts arising during the construction of *P1, P2 & P3*	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
		• Adoption of temporary noise barrier, in the form of a site hoarding (with a superficial density of at least 20kg/m2, with no substantial gaps), along the site boundary of the pumping station sites.	To minimise potential noise impacts arising during the construction of *P1, P2 & P3*	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
		Sewers and Rising Mains using Open Trench Method								
4.7.1	B3	• Use of quiet PME which meet the SWLs taken from British Standard, *Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,*	To control potential noise impacts during excavation works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
4.7.1	B4	• 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	• Use of movable noise barriers or 3 sided enclosures for all initial road opening activities	To control potential noise impacts during road opening	Where there are NSRs located within 50m of the	The Contractor		✓			

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	
		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.	activities.	line of sight. Throughout the full duration of the road opening activities.						
		Sewers and Rising Mains using Pipe Jacking Method								
4.7.1	D6	• Use of quiet PME which meet the SWLs taken from British Standard, *Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,*	To control potential noise impacts from PME during construction works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
		Road Pavement and Finishes								
4.7.1	D7	• Use of quiet PME which meet the SWLs taken from British Standard, *Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997,*	To control potential noise impacts from PME during pavement and finish works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Annex 5 of EIAO-TM*
		WATER QUALITY - *Construction Phase*								
		No water quality monitoring is required under this study.								
		WASTE - *Construction Phase*								
6.6.2	D1	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) Ordinance (Cap 28))*	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))*

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	
6.6.2	D2	*Chemical Waste* Chemical waste that is produced, as defined by Schedule 1 of the *Waste Disposal (Chemical Waste) (General) Regulation*, should be handled in accordance with the regulations and Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows. All chemical waste producers should be registered with the EPD.	To control the handling, storage and disposal of chemical waste, in order to minimise potential spillages/leakages and human health and environmental impacts.	To be implemented at all worksites throughout the full duration of the construction phase.	The Contractor		✓			*Part II, (6) Waste Disposal (Chemical Waste) (General) Regulation*
6.6.2	D3	Storage, Packaging and Labelling of Chemical Waste Containers used for storage of chemical wastes should: • be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; • have a capacity of less than 450 L unless the specifications have been approved by the EPD; and • display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.	To ensure the proper storage, packaging and labelling of chemical waste in accordance with the Regulations.	To be implemented at all worksites throughout the full duration of the construction phase.	The Contractor		✓			*Part IV, (9, 10, 11 & 12) Waste Disposal (Chemical Waste) (General) Regulation*
6.6.2	D4	Storage of chemical waste The storage area for chemical wastes should: • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste, if necessary); and • be arranged so that incompatible materials are	To ensure the proper storage of chemical waste in accordance with the Regulations.	To be implemented at all worksites throughout the full duration of the construction phase.	The Contractor		✓			*Part IV, (13,14, 15, 16, 17, & 18) Waste Disposal (Chemical Waste) (General) Regulation*

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	
		adequately separate								
		Disposal of chemical waste • The Contractor should ensure that the disposal of chemical waste is via a licensed Waste Collector and in accordance with the *Waste Disposal (Chemical Waste) (General) Regulations.*	To control the disposal of chemical waste in accordance with the Regulations.	To be implemented at all worksites throughout the full duration of the construction phase.	The Contractor		✓			*Part IV, (20 -25) Waste Disposal (Chemical Waste) (General) Regulation*
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.*	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		✓			*Land (Miscellaneous Provisions) Ordinance (Cap 285) and Works Bureau Technical Circular No. 5/99.*
7.5.6	E1	**LAND CONTAMINATION- *Construction Phase*** A revised CAP should be submitted to the EPD for approval before the commencement of the construction works. Following receipt of the EPD's approval, the CAP shall be implemented and the findings of the investigations will be reported in the Contaminated Assessment Report (CAR), before ground disturbance is allowed at the concerned sites. If land contamination is confirmed, a Remediation Action Plan (RAP) shall be prepared, and both the CAR and the RAP shall be submitted as a combined report to the EPD for approval before disturbing the ground of the concerned sites. If applicable and required in consultation with the	To determine the presence of soil and groundwater contamination and remedy any potential concerns to acceptable levels.	To be implemented before the commencement of the construction works.	To be implemented by DSD or their sub-consultants at the Detailed Design Stage, depending upon when site access can be gained.	✓				*EIAO TM Annex 19/3.1.1 & 3.1.2*

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	Déc	
		EPD, the contaminated site(s) shall be remediated in accordance with the approved CAR/RAP.								
8.7.1	F1	ECOLOGY - *Construction Phase* ***Mitigation Measures Adopted - Avoidance*** Construction activities shall be prohibited during the winter season (November to March) along the section of the proposed sewerage alignment, which fall within the Deep Bay Wetland Conservation Area and the Deep Bay Wetland Buffer Area (WCA and WBA) and close to the locations of ecologically sensitive species (including Intermediate Egret, Black-faced Spoonbill, Buzzard, Imperial Eagle and Avocet). (See Figure 8.7a attached). Regular site inspections (at least twice a month) should be conducted by the Environmental Team during the winter season (November to March) to ensure proper implementation of this restriction	To schedule construction works in order to minimise potential impacts to winter visiting birds. To be confirmed by regular site inspections.	At identified location (*Figure 8.7a*) for the full duration of the construction contract.	The Contractor		✓			
8.7.2	F2	***Mitigation Measures Adopted - Minimisation*** Pipe jacking method should be used instead of dredging where sewers and rising mains cross over existing MDC within the WCA and WBA.	To minimise potential construction noise impacts to ecological sensitive receivers within the WCA/WBA.	For the full duration of the construction contract.	The Contractor		✓			
8.7.2	F4	Regular inspections (at least twice a month) should be conducted by the ET during the winter season (November to March) for the remaining sections of the proposed sewerage alignment (including parts of S4, S5 and S6) within the WCA and WBA, where construction activities cannot be rescheduled. The site inspections shall check and report the number of workfronts and implementation of	To schedule noisy construction activities to minimise potential impacts to winter visiting birds.	Work fronts other than identified sections within WBA & WCA (see *Figure 8.7a* attached) throughout the full duration of the construction contract.	The Contractor		✓			

