JOB NO.: TCS00310/06

VISION NO.: 2 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

BI-ANNUAL ENVIRONMENTAL MONITORING & AUDIT (EM&A) SUMMARY REPORT FOR October 2008 to March 2009 (No. 6) (Designated Elements)

PREPARED FOR

LEADER CIVIL ENGINEERING CORPORATION LIMITED

Quality Index

Date	Reference No.		
9 June 2009	TCS00310/06/600/R0863r2		
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Rev. No.	Date	Remarks
1	6 June2009	First Submission
2	9 June 2009	Response to IEC's comments received on 9 June 2009 via. e-mail

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EXECUTIVE SUMMARY

- ES01. 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.
- ES02. This is the Sixth Bi-Annual EM&A Summary Report for October 2008 to March 2008 (No. 6) reporting the environmental impact monitoring and audit (EM&A) conducted from 01 October 2008 to 31 March 2009. EM&A program implemented in this reporting period (October 2008 to March 2009) covered air quality, noise and waste management.

BREACH OF ACTION AND LIMIT (AL) LEVELS

ES03. No noise exceedance was recorded in this bi-quarterly reporting period. However five action and five limit levels exceedances were found in 24-hr TSP during the period. The locations of 24-hr TSP exceedance were included AM1, AM5, AM6 and AM7 of all designated Sensitive Receivers. Based on the information and the investigation provided by the Contractor, the exceedances were not considered to be related the project. The detail of 24-hr TSP exceedance in this reporting period is list as below.

Station	Action Level (µg/m ³)	Limit Level (µg/m ³)	Date of Exceeded	Concentration (µg/m ³)	Exceedance Level
			17 Dec 08	247	Action
AM1	184	260	15 Jan 09	203	Action
AMI	104	200	02 Feb 09	295	Limit
			09 Mar 09	196	Action
			09 Jan 09	276	Limit
AM5	237	260	03 Mar 09	251	Action
			14 Mar 09	347	Limit
AM6	183	260	25 Oct 08	213	Action
ANIO	105	200	29 Nov 08	646	Limit
AM7	204	260	02 Mar 09	284	Limit

ENVIRONMENTAL SITE INSPECTION

ES04. In this reporting period, totally 19 weekly joint site inspections were undertaken by representatives of the Engineer, the Contractor and ET to evaluate the site environmental performance. Although total 28 observations were found no non-compliance was identified during the site weekly inspections. Six joint IEC site inspections had been taken in monthly basis, based on the joint IEC site audits to finding, no non-compliance is identified by IEC, however seventeen observations were recorded in the reporting period.

COMPLAINT LOG

ES05. No environmental complaint was received in this reporting period.

NOTIFICATION OF ANY SUMMONS AND SUCCESSFUL PROSECUTION

ES06. There was no environmental summons or prosecution in this reporting period.

REPORTING CHANGES

ES07. There are no changes to be reported in this reporting period.

ADEQUACY OF EM&A

ES08. Based on the data collected and reviewed for the period between October 2008 to March 2009 (as reported herein), it can be confirmed that the monitoring work is effective and that it is generating data to categorically confirm the observation of impact attributable to the works.

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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 6th **Bi-Annual EM&A Summary Report for October 2008 to March 2009** (No. 6) summarizes the impact monitoring results and audit findings in the reporting period from **October 2008 to March 2009**.

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

CONSTRUCTION PROGRAM FOR THE REPORTING PERIOD

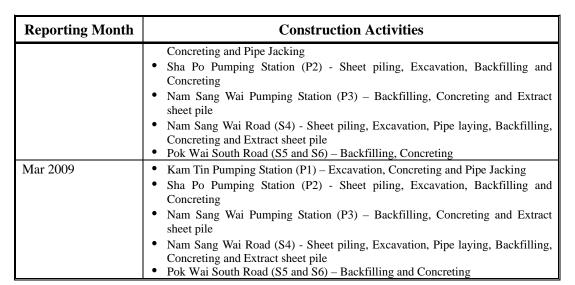
1.04 A construction program showing the construction work undertaken in this reporting period is shown in Annex C.

WORKS UNDERTAKEN DURING THE REPORTING PERIOD

1.05 The major construction work undertaken during the reporting period under the Environmental Permit (EP-220/2005) is shown in **Table 1-1**.

Reporting Month	Construction Activities
Oct 2008	 Kam Tin Pumping Station (P1) and Sha Po Pumping Station (P2) – Backfilling, Concreting and Extract sheet pile Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting Nam Sang Wai Road (S4) and Pok Wai South Road (S5 and S6) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting, Pipe jacking and Extract sheet pile
Nov 2008	 Kam Tin Pumping Station (P1) – Concreting, Extract sheet pile Sha Po Pumping Station (P2) – Backfilling, Concreting and Extract sheet pile Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting, Pipe jacking, Extract sheet pile, Pok Wai South Road (S5 and S6) -Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
Dec 2008	 Kam Tin Pumping Station (P1) – Excavation, Concreting Sha Po Pumping Station (P2) - Concreting Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting Nam Sang Wai Road (S4) and Pok Wai South Road (S5 and S6) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
Jan 2009	 Kam Tin Pumping Station (P1) – Excavation and Concreting Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling, Concreting and Extract sheet pile Nam Sang Wai Pumping Station (P3) – Backfilling, Concreting and Extract sheet pile Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile Pok Wai South Road (S5 and S6) – Backfilling and Concreting
Feb 2009	• Kam Tin Pumping Station (P1) - Sheet piling, Excavation, Backfilling,

Table 1-1Construction Activities in this Reporting Period



2.0 ENVIRONMENTAL STATUS

WORK UNDERTAKEN DURING THE REPORTING PERIOD WITH ILLUSTRATIONS

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

Table 2-1	Work Underta	ken in	Reporting	Period	with	Illustrations	of N	1itigation
	Measures							

Locations	Description of Construction Activities	Environmental Mitigation Measures	EM&A Ref.
P1 (Kam Tin Pumping Station)	Back fillingExtract sheet pileConcreting	 Erect 2.4m high noise barrier hoarding around the works area at P1, P2 and P3 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 	A2 A3
P2 (Sha Po Pumping Station) and P3 (Nam Sang Wai Pumping Station	 Back filling Concreting Steel reinforcement work 	 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 	A5 A6 A7 A8 B1, B2 & F5 D1
S4 (Nam Sang Wai Road) and S5 & S6 (Pok Wai South Road)	 Sheet piling Excavation Pipe laying Backfilling Concreting Pipe jacking Extract sheet pile 	 Implement trip-ticket system for waste disposal Restrict open fires and provide fire fighting equipment in the works area 	D4 D5 F9 H1 I1 & I2

2.02 Photographic records showing the implemented 2.4m high noise barrier at the pumping station (S3) are shown in **Annex D**.

PROJECT DRAWINGS

2.03 There are four designated air and four designated construction noise monitoring stations under the EM&A Manual. Descriptions of monitoring stations are summary in **Table 2-2.** Drawings showing the designated monitoring stations are presented in **Annex E**.

Table 2-2Description of the Monitoring Stations

Station ID	Nature of Premise	Site Work Description	Station Coordinates
AM1	Site Boundary in NSW		835829 N 822910 E
AM5	Site Boundary in FKH	Excavation;	835121 N 823515 E
AM6	Site Boundary in KT	Sheet piling;	833308 N 823987 E
AM7	Site Boundary in NSW	Backfilling;	836171 N 822586 E
NM3	Village House in NSW	Pipe laying;	835808 N 822817 E
NM4	Village House in NSW	Concreting; and	835282 N 822811 E
NM6	Village House in KT	Extract sheet pile	833288 N 823999 E
NM7	Village House in FKH		835121 N 823495 E

2.04 In this reporting period, the impact monitoring was carried out at four designated air and four noise monitoring stations in according to the monitoring schedule.

3.0 SUMMARY OF EM&A REQUIREMENTS

MONITORING PARAMETERS

- 3.01 Environmental monitoring and audit requirements are set out in the 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.

Environmental Aspect	Monitoring Parameters	
Air Quality	24-Hour 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 3-2Action and Limit Levels for Air Quality Monitoring

Monitoring Stations	Action Le	evel (µg/m ³)	vel (μg/m ³) Limit Level (μg/	
Womtor ing Stations	1-Hour TSP	24-Hour TSP	1-Hour TSP	24-Hour TSP
AM1	>391	>184	>500	>260
AM5	>353	>237	>500	>260
AM6	>329	>183	>500	>260
AM7	>383	>204	>500	>260

Table 3-3Action and Limit Levels for Construction Noise

Monitoring Period	Action Level	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 AND ENVIRONMENTAL SUBMISSIONS

- 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 the reporting period is presented in Table 4-1.

	1 ci iou	
Items	Item Description	Licenses/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 (5213-528-L2544-08)	Registration on 27 Jan 2006
4	Water Pollution Control (Discharge license No. 1U434/1)	Applied to EPD on 7 Feb 2006
5	Account for Disposal of Construction Waste No. 5004959	Registration on 27 Dec 2005
6	Piling Permit (PP No.RN0008-08)	Valid (22 May 2008 to 21 Feb 2009)
7	Construction Noise Permit (CNP No. GW-RN0479-07)	Valid (06 Nov 2007 to 05 May 2008)
8	Construction Noise Permit (CNP No. GW-RN0480-07)	Valid (06 Nov 2007 to 05 May 2008)

Table 4-1 Status of Environmental Licenses and Permits in the Reporting Period

5.0 MONITORING RESULTS

PARAMETERS MONITORED

5.01 The environmental parameters monitoring in the reporting period is compliance with the monitoring requirements as in **Table 3-1**.

MONITORING LOCATIONS

5.02 There are four designated air quality and four noise monitoring stations under the project EP. For this reporting period, monitoring was carried out at four designated air (AM1, AM5, AM6 & AM7) and four noise (NM3, NM4, NM6 & NM7) monitoring stations/locations. The locations of the designated monitoring stations/locations are shown in Table 5-1 and geographically in Annex E.

Table 5-1Location of Air Quality and Construction Noise Monitoring
Stations/Locations

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 house near Route 3						
AM7	Worksite boundary facing scattered house in Nam Sang Wai						
Construction	Noise (4 Locations)						
NM3	Village House in Nam Sang Wai						
NM4	Village House in Nam Sang Wai						
NM6	Scattered House near Route 3						
NM7	Fung Kat Heung						

MONITORING FREQUENCY AND PERIOD

5.03 The impact 24-Hour TSP monitoring was conducted at the designated stations once every 6 days in compliance with the updated EM&A manual. A totally 12 events of power supply damage or failure incident were disturbed the monitoring programme. However 24-Hr TSP were re-scheduled to monitoring as following day or resumed or repair upon electric resumed to supporting the HVS operation. Details of power supply damage or repair to re-schedule 24-hr TSP monitoring is listed in follow *Table 5-2*.

Table 5-2Re-scheduled 24-Hr TSP monitoring in Reporting Period

Station	Monito	ring Date	Remarks		
Station	Original	Re-Scheduling	Keniai KS		
AM1	03 Mar 09	04 Mar 09	Power Supply Failure		
AM5	29 Dec 08	30 Dec 28	Power Supply Failure		
	15 Jan 09	16 Jan 09	Power Supply Failure		
	02 Feb 09	03 Feb 09	Power Supply Failure		
	13 Feb 09	14 Feb 09	Power Supply Failure		
AM6	25 Feb 09	26 Feb 09	Power Supply Failure		
	03 Mar 09	04 Mar 09	Power Supply Failure		
	09 Mar 09	10 Mar 09	Power Supply Failure		
	26 Mar 09	27 Mar 09	Power Supply Failure		
AM7	19 Feb 09	20 Feb 09	Power Supply Failure		
	25 Feb 09	02 Mar 09	Power Cable Damage		

5.04 A total of **115** air quality monitoring events were carried out in the reporting period.

5.05 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 **120** monitoring events were carried out in the reporting period.

MONITORING RESULTS AND GRAPHICAL PLOT IN THE REPORTING PERIOD

- 5.06 The graphical plot and monitoring results of air quality and construction noise for the reporting period are summarized in **Annex H**.
- 5.07 Five action and five limit levels exceedances were found in 24-hr TSP during the period. The locations of 24-hr TSP exceedance were included AM1, AM5, AM6 and AM7 of all designated Sensitive Receivers. Based on the information and the investigation provided by the Contractor, the exceedances were not considered to relate the project. The investigation of exceedances was stipulated in each representative EM&A monthly report. The detail of 24-hr TSP exceedance in this period is list as below.

Station	Action Level (µg/m ³)	Limit Level (µg/m ³)	Date of Exceeded	Concentration (µg/m ³)	Exceedance Level
			17 Dec 08	247	Action
AM1	184	260	15 Jan 09	203	Action
AMI	164	200	02 Feb 09	295	Limit
			09 Mar 09	196	Action
	237		09 Jan 09	276	Limit
AM5		260	03 Mar 09	251	Action
			14 Mar 09	347	Limit
AM6	102	260	25 Oct 08	213	Action
AMO	183	200	29 Nov 08	646	Limit
AM7	204	260	02 Mar 09	284	Limit

 Table 5-3
 Details of 24-hr TSP Exceedance identified in Reporting Period

- 5.08 The notifications and investigation reports were issued and submitted for IEC to close the exceedances
- 5.09 All construction noise monitoring were complied with the Limit Level and no noise complaint (Action Level) was received in this reporting period.

WEATHER CONDITIONS DURING THE MONITORING PERIOD

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

OTHER FACTORS INFLUENCING THE MONITORING RESULTS

5.11 There were no other noticeable external factors generally affecting the monitoring results in the reporting period.

QA/QC RESULTS AND DETECTION LIMITS

5.12 Not applicable.

6.0 SOLID AND LIQUID WASTE MANAGEMENT STATUS

SOLID AND LIQUID WASTE MANAGEMENT STATUS

6.01 The cumulative quantities of waste for disposal or reuse in the reporting period are summarized in **Tables 6-1** and **6-2**.

Table 6-1	Cumulative	Quantities	of	Waste	for	Disposal	in	the	Reporting
	Period								

			Disposal					
Type of Waste	Oct Nov		Dec	Jan	Feb	Mar	Total	Location
	08	08	08	09	09	09	Total	Location
C&D Materials								Tuen Mun 38
(Inert) (tons) –	3.856	1.727	1.709	2.126	1.006	1.078	11.502	Fill Bank
Disposed								FIII Dalik
C&D Materials								DSD Contract
(Inert) (tons) –	0.08	1.32	0	0	0	0	1.4	DSD Contract DC/2005/02
Reused								DC/2003/02
C&D Materials								
(Non-Inert)	0	0	0	0	0	0	0	NA
(tons)								
Chemical Waste	0	0	0	0	0	1.2	1.2	NA
(Litres)	0	0	0	0	0	1.2	1.2	INA
General Refuse	0.051	0.05	0.051	0.04	0.039	0.081	0.312	Refuse Collector
(tons)	0.031	0.05	0.031	0.04	0.039	0.081	0.312	Keruse Collector

 Table 6-2
 Cumulative Quantities of Waste for Reuse/Recycling in the Reporting Period

		Disposal						
Type of Waste	Oct 08	Nov 08	Dec 08	Jan 09	Feb 09	Mar 09	Total	Location
Metals for Recycling (kg)	0	25.24	0	0	0	12.7	37.94	NA
Paper for Recycling (kg)	0	0	0	0	0	0	0	NA
Plastics for Recycling (kg)	0	0	0	0	0	0	0	NA

6.02 There was no site effluent discharged but an estimated volume of less than 50m³ of surface runoff was discharged for each reporting month. The sampling of effluent had been carried out by the Contractor in the reporting period.

ENVIRONMENTAL SITE INSPECTIONS

6.03 In this reporting period, totally 19 weekly joint site inspections were undertaken by representatives of the Engineer, the Contractor and ET to evaluate the site environmental performance. Although total 28 observations were found no non-compliance was identified during the site weekly inspections. Six joint IEC site inspections had been taken in monthly basis, based on the joint IEC site audits to finding, no non-compliance is identified by IEC, however seventeen observations were recorded in the reporting period. Date of inspection and audit are summarized in Table 6-3.

Table 6-3Date of Environmental Weekly Site Inspection and Monthly Audit in
the Reporting Period

Reporting Months	Site Inspection Date	Checklist Reference Number
	10 Oct 08	DSD-AT101008
October 2008	14 Oct 08	DSD-AT141008
October 2008	21 Oct 08	DSD-AT211008
	31 Oct 08*	DSD-AT311008
	04 Nov 08	DSD-AT041108
	11 Nov 08	DSD-AT111108
November 2008	18 Nov 08	DSD-AT181108
	25 Nov 08	DSD-AT251108
	27 Nov 08*	DSD-AT271108
	02 Dec 08	DSD-AT021208
	09 Dec 08	DSD-AT091208
December 2008	16 Dec 08	DSD-AT161208
	23 Dec 08*	DSD-AT231208
	29 Dec 08	DSD-AT291208
	05 Jan 09	DSD-AT050109
January 2009	13 Jan 09	DSD-AT130109
	20 Jan 09*	DSD-AT200109
	03 Feb 09	DSD-AT030209
Echanicary 2000	10 Feb 09	DSD-AT100209
February 2009	17 Feb 09*	DSD-AT170209
	27 Feb 09	DSD-AT270209
	03 Mar 09	DSD-AT030309
March 2009	10 Mar 09	DSD-AT100309
March 2009	17 Mar 09	DSD-AT170309
	24 Mar 09*	DSD-AT240309

Note: *Joint IEC monthly site audit

6.04 The weekly/monthly site inspection and audit checklists in this reporting period were presented in the related Monthly EM&A Reports.

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

RECORD OF NON-COMPLIANCE OF ACTION AND LIMIT LEVELS

7.01 No project related Action or Limit Level exceedance was recorded in the reporting period. The summary of exceedance was presented in Table 7-1.

14510 / 1		in the hepping i chou
Reporting Month	Work-Related Exceedance (%) for 24-Hour TSP	Work-Related Exceedance (%) for Leq (30mins) Daytime
October 2008	0	0
November 2008	0	0
December 2008	0	0
January 2008	0	0
February 2009	0	0
March 2009	0	0

 Table 7-1
 Summaries of Exceedance in the Reporting Period

RECORD OF ENVIRONMENTAL COMPLAINTS RECEIVED

7.02 No environmental complaint was received in the reporting period and summary of was presented in Table 7-2.

 Table 7-2
 Summaries of Environmental Complaint in the Reporting Period

Reporting Month	Complaint Statistics							
Reporting Month	Frequency	Cumulative	Complaint Nature					
October 2008	0	0	NA					
November 2008	0	0	NA					
December 2008	0	0	NA					
January 2008	0	0	NA					
February 2009	0	0	NA					
March 2009	0	0	NA					

RECORD OF NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTION

7.03 No notification of summons or prosecution was received in the reporting period. The summary of environmental summons and prosecution was presented in Table 7-3.

Table 7-3Summaries of Environmental Summons and Prosecution in the
Reporting Period

Departing Month	Environmental Summons and Prosecution Statistics							
Reporting Month	Summons	Prosecution	Nature					
October 2008	0	0	NA					
November 2008	0	0	NA					
December 2008	0	0	NA					
January 2008	0	0	NA					
February 2009	0	0	NA					
March 2009	0	0	NA					

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

7.04 No NC, complaints or NoS received in the reporting period.

DESCRIPTION OF FOLLOW-UP ACTIONS TAKEN

7.05 No NC, complaints or NoS received in the reporting period.

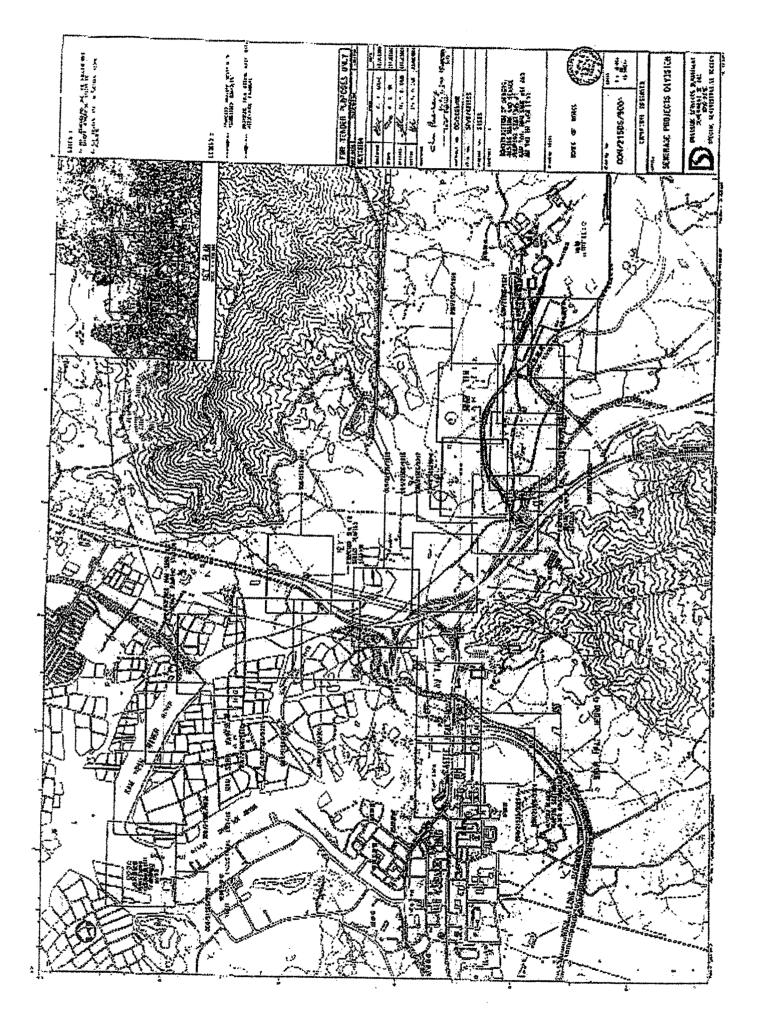
8.0 CONCULSIONS FOR THE PERIOD OCTOBER 2008 TO MARCH 2009

8.01 Based on the data collected and reviewed for the period between October 2008 to March 2009 (as reported herein), it can be confirmed that the monitoring work is effective and that it is generating data to categorically confirm the observation of impact attributable to the works.



Annex A

Project Site Layout



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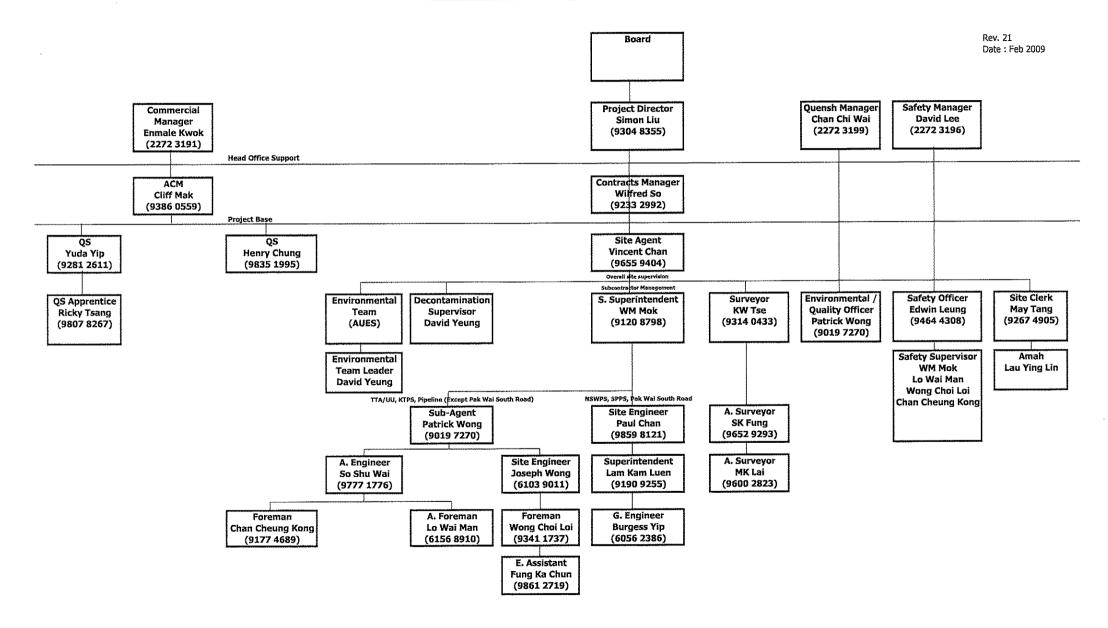
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Annex B