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	
		mitigation measures (i.e. erection of movable noise barriers with a suitable footing along the sites) in the monthly EM&A reports.								
		Mitigation Measures Adopted								
8.7.3	F5	Quietened construction plant and equipment (as shown in *Table F2*) should be used for the construction of pumping stations (P3 and P2) and sewerage alignment (S4, S5 and S6) located within the WCA and WBA.	Quiet construction plant shall minimise potential noise impacts to the wildlife, particularly rare birds including Black-faced Spoonbill, Buzzard, Hobby, Impedial Eagle, Intermediate Egret, Avocet and Black-eared Kite	At described locations and throughout the full duration of the construction contract.	The Contractor		✓			
8.7.4	F6	Erection of fences along the boundary of pumping station construction sites (P1 to P3) before the commencement of construction works to prevent tipping, vehicle movements, and encroachment of personnel into adjacent areas, and P2 to avoid disturbance to the remaining pond areas (0.7 ha);	To erect fences to prevent encroachment of construction activities onto adjacent areas.	At P1 to P3 for full duration of the construction contract.	The Contractor		✓			
8.7.4	F7	No filling and dumping to the remaining abandoned fishpond at P2.	To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.	At P2 for full duration of the construction contract	The Contractor		✓			
8.7.4	F8	Installation and operation of silt removal facilities at construction sites of P1 to P3. The silt removal facilities should be designed in accordance with Appendix A1 of ProPECC Note PN1/94 Construction Site Drainage. The minimal total combined volume of the silt removal facilities at Nam Sang Wai SPS (P3) should be 15m^3.	To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.	At P1 to P3 for full duration of the construction contract.	The Contractor		✓			
8.7.4	F9	No open fires within the site boundary during	To prohibit open fires, thereby	Site wide and throughout	The Contractor		✓			*Air Pollution Control*

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	
8.7.4	F7	construction and provide temporary fire fighting equipment in the work areas. No filling and dumping to the remaining abandoned fishpond at P2.	minimising potential damage to trees and shrubs. To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.	the full duration of the construction contract. At P2 for full duration of the construction contract	The Contractor		✓			*(Open Burning) Regulation*
8.7.4	F8	Installation and operation of silt removal facilities at construction sites of P1 to P3. The silt removal facilities should be designed in accordance with Appendix A1 of ProPECC Note PN1/94 Construction Site Drainage.	To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.	At P1 to P3 for full duration of the construction contract.	The Contractor		✓			
8.7.4	F9	No open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.	To prohibit open fires, thereby minimising potential damage to trees and shrubs.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			*Air Pollution Control (Open Burning) Regulation*
		FISHERIES - *Construction Phase* No specific miligation measures are required for inclusion in the EP.								
		CULTURAL HERITAGE – Not Applicable for Package 1A-1T (DC/2005/02)								
		LANDSCAPE AND VISUAL - *Construction Phase*								
	H1	The site inspections shall check and report the implementation of mitigation measures (i.e. top-soil are reused and new compensatory planting works are carried out immediately after the construction of the civil structure) in the monthly EM&A reports. The first monthly EM&A Report should also report the appearance of the temporary hoarding barriers.	To minimise potential landscape and visual impacts.	To be implemented during the construction phases of the project.	The Contractor		✓			
	H2	Prior to application for an Environmental Permit, a set of landscape plans and building elevations of the proposed pumping stations should be	To minimise potential landscape and visual impacts.	To be implemented during the design and construction phases of the	DSD and The Contractor	✓	✓			

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	
		submitted for approval by the EPD. The landscape plans and pumping station elevations should demonstrate that the following elements are considered: • existing landscape elements (such as mature trees), transplantation of valuable trees, new compensatory planting		project.						
		• incorporate information on materials, details and textures so as to be as visually recessive as possible and in a style that fits with the surrounding village buildings. • colour should be of low chromatic intensity to reduce the potential contrast between the structures and their background. The external finishing of the Pumping Stations shall be designed in conjunction with the landscape scheme. • a minimum screen planting of 3m width and use of trees with a dense canopy of up to 5 m in height subject to constraints such as engineering and land availability. • felling of mature trees are kept to a minimum.								
3.7	I1	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. • Worksite boundary facing Scattered house in Nam Sang Wai (AM1); • Worksite boundary facing Fung Kat Heung (AM5); • Worksite boundary facing Scattered House near Route 3 (AM6);	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*

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	
4.9.1	I2	• at any additional locations, where considered necessary, in agreement with EPD. *Construction Noise* 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. • (NM3) Scattered House in Nam San Wai (D12); • (NM4) Scattered House in Nam San Wai (D11); • (NM5) Scattered House near Route 3 (D17); • (NM7) Fung Kat Heung (D19); • and at any additional locations, where considered necessary, in agreement with EPD	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*

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

Annex H

Equipment Calibration Certificates

Equipment Calibration List for Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Project

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

Item	Aspect	Description of Equipment	Serial No.	Date of Calibration	Date of Next Calibration
1	Air	Greasby Anderson GMWS2310 High Volume Sampler	AM1	22 May 06	21 Aug 06
2		Greasby Anderson GMWS2310 High Volume Sampler	AM7	22 May 06	21 Aug 06
3	Noise	Bruel & Kjaer 4231 Acoustical Calibrator	2292167	13 Apr 06	13 Apr 07
4		Bruel & Kjaer 2238 Integrating Sound Level Meter	2285762	8 Jul 05	8 Jul 06

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

Annex I

Meteorological Data

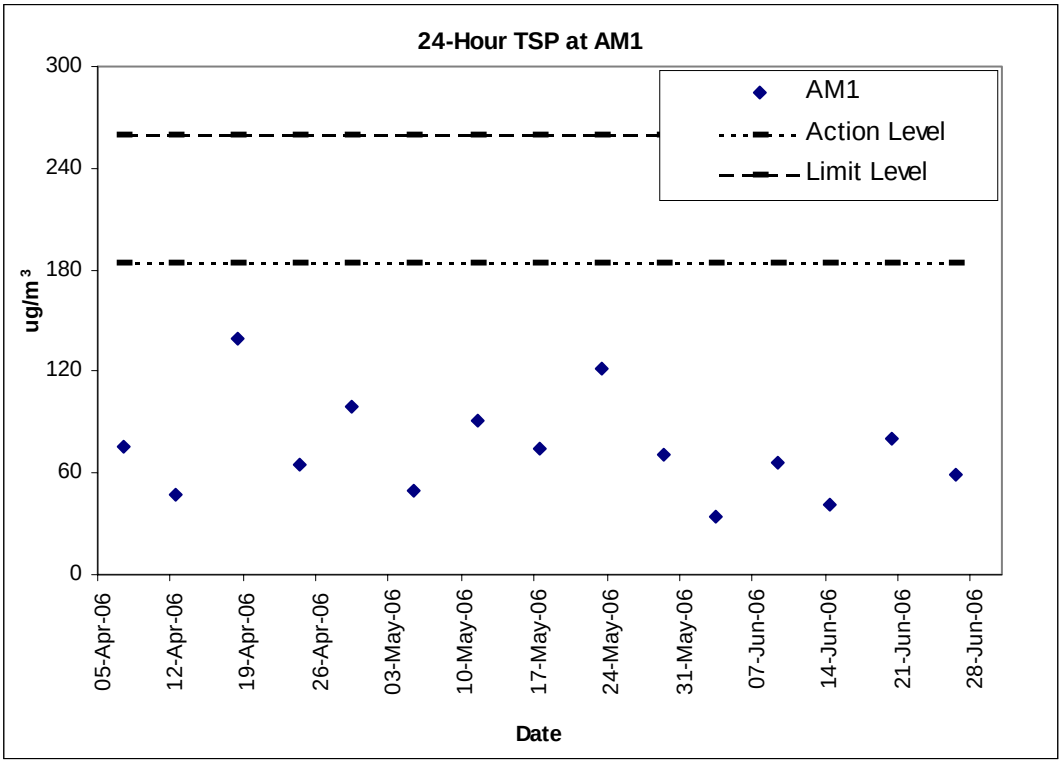
Meteorological Data Extracted From The HK Observatory at Lau Fau Shan Weather Station

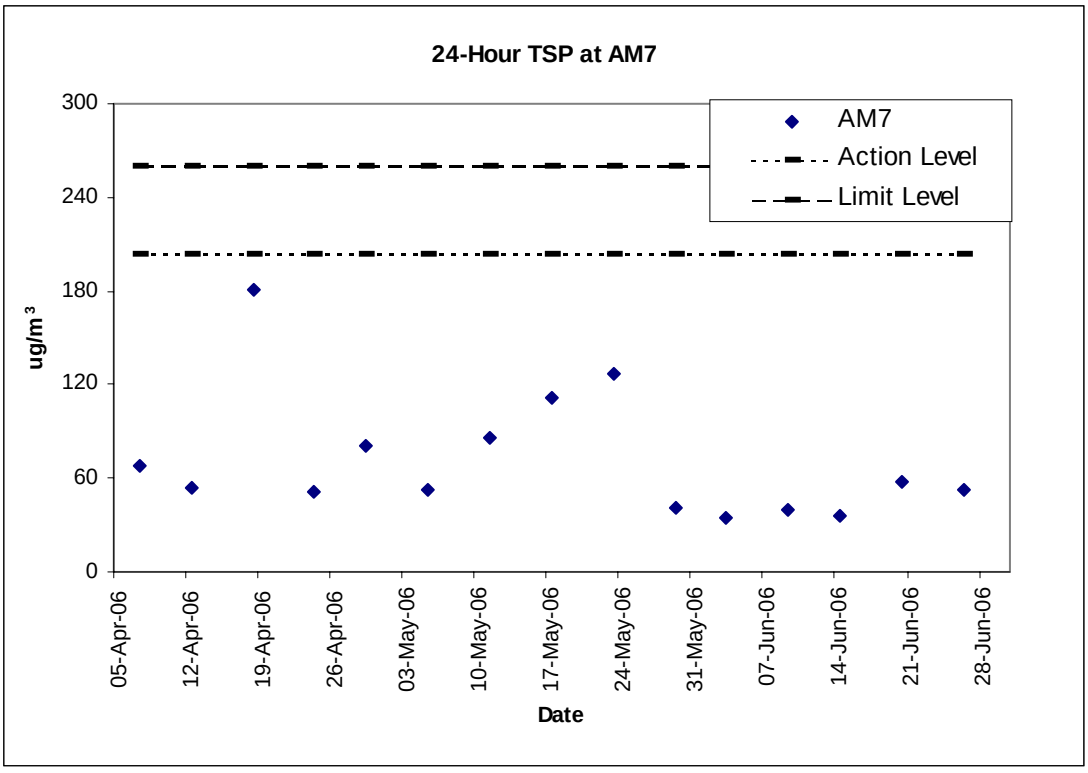
Date		Weather	Total Rainfall	Mean Air Temp.	Wind Speed	Mean Relative	Wind Direction
			(mm)	(°C)	(km/h)	(%)	
1-Jun-06	Thu	moderate/showers/ cloudy/thunderstorms	33.2	25.8	20	95	S/SW
2-Jun-06	Fri	cloudy/ moderate/ rain/ thunderstorms	80.2	25.8	9	100	S/SW
3-Jun-06	Sat	cloudy/thunderstorms/ showers/ moderate	0.6	26.6	18	95	S/SW
4-Jun-06	Sun	sunny/ showers	1.5	28.5	29	80	S/SW
5-Jun-06	Mon	cloudy/ showers/ sunny/ moderate	Trace	28.3	29	80	S/SW
6-Jun-06	Tue	cloudy/ showers/ sunny	0.8	28.7	30	85	S/SW
7-Jun-06	Wed	sunny/ showers	0.4	26.7	25	85	S/SW
8-Jun-06	Thu	cloudy/ showers/ thunderstorms	12.4	27.8	30	85	SW
9-Jun-06	Fri	rain/ thunderstorms/ moderate	136.7	25.3	5	100	SW
10-Jun-06	Sat	cloudy/ misty/ rain/ moderate	26.4	23.1	15	95	W/NW
11-Jun-06	Sun	cloudy/ showers/ thunderstorms	9.5	24.2	15	90	E/SE
12-Jun-06	Mon	cloudy/ moderate/ rain/ thunderstorms	9.4	23.9	12	95	E
13-Jun-06	Tue	cloudy/ showers/ sunny/ moderate	65.2	27.2	12	95	S
14-Jun-06	Wed	cloudy/ showers/ sunny/ moderate	0.4	28.3	19	85	S/SW
15-Jun-06	Thu	cloudy/thunderstorms/ moderate/ showers	0.2	28.1	15	90	S/SW
16-Jun-06	Fri	hot/ sunny/ showers/ moderate	0.1	29.2	10	85	SW/W
17-Jun-06	Sat	-	Trace	29	-	-	-
18-Jun-06	Sun	-	Trace	28.6	10	90	E/SE
19-Jun-06	Mon	cloudy/ showers/ thunderstorms	0.6	25.2	10	95	NE/E
20-Jun-06	Tue	showers/ moderate/ sunny/ thunderstorms	Trace	26.3	9	95	E/SE
21-Jun-06	Wed	thunderstorms/cloudy/ moderate/ showers	10	27.6	9	95	SE/S
22-Jun-06	Thu	sunny/thunderstorms/moderate/showers	10.4	27.4	9	90	SE
23-Jun-06	Fri	fine/ moderate/ hot/ showers	1	28.5	6	75	SE/S
24-Jun-06	Sat	fine/ hot/ showers/ moderate	-	29.6	9	90	SE/S
25-Jun-06	Sun	fine/ hot/ showers	-	29.6	15	70	S
26-Jun-06	Mon	fine/ hot/ showers	-	29.7	12	75	SE/S
27-Jun-06	Tue	sunny/ showers/ thunderstorms	0.1	29.9	18	85	E/SE
28-Jun-06	Wed	cloudy/ showers/ thunderstorms	51	27.5	15	95	E
29-Jun-06	Thu	cloudy/thunderstorms/moderate/showers	16.6	27.4	30	85	SE
30-Jun-06	Fri	cloudy/ showers/ sunny/ moderate	2.5	29.6	14	85	SE