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 <u>Contractor's Site Organization Chart</u>





Annex C

Construction Program

Z:\Jobs\2006\TCS00310 (DC-2005-02)\600\Impact\DP\Bi-Annual\No.6 Oct08-Mar09\Revision 2\R0863 (Annex) r2.doc Action-United Environmental Services and Consulting

	Act ID	Description	Orig Dur	Total Float	Percent Early Complete Start	Early Finish	Late Start	Late Finish	JAN FEB MAR 05 12 19 26 02 09 16 23 02 09 16 23 30 06 11	APR 20 27
Sec	tion Comple	ation /Key Date								
F										
	CD50		1 (20555000	1	40101/00 1		
	CD50) -99d) -388d	0	26FEB09 14MAR09		19NOV08 * 20FEB08 *	Section 7	
Prel	iminaries	Section 7		-3880	0	14MAR09		20FEB08		
	PR290	00 Deliver Ductile Iron Pipe	800) 133d	99 29APR 06 A	06FEB09	29APR 06 A	16JUL09	Deliver Ductile Iron Pipe	
	PR310	00 Deliver PrecastConcrete Pipe	800) 136d	99 24APR 06 A	03FEB09	24APR06 A	16JUL09	Deliver Precast Concrete Pipe	
	PR330	00 Deliver Vitrified Clay Pipe	800) 125d	98 10APR06 A	16FEB09	10APR 06 A	16JUL09	Deliver Vitrified Clay Pipe	
	PR340	00 Structural Monitoring by ISE	835	5 116d	97 06APR 06 A	26FEB09	06APR 06 A	16JUL09	Structural Monitoring by ISE	
	PR 350		814	1 138d	100 06APR 06 A	31JAN09	06APR 06 A	16JUL09	Environmental monitoring by ET	
Sec	tion 1 - Kam ortion A	Tin Sewage Pumping Station								
	Fencing									
	_									
	SIAD	1300 Install GMS Panel Fence	1 4	3 -143d	0 28APR 09	07MAY09	04NOV08	12NOV08		
	Drainage a			-1430	0 2041103	071014109	04110100	12100000		
	Trench N	Method								
	S1 AEA		1 44			1155000	4005000		DN1050 Pipe & Manhole (D1 - P/S)	
			12		0 29JAN09	11FEB09	16SEP08	29SEP08		
	S1 AEA		12		80 27FEB08 A	13FEB09	27FEB08 A	150CT08	DN600 Pipe & Manhole (A2 - D1) DN1050 Pipe & Manhole (P/S - Outfall)	
	S1 AEA S1 AEA		12		0 12FEB09 0 16APR09	25FEB09 29APR09	30SEP08 23OCT08	15OCT08 05NOV08		
	STAEA		30		0 16APR09			26NOV08		
	STAEA STAEA		30) -143d 6 -143d	0 09APR09	21MAY09 15APR09	230CT08 160CT08	220CT08		Lay Ducts & Constru
	S1 AEA			-73d	0 26FEB09	26FEB09	26NOV08	26NOV08	CCTV Inspection of Pipeline	
		Rising Main		100	0 201 2003	201 2003	20110100	20110 100		
	Trench N	Method								
	STAFA	A100 Twin Rising Main DN700	1 4	0.04	0 14FEB09	20FEB09	16OCT08	22OCT08	Twin Rising Main DN700	
	Earthworks			6 -98d	0 14FEB09	20FEB09	1600108	2200108		
	aronionito									l l
		analar - an - a	1 1(Leveeree	Extract Sheetpile	
		2600 Extract Sheetpile	10	/ 000	70 03APR08 A	31JAN09	03APR 08 A	04OCT08		Trim & Co
	Roads and	2700 Trim&CompactFormation of Paved Areas	6	6 -143d	0 16APR 09	22APR 09	23OCT08	29OCT08		
	Roads and									I I
			1				1			🛁 Lay
		1000 Lay 250mm Granular Fill Material Base	4	4 -143d	0 23APR 09	27APR09	30OCT08	03NOV08		
	S1 AH		18	3 -143d	0 28APR 09	19MAY09	04NOV08	24NOV08		
					1 1		1			
	S1AL1		32		80 10OCT08 A		10OCT08 A		Apply Anticorrosion Concrete Coating System	
	S1AL2 Finishings		45	5 -143d	25 18OCT08 A	18MAY09	180CT08 A	22NOV08		
	Hinshings									I I
			-	_		-		-		
	S1 AQ1	1000 Apply Internal Finishes	60) -63d	75 10OCT08 A	14FEB09	100CT08 A	26NOV08	Apply Internal Finishes	
Start	date 19	9DEC05								Early bar
Finis	hdate 13	3NOV10					l eader	Civil En	eering Corp td	Progress bar
Page	date 28 number 1A	A					DSI	O Contrac	lo. DC/2005/02	Critical bar Summary bar
						3-Mont	h Rolling	Program	- 3M01 at 28 January 2009	Start miles tone poin
c Pri	mavera Sys	stems, Inc.							, i i i i i i i i i i i i i i i i i i i	Finish milestone po

	Act ID	Description	Orig Dur	Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	E(5 12	JAN 19	26	02	2 09	FEB 16	23	02	09	MAR 16	23	30	06	APR 13	20 27
	S1AQ1050 App	bly Roof Finishes	10	-61d	0	02FEB09	12FEB09	15NOV08	26NOV08				1	–		Apply Ro	oof Finishe	es							
	S1AQ1100 App	oly External Finishes	30		100	23OCT08 A	23JAN09 A	230CT08 A	23JAN09 A			ļ.	Apply	External	Finishes	1	1	1	1	1	1	I I		1	i I
Т	esting	·																							
i 🗖													- 1							-					
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		tertightness of Structure - Compartments	72		100	10NOV08 A	20JAN09 A	10NOV08 A	20JAN09 A			w	/atertigh	tness of S	Structure -	Compartme	nts								
M	liscellaneous																								
										i	i		i	i i	· ·	i	1	i	i		i	· ·			
	S1AT1000 Inst	all Doors, Louvres & Folding doors	30	-47d	95	140CT08 A	02FEB09	140CT08 A	02DEC08						Install Doo	rs, Louvres	& Folding	doors	1	i.	1	i i		1	i i
		ndry Metalwork	12	-44d	60	15DEC08 A	06FEB09	15DEC08 A	10DEC08			1	1			ry Metalwor		1	1	1	1	I I		1	L I
	<u> </u>				00					- I	1	1	1	- I			1	Glass Block		1	1	I		I	(I
	· · · · · ·	all Glass Block	12	-44d	0	07FEB09	20FEB09	11DEC08	24DEC08	- I		1	- I	- I.			- I	Plumbing W		1	1	I		1	i I
		mbing Work	24	-95d	40	14JAN09 A	24FEB09	14JAN09 A	29OCT08			1	1		I		1	-iumbing w		1					1 I.
		ctrical and Mechanical Installations	24	-95d	0	25FEB09	24MAR09	30OCT08	26NOV08												Electri	ical and Me	echanical	Installatio	is
	S1AT1500 Inst	tall FRP Water Storage Tanks	12	-93d	0	09FEB09	21FEB09	16OCT08	29OCT08				- 1		_		Instal	I FRP Wate	r Storage	anks	-				
	S1AT1600 Inst	all FRPCatLadders & Handrails	24	-93d	0	23FEB09	21MAR09	30OCT08	26NOV08				- i -			1	_	i	1	i	Install FRI	P Cat Ladd	ers & Har	drails	
	on 2 - Sha Po Sewag	ge Pumping Station										i			i		i	i	i	i					
	tion B Drainage and Ducts									i i	i	i	i	i i	i	i i	i	i	i.	i	i	i i			i i
	Trench Method									1	1	1	1	- I.	1	1	1	1	1	1	1	I I		1	1 I I
										- I.	- I	1	1	- E	- I	- I -	1	1	1	1	1	I		1	(I
	S2BEA100 DN	900 Plpe & Manhole (F1 - P/S)	12	-156d	0	24APR09	08MAY09	16OCT08	29OCT08	1	1	1	- I.	- I.	1	1	1	1	1	I.	1	I		I	
In	n-Situ Concrete							1	1			1	1		1	1	1		1	1	1			1	
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							Lanuaria		Lucence				1	A a a b a	A			 C:							
		bly Anticorrosion Concrete Coating System	24		95	10DEC08 A	29JAN09	10DEC08 A						Арріу	Anticorros	on Concrete	e Coating	System			l Construct	l l	A/=!!		
		nstructBoundary Wall	47	-120d	5	12JAN09 A	21MAR09	12JAN09 A	25OCT08							_			_		Construct	Boundary	vvaii		
Fi	inishings										i i	i	- i	- i-	i	i i	1	1	1	1	i i			1	
										i	i	i	i.	i i	i	i i	i	i	i.	i	i	i i			i i
	S2BQ1000 App	oly Internal Finishes	50	-111d	50	09DEC08 A	30MAR 09	09DEC08 A	13NOV08									-				Apply In	ternal Fini	ishes	1 I I
	<u>···</u>	bly Roof Finishes	10	-69d	0	29JAN09	09FEB09	03NOV08	13NOV08	1	1	1	1			pply Roof F	inishes	1	1	1	1	I		1	(I
		bly External Finishes	25	27d	25	15JAN09 A	22APR 09	15JAN09 A		- I	1							1				<u> </u>		l	Apply Exte
	esting	Ny Externan misnes	23	270	23	133 AN03 A	22AFR03	133AN03 A	25101A103																
i ii	sung											1				1	1							1	
													- 1								-				
	S2BS1000 Pre:	ssure Testing to Twin Rising Main DN500	12	-71d	0	29JAN09	11FEB09	31OCT08	13NOV08				1			Pressure	Testing to	Twin Rising	g Main DN	500	1	1 1		1	
	S2BS1100 Wa	tertightness of Structure - Compartments	66	-111d	45	14JAN09 A	11MAR09	14JAN09 A	25OCT08	1 ;		-	-		-	_	-			atertightnes	s of Structu	ure - Comp	artments		
M	liscellaneous									1	1	1	1	1	1	1	1	1	1	1	1	1		1	
										1	1	1	1	- I.	1	1	1	1	1	1	1	I I		1	- I
			30	-82d	05		30JAN09						1	Insta		ouvres & Fo		re	1	1	1	I		1	t I
		tall Doors, Louvres & Folding doors	30	-82d -82d		22DEC08 A 27DEC08 A	30JAN09 30JAN09	22DEC08 A 27DEC08 A	200CT08		1		1		dry Metalw			1	1	I.	I.	I		1	i I
																	l Glass Bloo		1	1	1	1		1	
		all Glass Block	12	-82d		31JAN09	13FEB09	21OCT08	03NOV08										1	1	1			1	
		mbing Work	24	-103d	40	22JAN09 A	14FEB09	22JAN09 A	10OCT08		1	1				Plumb	oing Work			н 	П.,	т		1	
		ctrical and Mechanical Installations	24	-103d	0	10FEB09	09MAR 09	04OCT08	01NOV08								1	1		trical and M	ecnanical li	Istallations			!
	S2BT1500 Inst	tall FRP Water Storage Tanks	12	-106d	0	30JAN09	12FEB09	19SEP08	03OCT08		i i	i	i.		Ì	Install FF	RP Water	Storage Ta	nks	i	1	1			
	S2BT1600 Inst	all FRPCatLadders & Handrails	24	-111d	0	19FEB09	18MAR 09	04OCT08	01NOV08	i i	i	i	i.	i.	i	_ _	1	1	1	Inst	all FRP Ca	t Ladders &	& Handrail	S	i i
A	dditonal Works /Dis	sruption								- I	1	1	- 1	- I	1	- I	1	1		1	1	I		1	- I
										1	1	1	1	- I.	1	1	1	1	1	1	1	I	I I	1	f I
		Details at SPPS (Claim No. 030)	10	- 405 -		20 14100	09FEB09	11 11 1007	22111107	1	1	I	1) Drive Sheetp	l	1	I.	I.	I.	I			(I
		ve Sheetpiles cavate to 1st Layer of Waling & Strut	10	-485d -485d		29JAN09 10FEB09	16FEB09	11JUN07 23JUN07	22JUN07 29JUN07		1	I	1			i i		 1st Layer o	f Waling &	Strut	1	I I			1 I I
			6							1		1	1				1	1.		1	1			1	
	S2BV2020 Inst	tall 1stLayer of Waling & Strut	6	-485d	0	17FEB09	23FEB09	30JUN07	07JUL07		1		1		1		- Ins	stall 1st Lay	er or Walin	g & Strut	Ĩ	1			
-	10000																								
tartda inish (4																						Early	
ata da	ate 28JAN09	1						Leader	CivilEn	gineering	Corp.	Ltd.												Prog	
age n	number 2A	4					2-Mont	DSI h Rolling	D Contrac	t No. DC/	2005/02	lanuary	2000												mary bar
		1					3-IVIONT	n Kolling	Program	16 - 2100	1 al 20 c	anuary	2009										4	Start	milestone poin
Prima	avera Svstems. Inc.																							Finis	h milestone no

	Act ID	Description	Orig Dur	Total Float	Percent Early Complete Start	Early Finish	Late Start	Late Finish	20 E(29	05 1	JAN 19	26	s 0	12 10	FE B	16	23	2009	09	MAR 16	23	30	06 13	APR 20	27
	S2BV2030	Excavate to 2nd Layer of Waling & Strut	6	-485d	0 24FEB09	02MAR09	09JUL07	14JUL07					ľ	1			i 🏼				Waling &			1	
	S2BV2040	Install 2nd Layer of Waling & Strut	6	-485d	0 03MAR 09	09MAR 09	16JUL07	21JUL07						1		1	1	!	📥 Install	2nd Laye	er of Waling	g & Strut	I I		1
	S2BV2050	Excavate to 3rd Layer of Waling & Strut	6	-485d	0 10MAR09	16MAR 09	23JUL07	28JUL07											1	Exca	ate to 3rd	Layer of W	/aling & Strut		
	S2BV2060	Install 3rd Layer of Waling & Strut	6	-485d	0 17MAR09	23MAR 09	30JUL07	04AUG07	i	i i	i	i.	i i	i	i		i	i	i -	; —	📫 Install	3rd Layer	of Waling & S	rut	i
	S2BV2070	Excavate to Formation & Pour Blinding	6	-485d	0 24MAR09	30MAR 09	06AUG07	11AUG07	1	Г I	1	1	1	1	1	1	1	1	1	1	-	Excava	ate to Formatio	on & Pour F	Blinding
	S2BV2080	ConstructBase Slab for Bay 1 & 3	8	-485d	0 31MAR09	09APR 09	13AUG07	21AUG07			1	1	- T	1	1	1	1	1	1	1	1	-	Const	uct Base S	Slab for Bay
	S2BV2090	ConstructBase Slab for Bay 2 & 4	6	-485d	0 10APR 09	16APR09	22AUG07	28AUG07						1		1	1	1	-	1	-	1	: 	Constru	ruct Base Sla
	S2BV2100	Backfill & Remove 3rd Layer of Waling & Strut	6	-485d	0 17APR09	23APR 09	29AUG07	04SEP07												*			+		Backfill &
	S2BV2110	ConstructWall Stem 1 stLiftfor Bay 1 & 3	8	-485d	0 24APR 09	04MAY09	05SEP07	13SEP07	i	i i	i	i.	i i	i	i		i	i	i -	i	i	i -	i i	i.	<u> </u>
		g Wai Sewage Pumping Station							1		1		1	1		1		1	1	1	1	1	I I	I	1
	on C round Investig	ation											- I.	1	1		1	1	1	1		1	I I	1	1
	ound investig										1			1		1	1	1	-	1	-	1	I I		1
																1	1	1	1		1	1			1
		Install Settlement Markers for Pumping Station	2	-180d	75 01DEC07 A	10FEB09	01DEC07	A 04JUL08			1		1	1	Install	Settleme	nt Markers	s for Pum	oing Statio	n			· ·		
	rainage and D Trench Metho								1	Г I	1	1	1	I.	1	1	1	1	1	1	1	1	L I.	1	1
	Treffort Metho	u							1		1	- I	- E	1			1	1	1	1	1	1	I I.	- I	1
	S3CEA100	DN1200 Pipe & Manhole (H1 - P/S)	12		100 13JUN08 A	28JAN09	13JUN08/	A 28JAN09				_	DN120	0 Pipe & I	Manhole	(H1 - P/S	S)	1		1	1	1	I I	1	1
	S3CEA140	DN1200 Pipe & Manhole (P/S - Outfall)	12	-184d	0 09FEB09	21FEB09	27JUN08	11JUL08						=			DN1200 F	Pipe & Mai	nhole (P/S	- Outfall)	1			1
	S3CEA150	ConstructU-channel, Dish Channel & Catchpit	27	-184d	0 14MAR09	15APR09	01AUG08	01SEP08			i i	- i		i			i	i -	; =	-	-	-		Constru	ct U-channel
	S3CEA160	Lay Ducts & Construct Drawpit	6	-184d	0 16APR 09	22APR09	02SEP08	08SEP08	1	- I	1	1	- E	1			1	1	1	1	1	1	I I	<u> </u>	Lay Ducts
	S3CEA210	CCTV Inspection of Pipeline	1	-97d	0 23FEB09	23FEB09	25OCT08	25OCT08	1	Г I	1	- I	- T	1	1		CCTV	Inspectior	n of Pipelir	ne	1	1	I I.	- I	1
Pi	pework - Risin																			<u>+</u>					
	Trench Metho	d															1	1	1	-	-	1			1
	\$3CE4100	Twin Rising Main DN900	6	-184d	0 29JAN09	04FEB09	17JUN08	23JUN08			- i	- i		Twin R	lising Ma	in DN900	י ו	i i	÷	ì	÷	÷		i i	1
	S3CFA120	5	1	-94d	0 05FEB09	05FEB09	110CT08	110CT08	1	I I	1	1	- I.		•	tion of Pip		1	1	1	1	1	I I	1	1
Ea	Inthworks			014	0 001 2500	001 2800	1100100	1100100					+							+			+ + +		
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	0000000	Backfill to Formation of Ground Slab			05 0000700 4	0.455000								Backfil	l to Eorm	ation of (I Ground Sl	ab	1	-		1			1
			0	-184d	95 200CT08 A	04FEB09		A 23JUN08	-		l.				tract She				i -	i	i	i -	i i	i.	i
	S3CG2900		11	-184d	45 04NOV08 A	07FEB09	04NOV08		1	I I	1	-	1	[^		ethile	1	1	1	1	1	1	L I.	- I	
E	S3CG3000	Trim & Compact Formation of Paved Areas	6	-184d	0 23APR 09	29APR 09	09SEP08	16SEP08															<u> </u>		
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						-	-	-								1	1	1	1	i i	1	1		- i	1
		Erect Formwork to Ground Slab	8		90 15NOV08 A	04FEB09		A 27JUN08	1		1	I.	i i	Erect F	Formwork	k to Grou	1	<u>.</u>	i		i	i -	i i	i.	i
	S3CJ1700		12		40 23DEC08 A	24FEB09	23DEC08	A 18JUL08	1					1			Erect	Formworl	k to +10.8	DmPD	1	1	L I.	1	I.
		ErectFormwork to +13.75mPD & RoofSlab	12	-180d	0 07MAR09	20MAR 09	30JUL08	12AUG08	1	I I	1	- I	- I.	1		1	1	I •	1	1	Erect Forr	nwork to +	13.75mPD & F	:oof Slab	1
Ste	eelReinforcen	nent												1			1	1	-	1		1			1
																1	1	1	1	i i	1	1		- i	1
	S3CK1500	Fix Re-bar to Ground Slab	8	-180d	50 26NOV08 A	09FEB09	26NOV08	A 03JUL08	-			-		· · ·	Fix Re-b	par to Gro	und Slab	i	i.		i	i.	· ·	i.	i
	S3CK1600	Fix Re-bar to +10.80mPD	8	-180d	40 07JAN09A	16FEB09	07JAN09 A	10JUL08	1				-		-	Fix Re-	bar to +10	0.80mPD	1	1	1	1	L I.	1	I.
	S3CK1700	Fix Re-bar to +13.75mPD	8	-180d	0 26FEB09	06MAR 09	21JUL08	29JUL08			1	1	- T	1	1	1			ix Re-bar	to +13.7	5mPD	1	I I	1	1
	S3CK1800	Fix Re-bar to RoofSlab	8	-180d	0 21MAR09	30MAR 09	13AUG08	21AUG08					1 I.	1	I		1	1	1	÷ •		Fix Re	-bar to Roof S	lab	1
In-	Situ Concrete				L		1																		
									i		i	i.	i i	i			i	i	i.	i	i	i.	· ·	i.	i i
	S3CL1550	CastWallStem to +5.00mPD	2	-184d	75 03OCT08 A	04FEB09	03OCT08	A 23JUN08					<u> </u>	Cast W	Vall Stem	1 to +5.00	mPD	1	1	1	1	1	I I	1	I.
		CastGround Slab	2	-180d	50 18DEC08 A	10FEB09		A 04JUL08							Cast G	round Sl	ab	1	1	1	1	1	I I.	1	I
		CastWall Stem to +10.80mPD	2	-180d	40 20JAN09 A	25FEB09	20JAN09 A		- !			_					1	t Wall Ste	m to +10.8	30mPD	1	1	1 1		
		CastWall Stem to +13.75mPD & RoofSlab	2	-180d	0 31MAR09	01APR09	22AUG08	23AUG08	-								1	1	1	1		Cas	t Wall Stem to	ا +13.75m	PD & Roof S
Startda			-	1000	0 01111/11/00	0.111100	22/10/000	20/10/000			1							1		1	1	1			1
Finisho	late 13NOV	/10					1.4.4.1				1.64													Early ba Frogres	
Data da Page nu	ute 28JAN umber 3A	09					Leade	r Civil En D Contrac	gineerir	ng Corp. C/2005/0	Lta.													Critical b	bar
- age m						3-Mont	h Rolling	Program	me - 3M	01 at 28	Januar	y 2009)										_	 Summar 	ry bar
c Prima	vera Systems	s, Inc.						-																	estone poin nilestone po
																								1 11/511 [[]	and a torite DO