Annex J

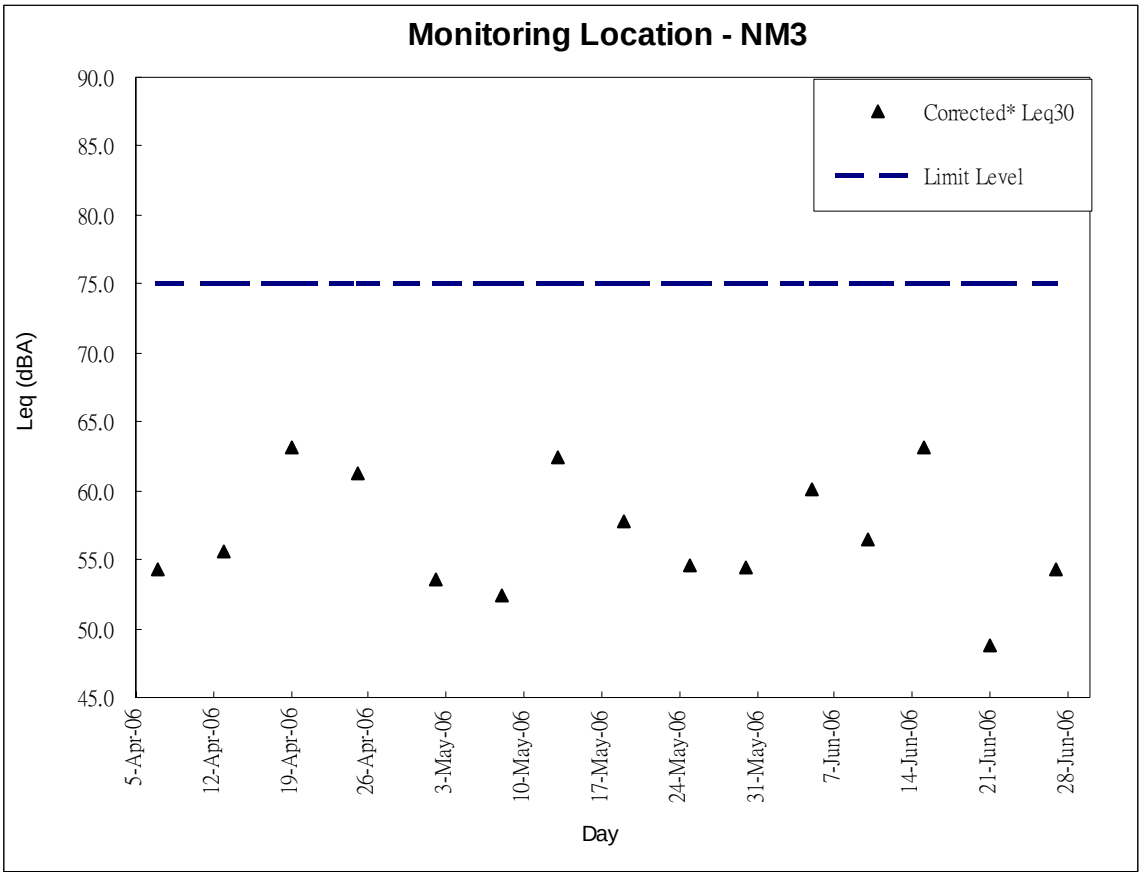
Graphical Plots of Air Quality and Noise Monitoring Results

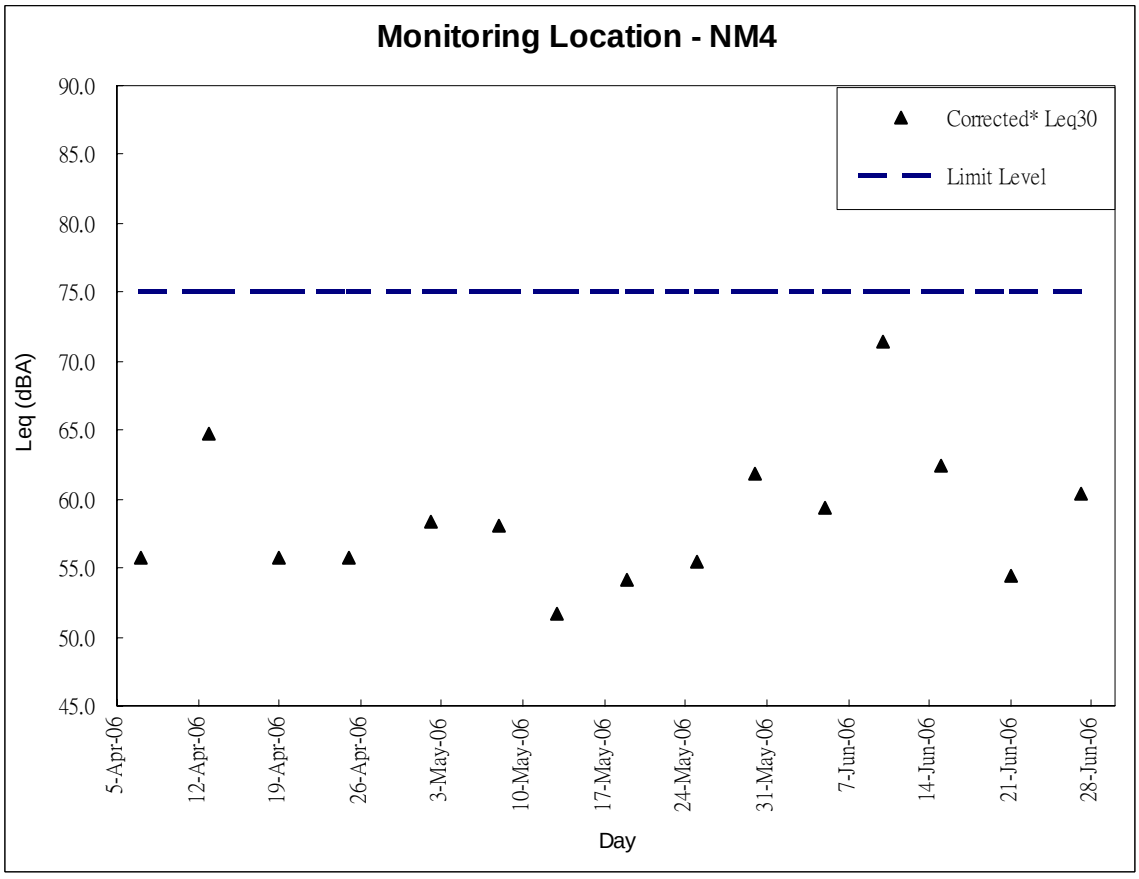
Air Quality Monitoring Results





Construction Noise Monitoring Results





Annex K

Proforma of Site Inspection and IEC Audit in June 2006

AUES

Site Inspection Checklist (SF-17)

Project	DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long	Contractor:	Leader Civil Engineering Corp. Ltd
		Engineer:	Babtie Asia Ltd
Inspected by:	ET Auditor: Ben Tam	IEC:	Mott Connell Ltd
	Contractor Rep: Patrick Wong	Env. Team:	Action-United Env. Services & Consulting
	IEC's Rep: Nil	Inspection Date & Time:	6 June 2006 at 10:30am
	RE's Rep: Mr. S L Ho	Inspection Ref:	EM&A (06June06)