	Act ID	Description	Orig Dur	Total Float	Percent Early Complete Start	Early Finish	Late Start	Late Finish	2009 JAN FEB MAR A 05 12 19 26 02 09 16 23 02 09 16 23 30 06 13	PR A
		oply Anticorrosion Concrete Coating System	24	-176d	0 04MAR09	31MAR09	31JUL08	27AUG08		Concrete Coating Syst
	S3CL2100 C	onstructBoundary Wall	17	-184d	0 23FEB09	13MAR 09	12JUL08	31JUL08	Construct Boundary Wall	
0	Geotechnical work	S								
	S3CP1000 M	onitoring of Instruments	787	-94d	98 06APR 06 A	19FEB09	06APR 06 A	25OCT08	Monitoring of Instruments	
	Finishings							1		1 1
	L and a stand to	and the foregoing the state of	1 45	100.1			0405500	Lacontas		
		oply Internal Finishes oply Roof Finishes	45 10	-180d -139d	0 10APR09 0 02APR09	03JUN09 14APR09	01SEP08 15OCT08	250CT08 250CT08		Apply Roof Finishes
	Testing	spir Roor Finishes	10	-1390	0 02APR09	14AFK09	1500108	2500108		
	Tootang								T T T T T T T T T T T T T T T	I I
	Lessessede						Lingaria	Incorrec	Pressure Testing to Twin Rising Main DN900	
		ressure Testing to Twin Rising Main DN900	12		0 06FEB09	19FEB09	13OCT08	25OCT08		
		atertightness of Structure - Grid D-E	40		0 18MAR09	05MAY09	14AUG08	30SEP08		
	Miscellaneous	atertightness of Structure - Grid F-G	40	-176d	0 18MAR09	05MAY09	14AUG08	30SEP08		
Í										
			_					-		
		stall Doors, Louvres & Folding doors	30		0 17APR09	22MAY09	08SEP08	15OCT08		
		undry Metalwork	12		0 17APR09	30APR 09	27APR09	11MAY09		
	S3CT1300 Pli		24		0 17APR09	15MAY09	27APR 09	25MAY09		
		ectrical and Mechanical Installations	24		0 17APR09	15MAY09	27APR 09	25MAY09		
		stall FRP Water Storage Tanks	12	8d	0 17APR09	30APR 09	27APR 09	11MAY09		
Po	rtion D	Min Portion D, F, G, H, I								I I
	Drainage and Duct	ts								
	Trench Method									
	S4DEA100 DI	N1200 Pipe & Manhole (G1-Treatment Plant)	60	-6d	40 31MAR 08 A	01JUN09	31MAR 08 A	23MAY09		
I I	Pipework - Rising N					I	1	1		
	Trench Method									
	S4DEA110 Ty	win Rising Main DN900 (ChA1850- WOIC1)	101	-15d	55 15DEC06 A	12JUN09	15DEC06 /	25MAY09		
		vin Rising Main DN900 (ChA2095 - ChA2215)	148	-15d	55 20DEC07 A	17APR09	20DEC07 /	30MAR 09		Twin Rising Main I
		CTV Inspection of Pipeline	5	-1d	20 16AUG08 A	12MAY09	16AUG08 /			
	Trenchless Meth									
						•				
		onstructWOIC1	30		0 29JAN09	04MAR09	24FEB09	30MAR 09		
		CTV Inspection of Pipeline	3	53d	0 05MAR09	07MAR09	08MAY09	11MAY09	CCTV Inspection of Pipeline	
	Geotechnicalwork	<u> </u>								
			-							
		onitoring of Instruments	602	61d	94 02NOV06 A	12MAR09	02NOV06	25MAY09	Monitoring of Instruments	
10	rtion F Ground Investigation									I I
	enound investigatio									1 I
		stall Settlement Markers	698	63d	95 27APR 06 A	10MAR 09	27APR 06 A	25MAY09	Install Settlement Markers	
	Drainage and Duct Trench Method	3								
										I I
	S4FEA100 DI	N900Pipe&Manhole(H8-H7)1stStage	53	-77d	0 31MAR09	03JUN09	24DEC08	02MAR09		
	Trenchless Meth	od								
	S4FEB104 Co	onstructManhole H2 & H1	27	84d	65 27SEP08 A	07FEB09	27SEP08 A	19MAY09	Construct Manhole H2 & H1	· · ·
Startd	date 19DEC05						1			Early bar
Finish Data o							Leade	r Civil En	ering Corp. Ltd.	Progress bar
Page	date 28JAN09 number 4A						DS	D Contrac	DC/2005/02	Critical bar Summary bar
						3-Mont	h Rolling	Program		Start miles tone poin
c Prin	navera Systems, In	ic.								Finish milestone po

	Act ID	Description	Orig Dur	Total Float	Percent Early Complete Start	Early Finish	Late Start	Late Finish	E(JAN	40 20	3 02	FE E	46	23 02	00	MAR	22	20	06	APR	20 27
	S4FEB160	CCTV Inspection of Pipeline	5	84d	0 09FEB09	13FEB09	20MAY09	25MAY09	29 05				C C	CTV Inspe	ction of Pipeline	09		25	30		13	20 21
Pi	oework - Risir	ng Main			I			1			1	1	1	-		1	1		1			
i 🗖	Trench Metho	d							1		1	- I	1	1	I I	1	1	I I	1	1	1 1	i I
							1												T.,	ia Disia a	J Maia DNI	 100 (WOIC5 - CH
	S4FFA130	Twin Rising Main DN700 (WOIC5 - ChC2000)	80	22d	30 05JUN08 A	03APR 09	05JUN08 A	30APR 09												0		
	S4FFA200	Twin Rising Main DN700 (ChC2300 - ChC2350)	45	24d	20 07JAN09 A	01APR09	07JAN09 A	30APR 09		1 1			1		1 1	1	1	1	I win	Rising Ma	in DN700	(ChC2300 - Ch
	S4FFA220	Twin Rising Main DN700 (ChC2400 - WOIC4)	93	24d	80 13SEP08 A	18FEB09	13SEP08 A	18MAR09						Twin	Rising Main DN7	'00 (ChC24	0 - WOIC4	4)			 I	1
	S4FFA230	Twin Rising Main DN700 (ChC2639 - H7)	52	-77d	0 29JAN09	30MAR 09	24OCT08	23DEC08	1	1 1	i.		1			1	1		Twin Ris	ing Main [DN700 (C	hC2639 - H7)
	S4FFA240	ConstructAVIC5	30	33d	10 22JAN09 A	21MAR 09	22JAN09 A	30APR 09		1 1	_		1				1	Construct A	VIC5		1 1	L I
	S4FFA260	CCTV Inspection of Pipeline	8	22d	0 06APR 09	14APR09	02MAY09	11MAY09		T T			1	ī — —			ī —	Г — I			ССТУ	Inspection of Pi
	Trenchless M	ethod																				
	CAEED400		30	204		0455000							I nstruct WOI	 C4		1		I I			. I	. I
	S4FFB120			36d	80 10JUN08 A	04FEB09	10JUN08 A	18MAR09				Construc		1		1						1
	S4FFB130	ConstructWOIC5	30	75d	90 28JUN08 A	31JAN09	28JUN08 A	30APR 09	1		I		1		i i	i i	i	i i	i	. i		
		CCTV Inspection of Pipeline	5	81d	10 16AUG08 A	03FEB09	16AUG08 A	11MAY09		- I I	_		V Inspection	of Pipelir	ne	_						
	eotechnicalw	STRS							- I	- I - I	1	- I	I.	1	I I .	1	I.	I I			i i	L I
										1 1			1				1	I I	1		1 I	
	S4FP1000	Monitoring of Instruments	772	75d	97 05JUN06 A	24FEB09	05JUN06 A	25MAY09			_				Monitoring of	Instruments					. I	. I
	on G																					
Pi	bework - Risir	ng Main								· · ·	i i		i	i	 I I	÷	i -	· ·		i i	1	
	Trenentwearo	u							1	- I - I	1	1	1	1	I I .	1	1	I I	1	1	1	1
1	S4GFA100	Twin Rising Main DN500 (AVIC4 - ChB250)	98	60d	90 26JUN08 A	21FEB09	26JUN08 A	05MAY09							win Rising Main	DN500 (AV	C4 - ChB2	50)			1 1	i I
	S4GFA130	Twin Rising Main DN500 (ChB450 - ChB550)	84	9d	50 16JAN08 A	18MAR 09	16JAN08 A	28MAR 09			1		1				Twin	Rising Main	n DN500	(ChB450	- ChB550)	. I.
	S4GFA170	ConstructWOIC3	30	9d	0 19MAR09	23APR09	30MAR 09	05MAY09								1	. —				<u> </u>	Construct
i i	S4GFA190	CCTV Inspection of Pipeline	9	9d	50 06MAR07 A	29APR09	06MAR 07 A	11MAY09					-			_	-					
	Trenchless M	ethod								1 1			1			-	1	· ·				
						-				1 1	i.		I.	l.		i.	i.	i i	1	i i	i - 1	i i
	S4GFB110	ConstructAVIC4	30	60d	30 09JUL08 A	21FEB09	09JUL08 A	05MAY09	1	1 1	1		1		Construct AVIC4	1	1	I I	1		i I	I I
		CCTV Inspection of Pipeline	2	63d	0 23FEB09	24FEB09	09MAY09	11MAY09				I			CCTV Inspec	tion of Pipe	ine					
G	eotechnical w	orks														1	-		1		· · · ·	1
											- i		1			÷	ì					
	S4GP1000	Monitoring of Instruments	720	83d	98 22APR 06 A	14FEB09	22APR 06 A	25MAY09		1 1	-		N	onitoring	of Instruments	i.	i.	i i	1	i i	i - 1	i i
	on H								I		1	I.		1		1	1			-	i i	í I
G	ound Investig	ation								1 1	1	- I	1		I I	1	1	1 1		1	1 1	
																-					. I	
1	S4HB1300	Install Settlement Markers	727	-35d	82 26MAY06 A	07JUL09	26MAY06 A	25MAY09					-			_	-				—	<u> </u>
D	ainage and D	ucts	1			I		1		1 1			1				i	· ·				
	Trench Metho	d							1	1 1	1	1	1	1	I I .	1	1	I I	1	1	1	
	S4HEA100	DN500 Pipe & Manhole (A3 - A6)	90	-105d	40 03OCT08 A	01APR 09	030CT08 A	22NOV08									1			00 Pipe & I	Manhole	A3 - A6)
		DN300 Pipe & Manhole (B4 - B6)	67	-179d	0 21MAR09	10JUN09	14AUG08	03NOV08		1 1			1			1						<u> </u>
																		N300 Plpe	8 Manhol	0 (B6 - B5	2)	
	S4HEA200	DN300 Plpe & Manhole (B6 - B8) ethod	44	-179d	0 29JAN09*	20MAR 09	23JUN08	13AUG08										N300 Pipe		5 (D0 - D0	, 	
										· ·	i		i			i.	i	i i		. F	1	
1	S4HEB102	Jacking DN600 (A2 - A3)	57	-105d	0 29JAN09	06APR 09	19SEP08	26NOV08	- I	1 1	1	-								Jacking I	DN600 (A	2 - A3)
1	S4HEB104	Construct Manholes A2 & A3	27	-105d	0 07APR 09	08MAY09	27NOV08	30DEC08	- I	1 1	1	- I	1	1	I I	1	1	I I	1			
Pi	bework - Risir	ng Main						1		1 1			1					1 1	1			
	Trench Metho	d											1	1		1	1	1 I			. I I	
	S4HFA100	Twin Rising Main DN700 (ChC63 - ChC170)	45	-7d	40 080CT08 A	05MAY09	080CT08 A	25APR09		- I	-				i I							
	S4HFA180		125	-95d	0 21MAR09	18AUG09	24NOV08	25APR09	i	- I I	i.	i i	1	l.	I I	i i						
	UTIL AIOU		120	350	0 2 1001009	.0/10/00/9	24110 100	20/11/03					1			-						
Startda	te 19DEC																			•	Early	bar
Finish o Data da	ate 13NO	/10 09					Leader	Civil En	gineering C	orp. Ltd.											Prog	ress bar
	umber 5A						DSI	O Contrac	t No. DC/20	05/02											Critic	albar marybar
						3-Mon	th Rolling	Program	ne - 3M01 a	t 28 Janua	ary 2009									•		milestone poin
c Prima	vera Systems	, Inc.																				h milestone po