General Meteorological Information

Weather	[ ] Sunny	[ ] Fine	[✓] Cloudy	[ ] Overcast	[ ] Drizzle	[ ] Rain	[ ] Hazy
Temp:	26 °C						
Humidity:	[ ] High (RH > 90%)	[✓] Moderate (90% > RH > 50%)	[ ] Low (RH < 50%)				
Wind:	[✓] Calm	[ ] Light	[ ] Breeze	[ ] Strong			

Air Quality	Yes	No	NA	NC	Follow-up	Remarks
Is hoarding of not less than 2.4m provided?	✓					
Are site vehicles traveling within controlled speed limit?	✓					
Are site vehicles movement confined to designated haul roads?	✓					
Are public roads outside site exits kept clean and free from dust?	✓					
Are haul roads and unpaved surfaces watered regularly to avoid dust generation?	✓					
Are there wheel washing facilities provided at site exits?	✓					
Is water spraying used during the main dust generating activities?	✓					
Are the excavated or stockpile of dusty materials kept wet?	✓					
Is exposed area of ground covered or watered frequently?	✓					
Are load on vehicles covered by clean impervious sheeting?			✓			
Are vehicles and equipment switched off while not in use?	✓					
Is smoky emissions from plants/equipment avoided?	✓					
Is open burning avoided?	✓					

Observable dust sources: [ ] Wind erosion; [ ] Vehicle/equipment movements; [ ] Loading/unloading of materials; [✓] Others: Nil

Construction Noise	Yes	No	NA	NC	Follow-up	Remarks
Are the construction works scheduled to minimize noise nuisance?	✓					
Are the works or equipment sited to minimize noise nuisance?	✓					
Are all plant and equipment well maintained and in good operating condition?	✓					
Is idle equipment turned off or throttled down?	✓					
Is powered mechanical equipment covered or shielded by appropriate acoustic materials?	✓					
Is silenced equipment used where appropriate?	✓					
Are noise enclosures or noise barriers used where necessary?	✓					
Does specified equipment has valid noise label?	✓					
Are Construction Noise Permits (CNPs) available for inspection?			✓			

Major Noise Source: [ ] Traffic; [✓] Construction activities inside of site; [ ] Construction activities outside of site; [ ] Others

Water Quality & Drainage		Yes	No	NA	NC	Follow-up	Remarks
Is a wastewater discharge license obtained for the Project?		✓					
Is site effluent discharged in accordance with the discharge license?		✓					
Is the discharge of silty water avoided?		✓					
Is drainage adequate?		✓					
Is drainage system well maintained?		✓					
Are there temporary ditches for runoff discharge into appropriate watercourse?				✓			
Are there sedimentation tanks for settling runoff prior to discharge?				✓			
Are the sedimentation tanks	Constructed of pre-formed individual cells?			✓			
	With adequate capacity?			✓			
	Free from silt and sediment?			✓			
Are there neutralization tanks for concrete batching/mixing discharge?				✓			
Are there oil interceptors in drainage system?				✓			
Is wheel wash facility provided at every site exit?		✓					
Are vehicles and plant cleaned of earth, mud & debris before leaving the site?		✓					
Are wheel washing facilities regularly inspected and maintained?				✓			
Are toilets provided on site? If so, are they properly maintained?		✓					
Are manholes covered and sealed?		✓					
Is oil leakage or spillage avoided?		✓					

Waste Management and Potential Land Contamination							
General Refuse	Are receptacles (rubbish bins) available?	✓					
	Is there regular and proper disposal?	✓					
	Is proper sorting and recycling implemented?	✓					
Construction Waste:	Is generation of construction waste minimized?	✓					
	Is waste sorting implemented on site?	✓					
	Is construction waste reused where practicable?	✓					
	Is construction waste properly disposed of?	✓					Remarks 2
	Are disposal records available for inspection?	✓					
Chemical waste/waste oil	Is there designated storage area?			✓			
	Is chemical waste stored properly?			✓			
	Is there proper disposal?			✓			
	Is chemical waste license available for inspection?			✓			
Excavated Materials	Do excavated materials appear uncontaminated?	✓					
	Are appropriate procedures followed if contaminated materials exist?	✓					
	Are disposal records available for inspection?	✓					
Chemical/Fuel	Is chemical/fuel stored in bunded area?	✓					
	Is bund capacity adequate (>110% of the largest tank)?	✓					
	Are storage areas lockable?	✓					
Is foam, oil, grease or other objectionable matters in water or nearby drains of sewer avoided?		✓					

Remarks:

Previous Audit Follow-up:

1. Stagnant water near the sheet pile was removed.

Observation:

Nil

Signatures:

Env. Auditor	Contractor's Representative	IC(E) Auditor	Resident Site Staff
			
Name: K.F.Tam	Name:	Name:	Name:

AUES

Site Inspection Checklist (SF-17)

Project	DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long	Contractor:	Leader Civil Engineering Corp. Ltd
		Engineer:	Sebbe Asia Ltd
Inspected by:	ET Auditor: Ben Tam	IEC:	Mott Connell Ltd
	Contractor Rep: Patrick Wong	Env. Team:	Action-United Env. Services & Consulting
	IEC's Rep: Nil	Inspection Date & Time:	14 June 2006 at 02:00pm
	RE's Rep: Mr. S.L.Kui	Inspection Ref:	EM&A (14June06)

General Meteorological Information

Weather: [✓] Sunny [ ] Fine [ ] Cloudy [ ] Overcast [ ] Drizzle [ ] Rain [ ] Hazy

Temp: 30 °C

Humidity: [ ] High (RH > 90%) [✓] Moderate (90% > RH > 50%) [ ] Low (RH < 50%)

Wind: [ ] Calm [✓] Light [ ] Breeze [ ] Strong

Air Quality	Yes	No	NA	NC	Follow-up	Remarks
Is hoarding of not less than 2.4m provided?	✓					
Are site vehicles traveling within controlled speed limit?	✓					
Are site vehicles movement confined to designated haul roads?	✓					
Are public roads outside site exits kept clean and free from dust?	✓					
Are haul roads and unpaved surfaces watered regularly to avoid dust generation?	✓					
Are there wheel washing facilities provided at site exits?	✓					
Is water spraying used during the main dust-generating activities?	✓					
Are the excavated or stockpile of dusty materials kept wet?	✓					
Is exposed area of ground covered or watered frequently?	✓					
Are load on vehicles covered by clean impervious sheeting?			✓			
Are vehicles and equipment switched off while not in use?	✓					
Is smoky emissions from plants/equipment avoided?	✓					
Is open burning avoided?	✓					

Observable dust sources: [ ] Wind erosion [ ] Vehicle/equipment movements [ ] Loading/unloading of materials [✓] Others Nil