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	JAN 10 26 02	2009 FEB MAR APR 09 16 23 02 09 16 23 30 06 13 20
S4HFA190	Twin Rising Main DN700 (ChC950 - ChC1000)	44	-95d	0 29	9JAN09	20MAR 09	02OCT08	22NOV08		Twin Rising Main DN700 (ChC950 - ChC1000)
S4HFA220	Twin Rising Main DN700 (ChC1250 - WOIC7)	104	-32d	40 20	0AUG08 A	04JUN09	20AUG08 A	25APR09		
S4HFA240	Twin Rising Main DN700 (ChC1450 - ChC1550)	110	-160d	0 29	9JAN09	09JUN09	16JUL08	24NOV08		
S4HFA250	Twin Rising Main DN700 (ChC1600 - ChC1618)	44		100 10	0JUN08 A	29DEC08 A	10JUN08 A	29DEC08 A	win Rising Main DN700 (ChC1600 - ChC1618)	
S4HFA251	Twin Rising Main DN700 (WOIC6 - ChC1664)	47	-106d	80 12	2JUN08 A	07FEB09	12JUN08 A	27SEP08		Twin Rising Main DN700 (WOIC6 - ChC1664)
S4HFA261	Twin Rising Main DN700 (ChC1715 - ChC1750)	47	-106d	0 09	9FEB09	03APR 09	29SEP08	24NOV08		Twin Rising Main DN700 (Ch
S4HFA270	Twin Rising Main DN700 (ChC1750 - AVIC6)	124	-106d	0 06	6APR09	31AUG09	25NOV08	25APR 09		
S4HFA300	ConstructAVIC9	20	10d	0 21	1MAR09	14APR09	02APR09	25APR 09		Construct AV
S4HFA310	ConstructWOIC8	20	10d	0 21	1MAR09	14APR09	02APR 09	25APR 09		Construct WC
S4HFA350	ConstructAVIC6	30	44d	0 29	9JAN09	04MAR09	21MAR 09	25APR 09		Construct AVIC6
Trenchless M	l Aethod						1			
	-									
S4HFB100	ConstructJack/Receive Pits (ChC42 - ChC63)	57		100 24	40CT08 A	05JAN09 A	24OCT08 A	05JAN09 A	Construct Jack/Receive Pits (ChC42 - ChC63)	
S4HFB102	2 Jacking Twin DN700 (ChC42 - ChC63)	65	-143d	0 06	6JAN09A	15APR 09	06JAN09 A	22OCT08		Jacking Twi
S4HFB112	2 Jacking Twin DN700 (AIC9 - WOIC7)	69		100 05	5DEC08 A	20JAN09 A	05DEC08 A	20JAN09 A	Jacking Twin DN700 (AIC	;9 - WOIC7)
S4HFB120	ConstructWOIC7	30	-74d	0 06	6APR09	11MAY09	05JAN09	11FEB09		
S4HFB130	CCTV Inspection of Pipeline	2	19d	0 16	6APR09	17APR09	09MAY09	11MAY09		CCTV Ins
Geotechnicalw	rorks									
S4HP1000	Monitoring of Instruments	947	-94d	80 26	6MAY06 A	14SEP09	26MAY06 A	25MAY09		
Additonal Works										
	entbtn ChC420 & ChC607 (Claim No. 118)					1		-		
	Twin Rising Main DN700 (ChC610 - ChC580)	40			3JUL08 A	15JAN09 A	23JUL08 A		Twin Rising Main DN700 (ChC61)	
· · · · · · · · · · · · · · · · · · ·	Twin Rising Main DN700 (ChC515 - ChC490)	20		100 06	60CT08 A	21JAN09 A	06OCT08 A	21JAN09 A	Twin Rising Main DN700	
S4HV1350	Twin Rising Main DN700 (ChC490 - ChC460)	20		100 06	60CT08 A	21JAN09 A	06OCT08 A	21JAN09 A	Twin Rising Main DN700	J (ChC490 - ChC460)
S4HV1360	Twin Rising Main DN700 (ChC460 - ChC436)	20		100 10	00CT08 A	28JAN09	100CT08 A	28JAN09	· · · · · · · · · · · · · · · · · · ·	Iain DN700 (ChC460 - ChC436)
S4HV1380	ConstructWOIC9	20		100 29	9AUG08 A	15JAN09 A	29AUG08 A	15JAN09 A	Construct WOIC9	
S4HV1410	DN500 Pipe & Manhole (A14 - A15)	30	53d	30 24	40CT08 A	21FEB09	24OCT08 A	25APR 09		DN500 Pipe & Manhole (A14 - A15)
ortion I										
Ground Investig	gation									
S4IB1300	Install Settlement Markers	736	-60d	79 26	6JUN06 A	05AUG09	26JUN06 A	25MAY09		<u>, , , , , , , , , , , ,</u>
Drainage and D	Ducts									* * * * * * * * * * *
Trench Metho	od									
S4/EA1000	DN500 Pipe & Manhole (C2 - C4)	58	-65d	35 24	4DEC08 A	27APR 09	24DEC08 A	09EEB09		
	DN500 Pipe & Manhole (C4 - C6)	76	-65d		7AUG08 A	13MAR 09	27AUG08 A	20DEC08		DN500 Pipe & Manhole (C4 - C6)
										DN400 Pipe & Manhole (C7a - C7)
	DN400 Pipe & Manhole (C7a - C7)	36	62d		9JAN09	11MAR09	13APR09	25MAY09		
	DN500 Pipe & Manhole (C11 - C12)	35	-65d		8APR09	09JUN09	10FEB09	21MAR09		
	DN500 Plpe & Manhole (C22 - C23)	65	58d		8NOV08 A	06MAR 09	28NOV08 A	15MAY09		DN500 Plpe & Manhole (C22 - C23)
	DN500 Plpe & Manhole (C31 - C32)	53	-164d		9JAN09	31MAR 09	11JUL08	10SEP08		DN500 Pipe & Manhole (C31 - C3
S4IEA2400	DN500 Plpe & Manhole (C32 - C34)	70	-164d	0 01	1APR09	24JUN09	11SEP08	04DEC08		
Trenchless M	Nethod									
S4IEB1000	ConstructJack/Receive Pits (C1 - C2)	30	-52d	0.20	9JAN09	04MAR 09	22NOV08	29DEC08		Construct Jack/Receive Pits (C1 - C2)
	Jacking DN500 (C1 - C2)	78			5MAR 09	06JUN09	30DEC08	03APR09		
Geotechnical w		1 ⁷⁸	-520		UNIME US	00101009	3005008	USAFRUS		
Scoleennicalw										
										· · · · · · · · · · · · ·
S4IP1000	Monitoring of Instruments	827	-76d	79 28	8JUN06 A	24AUG09	28JUN06 A	25MAY09		
date 19DEC h date 13NO date 28JAN e number 6A	V10					3-Month	DSI	D Contrac	eering Corp. Ltd. o. DC/2005/02 - 3M01 at 28 January 2009	Early bar Progress ba Critical bar Summary ba ♦ Startmiles to Finish miles

Act Description	Orig Total Percent Early Early Dur Float Complete Start Finish	Late Late Start Finish	20 2009 EC JAN FEB MAR APR 4 29 05 12 19 26 02 09 16 23 02 09 16 23 30 06 13 20 27
Section 5 - Sewers & RM in Portion E			29 05 12 ⁰¹¹ 19 28 02 09 16 23 02 09 16 23 30 06 13 20 27
Portion E			
Drainage and Ducts			
S5EEB104 ConstructManholes H11	27 -74d 30 09OCT08 A 19FEB09	09OCT08 A 18NOV08	Construct Manholes H11
S5EEB110 CCTV Inspection of Pipeline	1 -74d 0 20FEB09 20FEB09	19NOV08 19NOV08	CCTV Inspection of Pipeline
Pipework - Rising Main			
Trench Method			
S5EFA100 Twin Rising Main DN900 (ChA208 - ChA250)	33 -79d 70 23MAY08 A 07FEB09	23MAY08 A 31OCT08	Twin Rising Main DN900 (ChA208 - ChA250)
S5EFA430 CCTV Inspection of Pipeline	20 -79d 80 16AUG08 A 12FEB09	16AUG08 A 05NOV08	CCTV Inspection of Pipeline
Trenchless Method			
	3 -78d 0 09FEB09 11FEB09		E CCTV Inspection of Pipeline
S5EFB110 CCTV Inspection of Pipeline	3 -78d 0 09FEB09 11FEB09	03NOV08 05NOV08	
Testing			
S5ES1000 Pressure Testing to Twin Rising Main DN900	12 -79d 0 13FEB09 26FEB09	06NOV08 19NOV08	Pressure Testing to Twin Rising Main DN900
Section 6 - Sewers in Portion J Portion J			
Ground Investigation			
S6JB1500 Install Settlement Marker 1st Stage Drainage and Ducts	765 -401d 35 20APR 06 A 20SEP10	20APR 06 A 25MAY09	
Trench Method			
S6JEA101 DN1050 Pipe & Manhole (D2 - D3)	78 -51d 0 06APR09 08JUL09	04FEB09 07MAY09	
S6JEA170 TTA JA7-2 DN400 Pipe & Manhole (D14 - D15)	46 -421d 0 11APR09 05JUN09	09NOV07 04JAN08	
S6JEA172 TTA JA7-1 DN400 Pipe & Manhole (D15 - D16)	61 -421d 0 29JAN09 10APR09	27AUG07 08NOV07	TTA JA7-1 DN400 Pipe & M
S6JEA190 TTA JB1-1 DN400 Plpe & Manhole (D20 - D21)	102 -147d 0 20APR 09 19AUG 09	22OCT08 24FEB09	
S6JEA192 TTAJB2-1 DN400 Plpe & Manhole (D21 - D22)	68 -147d 0 29JAN09 18APR09	31JUL08 21OCT08	
S6JEA240 TTA JB6-1 DN400 Plpe & Manhole (D28 - D30)	80 -445d 0 29JAN09 04MAY09	30JUL07 02NOV07	
S6JEA320 DN300 Pipe & Manhole (D40 - D42)	65 -239d 50 09JAN08 A 06MAR09	09JAN08 A 19MAY08	DN300 Pipe & Manhole (D40 - D42)
S6JEA330 DN300 Pipe & Manhole (D42 - D44)	72 -239d 0 07MAR09 02JUN09	20MAY08 13AUG08	
S6JEA420 TTAJD4-1 DN750 Pipe & Manhole (E7 - E8)	35 -249d 0 14APR 09 25MAY09	14JUN08 25JUL08	
S6JEA422 TTAJD4-2 DN750 Pipe & Manhole (E7 - E9)	63 -249d 0 29JAN09 13APR09	28MAR08 13JUN08	
S6JEA460 TTA JD8-2 DN750 Pipe & Manhole (E12 - E13)	40 -298d 0 27MAR09 14MAY09	28MAR08 16MAY08	
S6JEA462 TTAJD8-1 DN750 Pipe & Manhole (E13 - E14)	39 -298d 0 10FEB09 26MAR09	05FEB08 27MAR08	TTA JD8-1 DN750 Pipe & Manhole (E13 - E14)
S6JEA470 TTA JD-9 DN750 Pipe & Manhole (E14 - E15)	69 -298d 85 13NOV07 A 09FEB09	13NOV07 A 04FEB08	TTA JD-9 DN750 Pipe & Manhole (E14 - E15)
Trenchless Method			
S6JEB100 ConstructJack/Receive Pits (D1 - D2)	28 -78d 5 25NOV08 A 28FEB09	25NOV08 A 22NOV08	Construct Jack/Receive Pits (D1 - D2)
S6JEB102 Jacking DN1050 (D1 - D2)	29 -78d 0 02MAR09 03APR09	24NOV08 29DEC08	- I I I I I I I I I I I I I I I I I I I
S6JEB104 ConstructManholes D1 & D2	25 -78d 0 06APR 09 05MAY09	30DEC08 31JAN09	1
S6JEB124 ConstructManholes D7 & D8	25 84d 50 25AUG08 A 11FEB09	25AUG08 A 22MAY09	Construct Manholes D7 & D8
Geotechnical works		· · ·	
S6JP1000 Monitoring of Instruments	1152 -377d 59 21APR06 A 23AUG10	21APR 06 A 25MAY09	
Section 7 - Sewers in Portion K		1	
Portion K			
Drainage and Ducts			
Start date 19DEC05			Early bar
Finish date 13NOV10 Data date 28JAN09		Leader Civil En	gineering Corp. Ltd.
Page number 7A		DSD Contrac	t No. DC/2005/02
	3-Mon	th Rolling Program	Startmilestone poin
c Primavera Systems, Inc.			 Finish milestone po

	Act	Description	Orig Dur	Total	Percent Early Complete Start	Early Finish	Late Start	Late Finish	20							TD		2009						4.00		
	ID		Dur						E(29	05	JA 12	N 19	26	02	09	ЕВ 16	23	02		MAR 16	23	30	06	APR 13	20	27
	S7KEA110	DN600 Pipe & Manhole (M2 - M3) Stage 2	35	-316d	0 29JAN0	10MAR 09	03JAN08	15FEB08						-			-	-	DN60	00 Pipe &	Manhole (M	/12 - M3) \$	Stage 2	1	1	
	S7KEA161	DN900 Pipe & Manhole (M11 - M12) Stage 2	54	-286d	90 20AUG0	3 A 03FEB09	20AUG08 A	4 15FEB08					-		DN900 Pipe 8	Manhole (M11 - M1	2) Stage 2	1	1	-	1	1	1		1
	S7KEA210	CCTV Inspection of Pipeline	5	-316d	30 16AUG0	A 14MAR09	16AUG08 A	4 20FEB08	_	_	_			-			-	-	<u> </u>	CCTV In	spection of	Pipeline	-	1	1	1
	Trenchless M	/ethod										1		1		1		1	1	1		: 				1
							Linuigue			i.					Inspection of	Dinalina	I.	1	i.	i.	1	i.	l.	1	i.	i.
		CCTV Inspection of Pipeline	2	-278d	30 16AUG0	3 A 29JAN09	16AUG08 A	4 20FEB08					-		Inspection of	-ipeline		_			-					
F	Roads and Pav	ings								1	1	1	1	1	I	1	1	1	1	1	1	1	1	1	1	1
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	S7KH100	Concrete Footpath from M14 to M16a	18	-282d	70 25OCT0	A 03FEB09	25OCT08 A	4 20FEB08	1-	_	_	_	<u> </u>	_	Concrete Foo	tpath from	M14 to M	6a	1	1	1	1	1	1	!	1
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Data date	28JAN09
Page number	8A

c Primavera Systems, Inc.