Construction Noise	Yes	No	NA	NC	Follow-up	Remarks
Are the construction works scheduled to minimize no se nuisance?	✓					
Are the works or equipment sited to minimize noise nuisance?	✓					
Are all plant and equipment well maintained and in good operating condition?	✓					
Is idle equipment turned off or throttled down?	✓					
Is powered mechanical equipment covered or shielded by appropriate acoustic materials?	✓					
Is silenced equipment used where appropriate?	✓					
Are noise enclosures or noise barriers used where necessary?	✓					
Does specified equipment has valid noise label?	✓					
Are Construction Noise Permits (CNPs) available for inspection?			✓			

Major Noise Source: [ ] Traffic [✓] Construction activities inside of site [ ] Construction activities outside of site [ ] Others

Water Quality & Drainage		Yes	No	NA	NC	Follow-up	Remarks
Is a wastewater discharge license obtained for the Project?		✓					
Is site effluent discharged in accordance with the discharge license?		✓					
Is the discharge of silty water avoided?		✓					
Is drainage adequate?		✓					
Is drainage system well maintained?		✓					
Are there temporary ditches for runoff discharge into appropriate watercourse?				✓			
Are there sedimentation tanks for settling runoff prior to discharge?				✓			
Are the sedimentation tanks	Constructed of pre-formed individual cells?			✓			
	With adequate capacity?			✓			
	Free from silt and sediment?			✓			
Are there neutralization tanks for concrete batching/mixing discharge?				✓			
Are there oil interceptors in drainage system?				✓			
Is wheel wash facility provided at every site exit?		✓					
Are vehicles and plant cleaned of earth, mud & debris before leaving the site?		✓					
Are wheel washing facilities regularly inspected and maintained?				✓			
Are toilets provided on site? If so, are they properly maintained?		✓					
Are manholes covered and sealed?		✓					
Is oil leakage or spillage avoided?		✓					

Waste Management and Potential Land Contamination							
General Refuse:	Are receptacles (rubbish bins) available?	✓					
	Is there regular and proper disposal?	✓					
	Is proper sorting and recycling implemented?	✓					
Construction Waste:	Is generation of construction waste minimized?	✓					
	Is waste sorting implemented on site?	✓					
	Is construction waste reused where practicable?	✓					
	Is construction waste properly disposed of?	✓					
	Are disposal records available for inspection?	✓					
Chemical waste/waste oil	Is there designated storage area?			✓			
	Is chemical waste stored properly?			✓			
	Is there proper disposal?			✓			
	Is chemical waste license available for inspection?			✓			
Excavated Materials	Do excavated materials appear uncontaminated?	✓					
	Are appropriate procedures followed if contaminated materials exist?	✓					
	Are disposal records available for inspection?	✓					
Chemical/Fuel	Is chemical/fuel stored in bunded area?	✓					
	Is bund capacity adequate (>110% of the largest tank)?					✓	Remarks2&3
	Are storage areas lockable?	✓					
Is foam, oil, grease or other objectionable matters in water or nearby drains of sewer avoided?		✓					

Remarks:

Previous Audit Follow-up:

Nil

Observations:

1. Stagnant water was cumulated near the sheet pile at Portions F and J. The contractor was reminded to clean up the stagnant water.
2. Stagnant water was cumulated inside a drip tray at Portion G. The contractor was reminded to clean up the stagnant water.
3. Oil drum was observed without a drip tray at Portion K. The contractor was reminded to provide drip trays for all free-standing oil drums.

Signatures:

Env. Auditor	Contractor's Representative	ICE) Auditor	Resident Site Staff
Name: K.F.Tam	Name:	Name:	Name:

AUES

Site Inspection Checklist (SF-17)

Project:	DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long	Contractor:	Leader Civil Engineering Corp. Ltd
		Engineer:	Babtie Asia Ltd
Inspected by:	ET Auditor: Den Tam	IEC:	Mott Connell Ltd
	Contractor Rep: Patrick Wong	Env. Team:	Action-United Env. Services & Consulting
	IEC's Rep: NI	Inspection Date & Time:	30 June 2006 at 09:30am
	RE's Rep: Mr. S L Ho	Inspection Ref:	EM&A (30June06)

General Meteorological Information

Weather	[✓] Sunny	[ ] Fine	[ ] Cloudy	[ ] Overcast	[ ] Drizzle	[ ] Rain	[ ] Hazy
Temp:	[28] °C						
Humidity:	[ ] High (RH > 90%)	[✓] Moderate (90% > RH > 50%)	[ ] Low (RH < 50%)				
Wind:	[ ] Calm	[✓] Light	[ ] Breeze	[ ] Strong			

Air Quality	Yes	No	NA	NC	Follow-up	Remarks
Is hoarding of not less than 2.4m provided?	✓					
Are site vehicles traveling within controlled speed limit?	✓					
Are site vehicles movement confined to designated haul roads?	✓					
Are public roads outside site exits kept clean and free from dust?	✓					
Are haul roads and unpaved surfaces watered regularly to avoid dust generation?	✓					
Are there wheel washing facilities provided at site exits?	✓					
Is water spraying used during the main dust-generating activities?	✓					
Are the excavated or stockpile of dusty materials kept wet?	✓					
Is exposed area of ground covered or watered frequently?	✓					
Are load on vehicles covered by clean impervious sheeting?			✓			
Are vehicles and equipment switched off while not in use?	✓					
Is smoky emissions from plants/equipment avoided?	✓					
Is open burning avoided?	✓					

Observable dust sources: [ ] Wind erosion; [ ] Vehicle/equipment movements; [ ] Loading/Unloading of materials; [✓] Others: NI

Construction Noise

Are the construction works scheduled to minimize noise nuisance?	✓					
Are the works or equipment sited to minimize noise nuisance?	✓					
Are all plant and equipment well maintained and in good operating condition?	✓					
Is idle equipment turned off or throttled down?	✓					
Is powered mechanical equipment covered or shielded by appropriate acoustic materials?	✓					
Is silenced equipment used where appropriate?	✓					
Are noise enclosures or noise barriers used where necessary?	✓					
Does specified equipment has valid noise label?	✓					
Are Construction Noise Permits (CNPs) available for inspection?			✓			

Major Noise Source: [ ] Traffic; [✓] Construction activities inside of site; [ ] Construction activities outside of site; [ ] Others:

Water Quality & Drainage		Yes	No	NA	NC	Follow-up	Remarks
Is a wastewater discharge license obtained for the Project?		☑	☐	☐	☐	☐	
Is site effluent discharged in accordance with the discharge license?		☑	☐	☐	☐	☐	
Is the discharge of silty water avoided?		☑	☐	☐	☐	☐	
Is drainage adequate?		☑	☐	☐	☐	☐	
Is drainage system well maintained?		☑	☐	☐	☐	☐	
Are there temporary ditches for runoff discharge into appropriate watercourse?		☐	☐	☑	☐	☐	
Are there sedimentation tanks for settling runoff prior to discharge?		☐	☐	☑	☐	☐	
Are the sedimentation tanks:	Constructed of pre-formed individual cells?	☐	☐	☑	☐	☐	
	With adequate capacity?	☐	☐	☑	☐	☐	
	Free from silt and sediment?	☐	☐	☑	☐	☐	
Are there neutralizer tanks for concrete batching/mixing discharge?		☐	☐	☑	☐	☐	
Are there oil interceptors in drainage system?		☐	☐	☑	☐	☐	
Is wheel wash facility provided at every site exit?		☑	☐	☐	☐	☐	
Are vehicles and plant cleaned of earth, mud & debris before leaving the site?		☑	☐	☐	☐	☐	
Are wheel washing facilities regularly inspected and maintained?		☐	☐	☑	☐	☐	
Are toilets provided on site? If so, are they properly maintained?		☑	☐	☐	☐	☐	
Are manholes covered and sealed?		☑	☐	☐	☐	☐	
Is oil leakage or spillage avoided?		☑	☐	☐	☐	☐	
Waste Management and Potential Land Contamination							
General Refuse:	Are receptacles (rubbish bins) available?	☑	☐	☐	☐	☐	
	Is there regular and proper disposal?	☑	☐	☐	☐	☐	
	Is proper sorting and recycling implemented?	☑	☐	☐	☐	☐	
Construction Waste:	Is generation of construction waste minimized?	☑	☐	☐	☐	☐	
	Is waste sorting implemented on site?	☑	☐	☐	☐	☐	
	Is construction waste reused where practicable?	☑	☐	☐	☐	☐	
	Is construction waste properly disposed of?	☑	☐	☐	☐	☐	
	Are disposal records available for inspection?	☑	☐	☐	☐	☐	
Chemical waste/waste oil	Is there designated storage area?	☐	☐	☑	☐	☐	
	Is chemical waste stored properly?	☐	☐	☑	☐	☐	
	Is there proper disposal?	☐	☐	☑	☐	☐	
	Is chemical waste license available for inspection?	☐	☐	☑	☐	☐	
Excavated Materials	Do excavated materials appear uncontaminated?	☑	☐	☐	☐	☐	
	Are appropriate procedures followed if contaminated materials exist?	☑	☐	☐	☐	☐	
	Are disposal records available for inspection?	☑	☐	☐	☐	☐	
Chemical/Fuel	Is chemical/fuel stored in bunded area?	☑	☐	☐	☐	☐	
	Is bund capacity adequate (>110% of the largest tank)?	☑	☐	☐	☐	☐	Remarks2&3
	Are storage areas lockable?	☑	☐	☐	☐	☐	
Is foam, oil, grease or other objectionable matters in water or nearby drains of sewer avoided?		☑	☐	☐	☐	☐	

Remarks:

Previous Audit Follow-up:

1. Stagnant water was cumulated near the sheet pile at Portions F and J. The contractor was reminded to clean up the stagnant water.
   - Stagnant water was removed.

2. Stagnant water was cumulated inside a drip tray at Portion G. The contractor was reminded to clean up the stagnant water.
   - Stagnant water was removed.

3. Oil drum was observed without a drip tray at Portion K. The contractor was reminded to provide drip trays for all free-standing oil drums.
   - Drip tray was provided for all free-standing oil drums.

Observations:

Nil

Signatures:

Env. Auditor	Contractor's Representative	IC(E) Auditor	Resident Site Staff
			
Name: K F Tam	Name:	Name:	Name:

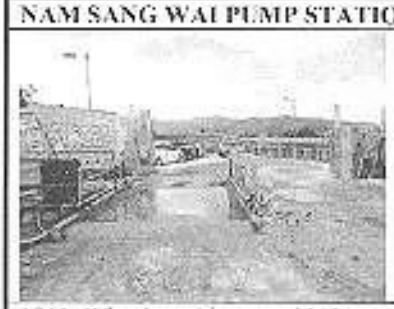
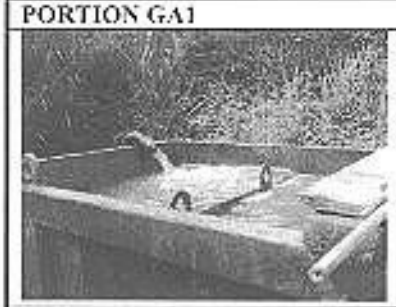
Agreement No. CE37/2005 (EP)
Environmental Monitoring and Audit for
Kam Tin Trunk Sewerage Phase 1 and Au Tau trunk sewers

MONTHLY SITE INSPECTION PHOTO
26 June 2006
PART 1 – Environmental Observations

Close out of previous month's observations (May 2006)

Last month's observations	This month's observations
None	None

This month's observations

This week's observations	This week's observations
NAM SANG WAI ROAD	
	
1853: Protection to drains from construction runoff.	1857: Protection provided to exposed surface to minimise runoff during rain.
NAM SANG WAI PUMP STATION	
	
1861: Wheel washing provided	1862: sorting facilities provided.
PORTION GA1	
	
1869: Contractor advised to review tank design to improve silt removal efficiency	1870: Measures to prevent runoff discharges

Agreement No. CE37/2005 (EP)
Environmental Monitoring and Audit for
Kam Tin Trunk Sewerage Phase 1 and Au Tau trunk sewers

MONTHLY SITE INSPECTION PHOTO
26 June 2006
PART 1 – Environmental Observations

SUN YUEN LONG	
	
1877: Measures to reduce dust generation	1878: Contractor reminded to provide adequate measures to prevent construction runoff into public drains

Agreement No. CE37/2005 (EP)
Environmental Monitoring and Audit for
Kam Tin Trunk Sewerage Phase 1 and Au Tau trunk sewers

MONTHLY SITE INSPECTION CHECKLIST

Inspection Date	26/6/2006	Time	9.30am	Inspected By	Leader: Benny Lam ET: Cliff Tam DSO: SL Hui IEC: SM Fou
Site Location					

Weather

Condition	✓	Sunny		Fine		Overcast		Drizzle		Rain		Storm		Hazy
Temperature	31°C				Humidity		High		Moderate	✓	Low			
Wind	✓	Calm		Light		Breeze		Strong		Direction				

EIA ref.		Close-out on last comments Y/N	N/A or not obs	Yes	No	Photo/Remarks
	Construction Phase					
	Air Quality - Construction Phase					
3.5	• Are hoardings of not less than 2.4m high provided along the site boundary?			✓		
3.5	• Is the portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit kept clear of dusty materials?			✓		
3.5	• Are stockpiled dusty materials covered by impervious sheeting and placed in an area sheltered on top and 3 sides or sprayed with water?			✓		
3.5	• Are dusty material loads on vehicles sprayed with water prior to loading and unloading?		✓			
3.5	• Are all vehicles washed to remove dusty materials from its body and wheels before leaving site?			✓		
3.5	• Are vehicles which are carrying dusty materials covered entirely by impervious sheeting when leaving site?		✓			
3.5	• Are surfaces where any mechanical breaking operation takes place sprayed?		✓			
3.5	• Are working area of any excavation sprayed with water, immediately before, during and immediately after the operation?		✓			
3.5	• Where a scaffolding is erected around the perimeter of a building under construction, are effective dust screens, sheeting or netting provided to enclose the scaffolding from the ground floor level of the SPS, or a canopy from the first floor level up to the highest level of the scaffolding?		✓			
3.5	• Are skip hoists for material transport totally enclosed?		✓			