Leader Civ il Engineering Corp. Ltd. DSD Contract No. DC/2005/02 3-Month Rolling Programme - 3M01 at 28 January 2009





Annex D

Photographical Records – Noise Barrier On-Site

DSD Contract DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Bi-Annual EM&A Summary Report for October 2008 to March 2009 (No. 6) (Designated Elements)

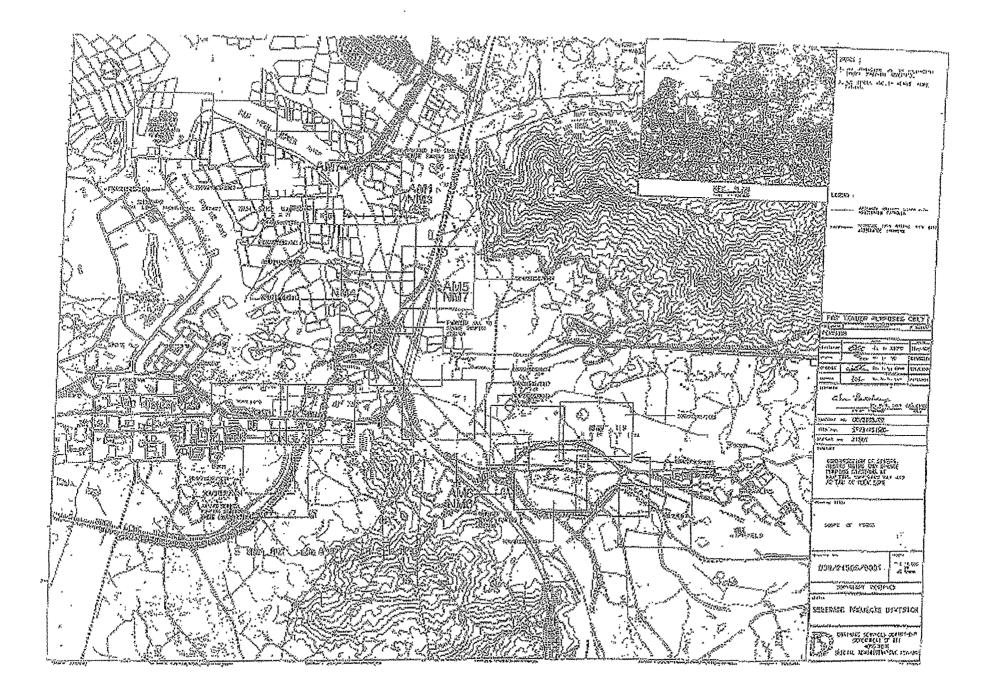


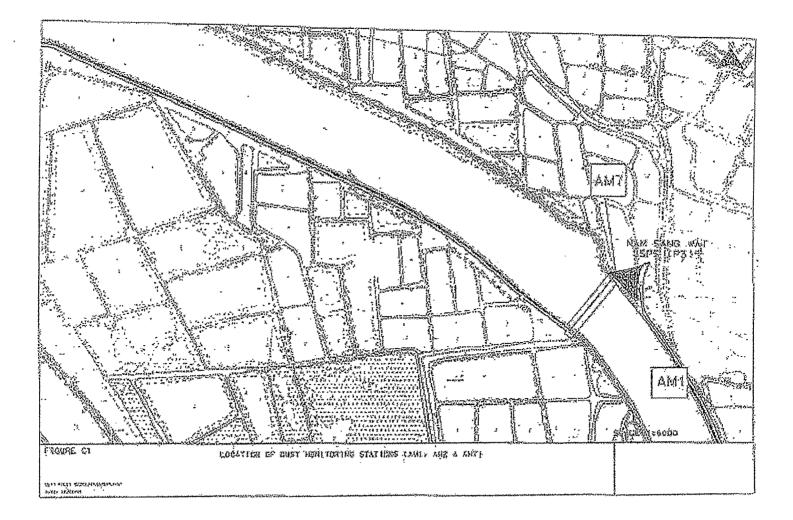


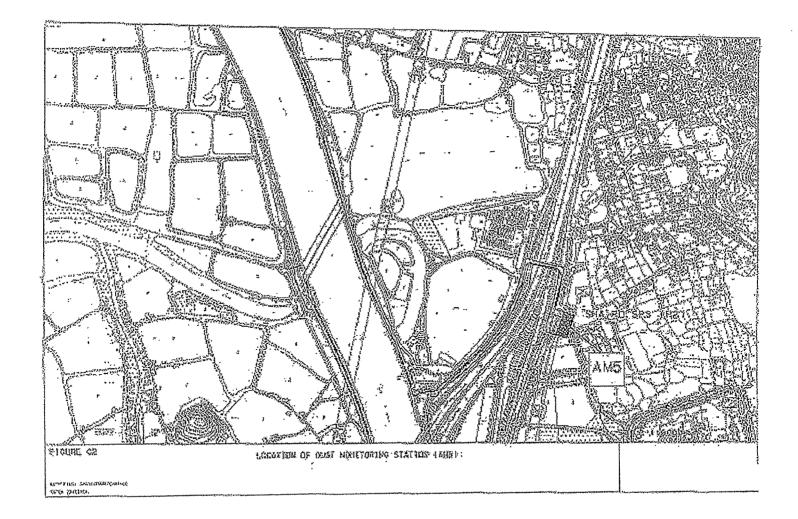


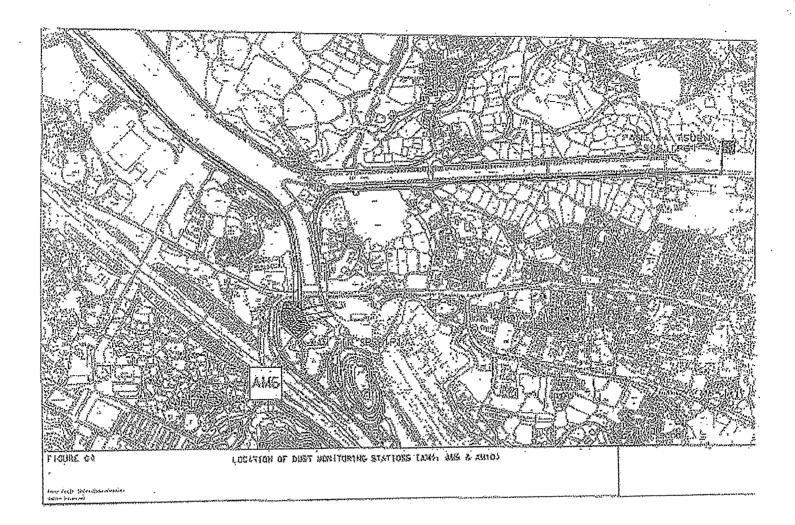
Annex E

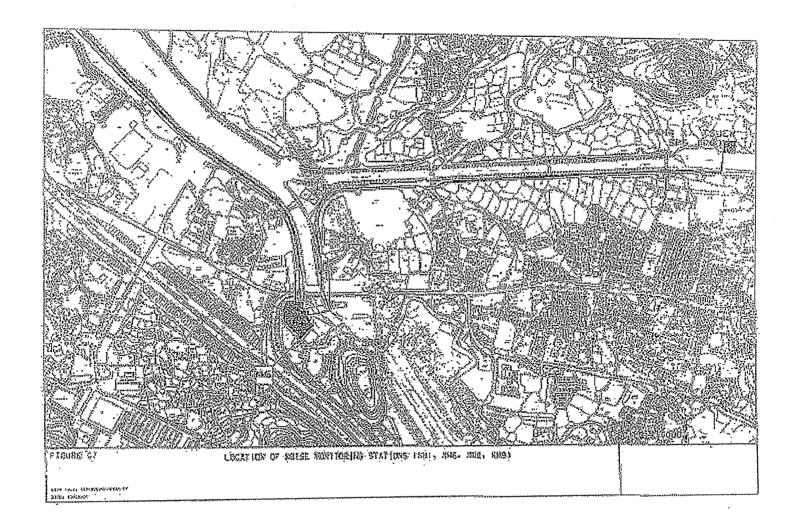
Locations of Monitoring Stations

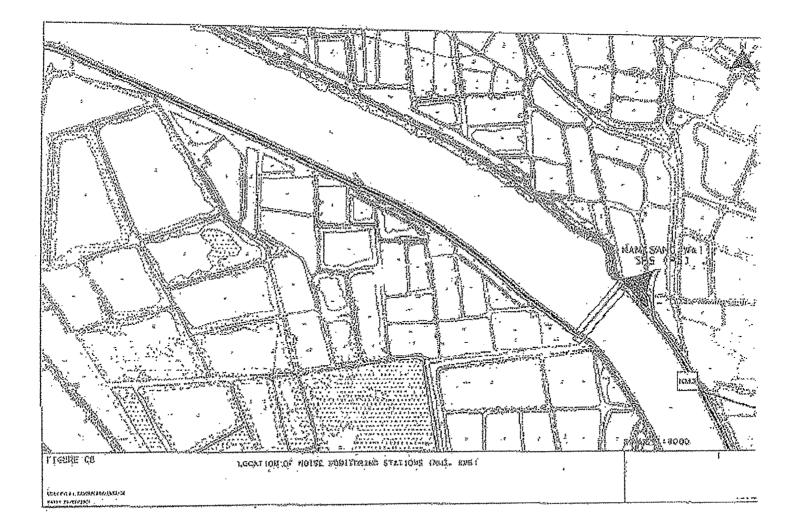


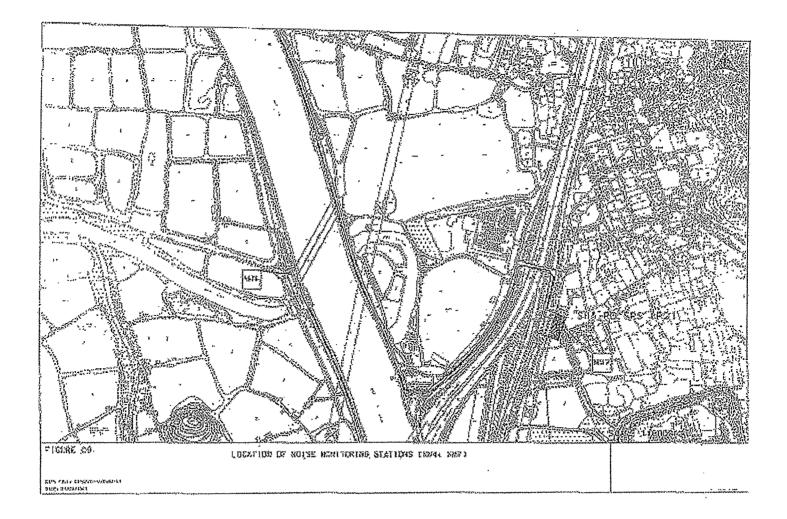














Annex F

Event and Action Plan

Z:\Jobs\2006\TCS00310 (DC-2005-02)\600\Impact\DP\Bi-Annual\No.6 Oct08-Mar09\Revision 2\R0863 (Annex) r2.doc Action-United Environmental Services and Consulting