3.7	• Have dust monitors been provided at the following locations: • Boundary facing scattered house in NSW (AM1) • Boundary facing Fung Kat Heung (AM5) • Boundary facing scattered house near route 3 (AM6)			✓		
	Construction Noise **Demolition works**					
4.7.1	• Are quiet PME which meet the SWLs from BS 5228:Part 1: 1997 used?			✓		
	Sewage Pumping Stations P1, P2 & P3					
4.7.1	• Are quiet PME which meet the SWLs from BS 5228:Part 1: 1997 used?			✓		
4.7.1	• Are temporary noise barrier, in the form of a site hoarding (with superficial density of at least 20kg/m2, with no substantial gaps), along the site boundaries of the pumping station sites adopted?			✓		
	Sewers and Rising Mains using Open Trench					
4.7.1	• Are quiet PME which meet the SWLs from BS 5228:Part 1: 1997 used?			✓		
4.7.1	• Are handheld breakers used for all initial road opening activities, when breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached?		✓			
4.7.1	• Are movable noise barriers or 3-sided enclosures installed for all initial road opening activities (breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached) where there NSRs within 50m of the line of sight?		✓			
	Sewers and Rising Mains using Pipe Jacking					
4.7.1	• Are quiet PME which meet the SWLs from BS 5228:Part 1: 1997 used?			✓		
	Road Pavement and Finishes					
4.7.1	• Are quiet PME which meet the SWLs from BS 5228:Part 1: 1997 used?			✓		
4.9.1	• Have noise monitors been provided at the following locations: • (NM3) Scattered house in NSW • (NM4) Scattered house in NSW • (NM6) Scattered house near Route 3 • (NM7) Fung Kat Heung			✓		
	Construction Runoff and Site Drainage					
	• Are perimeter cut-off drains to direct off-site water around the site constructed with internal drainage works and erosion and sedimentation control facilities implemented. Are channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers provided on site to direct stormwater to silt removal facilities?			✓		
	• Are dikes or embankments for flood protection implemented around the boundaries of earthwork areas. Are sediment/silt traps incorporated in the permanent drainage channels to enhance deposition rates?			✓		
	• Are silt removal facilities provided with retention time for silt/sand traps of 5 minutes under maximum flow conditions?	N				Check function performance
	• Are construction works programmed to minimize surface excavation works during the rainy seasons (April to September)?			✓		
	• Are slopes minimised and erosion potential reduced?			✓		
	• Is deposited silt and grit removed regularly and disposed of by spreading evenly over stable, vegetated areas?			✓		

	• Are measures taken to minimise the ingress of site drainage into excavations? Is water pumped out from trenches or foundation excavations discharged into storm drains via silt removal facilities?		✓		
	• Are open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 covered with tarpaulin or similar fabric during rainstorms?			✓	
	• Are manholes (including newly constructed ones) adequately covered and temporarily sealed?			✓	
	• Are precautions taken before rainstorms?			✓	
	• Are all vehicles and plant cleaned before leaving site?			✓	
	• Is solid waste, debris and rubbish on site appropriately collected, handled and disposed of properly to avoid water quality impacts?			✓	
	• Are all fuel tanks and storage areas provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby?			✓	
	Sewage Effluent - Construction Phase				
	1) Are portable chemical toilets and sewage holding tanks provided? Is handling the construction sewage generated for collection and disposal of this waste? Is a licensed contractor employed?			✓	
	Waste Management - Construction Phase				
6.6.2	• Are the necessary waste disposal permits from the appropriate authorities in placed for chemical and C&D wastes, in accordance with the Waste Disposal (Chemical Waste) (General) Regulations and the Land (Miscellaneous Provisions) Ordinance (Cap 28)?			✓	
6.6.2	• Is chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, being handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes?				
6.6.2	• Are containers used for the storage of chemical wastes suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation?			✓	
6.6.2	• Is the storage area for chemical wastes clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated?			✓	
6.6.2	• Is disposal of chemical waste via a licensed waste collector, be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD?			✓	
6.6.2	• Are trip tickets for disposal available to monitor disposal of C&DM and solid wastes at public filling and landfills, and to control fly tipping?			✓	

	Land Contamination - *Construction Phase*					
7.5.5	• Is a revised CAP submitted to the EPD before commencement of construction works? Is the CAP implemented and findings of the investigations reported in the CAR, before ground disturbance is allowed?			✓		
7.5.6	• If land contamination is confirmed, has a RAP been prepared and submitted to EPD?		✓			
7.5.6	• Are contaminated sites remediated in accordance with the approved CAR/RAP?		✓			
	Ecology - *Construction Phase*					
8.7.1	• Are construction activities prohibited during November to March for the sections of works within the WCA and WBA, and close to locations of ecologically sensitive species.		✓			
8.7.1	• During November to March periods, are regular site inspections (at least twice a month) undertaken by ET to ensure proper implementation of this restriction?		✓			
8.7.2	• Is pipe jacking method used for sewers and rising mains crossing over MDC within the WCA and WBA?		✓			
8.7.2	• During November to March, are regular site inspections (at least twice a month) undertaken by ET for the remaining sewerage sections (including parts of S4, S5 and S6) within the WCA and WBA where construction activities cannot be rescheduled?		✓			
8.7.2	• The site inspections shall check and report the number of workfronts and implementation of mitigation measures in the monthly EM&A Report.			✓		
8.7.3	• Are quietened construction plant and equipment used for PS (P2 and P3) and sewers (S4, S5, S6) within the WCA and WBA?			✓		
8.7.4	• For P1-P3, have fences along the boundary of the pumping stations construction sites been erected?		✓			
8.7.4	• There shall be no filling and dumping to the remaining abandoned fishpond at P2.		✓			
8.7.4	• Are silt removal facilities, designed to the ProPECC Note PN1/94, installed and operated at the P1 to P3 sites? The minimal total combined volume of the silt removal facilities at P3 (NSW SPS) should be 15m3.			✓		
8.7.4	• There shall be no open fires within the site boundary.		✓			
8.7.4	• Have temporary fire fighting equipment provided in the works areas.			✓		
	Landscape and Visual - *Construction Phase*					
	• Have the implementation of mitigation measures (i.e., top soil reused, new compensatory planting) been reported in the monthly EM&A?		✓			
	• The first monthly EM&A Report should report on the appearance of the temporary hoarding barriers.			✓		
	• Are screen planting (3m wide) and trees with dense canopy (up to 5m) provided?		✓			
	• Is felling of mature trees kept to a minimum?		✓			

OTHER OBSERVATIONS

1 Contractor advised to review and track design/performance to improve [illegible] efficiency (GA1)

DSD Representative	Contractor Representative	ETL	IEC
(S L Hui)	(Benny Lam)	(CLIFF LAW)	([illegible])