Event and Action Plan for Construction Phase Air Quality

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

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION								
	ET Leader	IEC	Engineer	Contractor					
Limit Level Exceedance for one sample	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings Increase monitoring frequency to 	 Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the 	 Take immediate action to avoid further exceedance Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial 					
	 Assess efficacy of remedial measures and keep the Contractor, IEC, Engineer and EPD informed 	 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	 Discuss remedial actions with the Contractor and IEC, Ensure remedial measures are properly implemented Inform complainant of actions taken, if necessary. 	 Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 					
Exceedance for two or more consecutive samples	 Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed Discuss remedial actions with IEC and Contractor If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring. 	 Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	 Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated Inform complainant of actions taken, if necessary. 	 Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 					



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



Annex 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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	0	Dec	
		CONSTRUCTION PHASE								
3.5	A1	 AIR QUALITY - Construction Phase The following measures are enforceable under the Air Pollution Control (Construction Dust) Regulations Site boundary and entrance 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
3.5	A2	 Access Road 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
3.5	A3	 Stockpiling of Dusty Materials 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
3.5	A4	 Loading, unloading or transfer of dusty materials 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
3.5	A5	 Use of vehicles 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			Relevant Legislation & Guidelines			
						Des	С	0	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
3.5	A7	 Power-driven drilling, and cutting 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
3.5	A8	 Excavation and earth moving 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
3.5	A9	 Construction of the superstructure of a building 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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	0	Dec	
4.7.1	B1	 NOISE - Construction Phase General Site Clearance – Demolition Works 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
4.7.1	B2	 Construction of Sewage Pumping Stations P1, P2 & P3 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 <i>P1, P2</i> & <i>P3</i>	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 <i>P1, P2 & P3</i>	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								
4.7.1	В3	 Method 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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	с	ο	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		 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, Road Pavement and Finishes 	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
4.7.1		 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		 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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	0	Dec	
6.6.2	D2	Chemical Waste Chemical waste that is produced, as defined by Schedule 1 of the <i>Waste Disposal (Chemical</i> <i>Waste) (General) Regulation,</i> 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 	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	 Schedule 2 of the Regulations. 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		V			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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	0	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 295) and Works Bureau Technical Circular No. 5/99.
7.5.6	E1	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 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	С	0	Dec																																									
		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 (<i>Figure 8.7a</i>) for the full duration of the construction contract.	The Contractor		~																																											
8.7.2	F2	<i>Mitigation Measures Adopted - Minimisation</i> 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 <i>Figure</i> <i>8.7a</i> 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	С	ο	Dec																			
		mitigation measures (i.e. erection of movable noise barriers with a suitable footing along the sites) in the monthly EM&A reports. <i>Mitigation Measures Adopted</i>					,																					
8.7.3	F5	Quietened construction plant and equipment (as shown in <i>Table F2</i>) 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, Imperial 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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	ο	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 mitigation 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.	To minimise potential landscape and visual impacts.	To be implemented during the construction phases of the project.	The Contractor		~			
		The first monthly EM&A Report should also report the appearance of the temporary hoarding barriers.								
	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	Imple Stage		tatio	n	Relevant Legislation & Guidelines
						Des	С	0	Dec	
		submitted for approval by the EPD.		project.						
		 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 								
		 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. 								
		EM&A REQUIEMENTS - Construction Phase								
3.7	11	 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); 	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
		 Worksite boundary facing Fung Kat Heung (AM5); Worksite boundary facing Scattered House near Route 3 (AM6); 								

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure		Imple Stage		tatio		Relevant Legislation & Guidelines
						Des	С	ο	Dec	
4.9.1		 at any additional locations, where considered necessary, in agreement with EPD. <i>Construction Noise</i> 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); (NM6) 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.	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 = I	Design, C = C	Construction, O = Operation, Dec = Decommissioning	1							



Annex H

Monitoring Results & Graphical Plots of Air Quality and Noise Monitoring Results

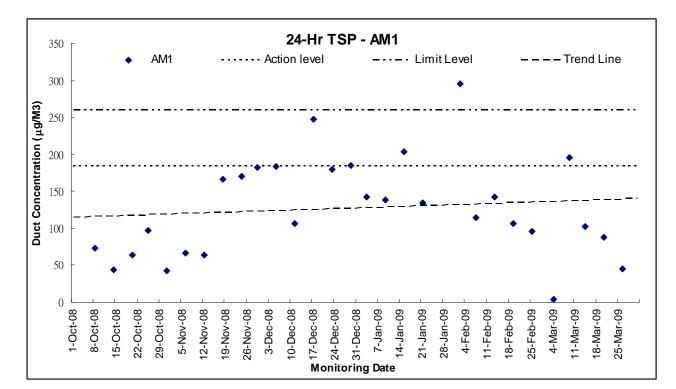


Air Quality Monitoring Results & Graphical Plot

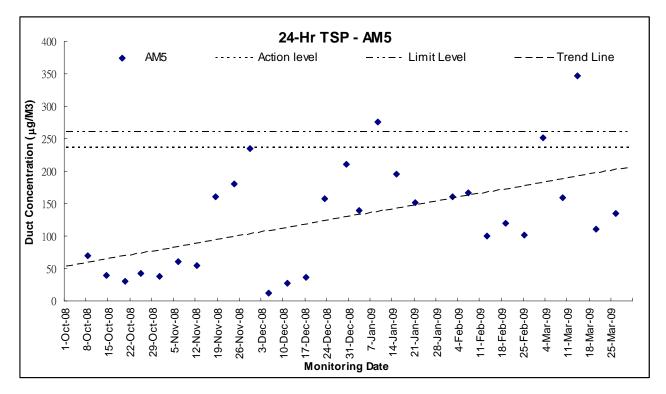
Date		24-Hr TS	P (μg/m ³)	
Date	AM1	AM5	AM6	AM7
8-Oct-08	73	69	31	54
14-Oct-08	44	39	174	46
20-Oct-08	64	31	85	13
25-Oct-08	97	42	213	46
31-Oct-08	43	38	60	30
6-Nov-08	67	60	33	25
12-Nov-08	64	54	24	30
18-Nov-08	166	160	16	111
24-Nov-08	170	181	109	83
29-Nov-08	182	235	<u>646</u>	66
05-Dec-08	183	12	69	96
11-Dec-08	106	28	56	86
17-Dec-08	247	36	56	94
23-Dec-08	180	158	149	103
29-Dec-08	185	210 (30-Dec-08)	45	44
3-Jan-09	143	139	133	42
9-Jan-09	139	<u>276</u>	71	94
15-Jan-09	203	195	87 (16-Jan-09)	163
21-Jan-09	134	151	47	185
2-Feb-09	295	160	69 (03-Feb-09)	52
7-Feb-09	115	167	50	36
13-Feb-09	142	100	45 (14-Feb-09)	51
19-Feb-09	107	120	40	153 (20-Feb-09)
25-Feb-09	96	102	56 (26-Feb-09)	294 (02 Mar 00)
3-Mar-09	4 (04-Mar-09)	251	24 (4-Mar-09)	<u>284</u> (02-Mar-09)
9-Mar-09	196	159	61 (10-Mar-09)	61
14-Mar-09	103	<u>347</u>	130	97
20-Mar-09	88	110	65	79
26-Mar-09	45	135	65 (27-Mar-09)	64
Average (Range)	61 (14 – 177)	76 (13 - 186)	36 (5 - 232)	40 (13 - 78)

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

DSD Contract DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Bi-Annual EM&A Summary Report for October 2008 to March 2009 (No. 6) (Designated Elements)

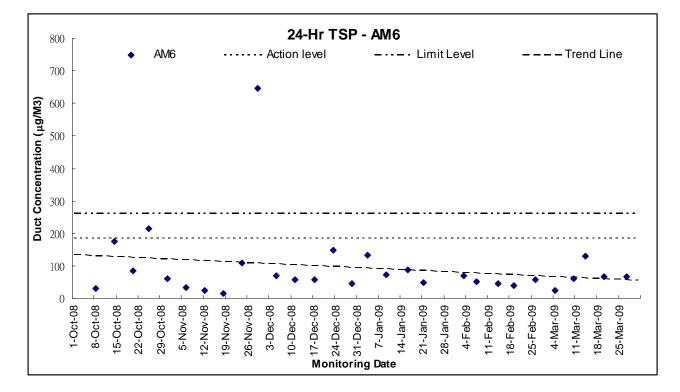


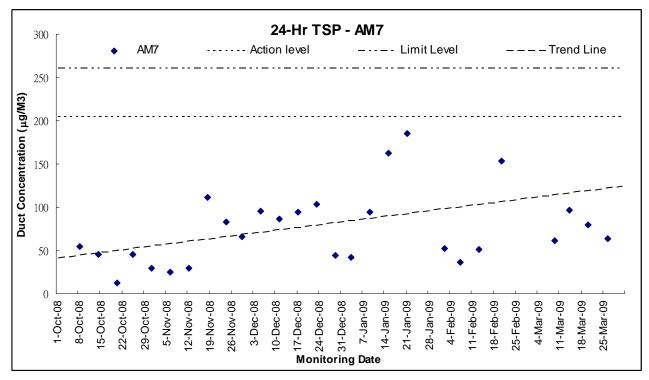
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DSD Contract DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Bi-Annual EM&A Summary Report for October 2008 to March 2009 (No. 6) (Designated Elements)









Construction Noise Monitoring Results & Graphical Plot

Noise Monitoring Results at NM3

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected * Leq30
02-Oct-08	09:16	46.3	45.7	45.4	45.8	46.7	45.1	45.9	48.9
09-Oct-08	09:18	52.0	51.8	52.1	52.5	52.7	52.4	52.3	55.3
15-Oct-08	09:34	48.5	48.5	49.6	52.6	9.5	50.2	49.4	52.4
21-Oct-08	11:07	50.4	49.2	48.7	49.0	55.0	50.1	51.1	54.1
27-Oct-08	09:40	58.8	47.4	49.3	45.1	45.0	42.4	52.1	55.1
01-Nov-08	11:20	49.9	49.1	50.2	57.9	49.8	52.2	52.9	55.9
07-Nov-08	11:00	61.0	60.2	59.1	59.1	59.4	60.0	59.9	62.9
13-Nov-08	11:30	54.2	51.3	57.0	55.5	51.6	54.7	54.5	57.5
19-Nov-08	11:00	67.2	66.6	66.0	67.1	67.3	68.7	67.2	70.2
25-Nov-08	11:20	47.0	50.4	43.2	42.3	45.8	53.9	49.0	52.0
01-Dec-08	10:45	54.6	53.6	55.9	57.8	56.7	58.7	56.6	59.6
06-Dec-08	11:10	63.7	62.7	63.9	61.9	60.5	62.7	62.7	65.7
12-Dec-08	10:30	47.3	45.5	46.7	48.3	45.2	47.5	46.9	49.9
18-Dec-08	10:40	46.1	42.6	43.8	43.7	44.9	46.5	44.8	47.8
24-Dec-08	10:40	50.4	52	53.2	56.3	53.9	52.4	53.4	56.4
30-Dec-08	10:30	56.5	50.2	46.7	47.3	44.7	45.2	50.8	53.8
05-Jan-09	10:35	53.2	43.9	44.9	43.4	44.7	53.5	49.5	52.5
10-Jan-09	10:20	57.1	58.4	56.9	58.1	56.4	69.8	63.1	66.1
16-Jan-09	10:30	56.3	58.9	56.4	55.7	49.8	51.4	55.7	58.7
22-Jan-09	10:30	45.1	51.7	51.8	54.9	56.7	60.7	55.8	58.8
03-Feb-09	11:20	50.9	49.5	52.3	54.8	53.9	55.4	53.3	56.3
09-Feb-09	11:10	50.6	49.7	53.2	54.9	50.4	51.5	52.1	55.1
14-Feb-09	10:40	54.2	50.5	50.9	48.2	51.2	49.7	51.2	54.2
20-Feb-09	11:00	50.4	55.7	52.8	50.3	49.6	53.1	52.5	55.5
26-Feb-09	09:40	55.3	49.5	46.0	57.2	60.9	54.2	56.2	59.2
04-Mar-09	10:26	54.9	60.4	63.2	59.3	61.2	58.7	60.3	63.3
10-Mar-09	09:55	47.5	50.9	55.4	57.9	53.2	50.3	53.9	56.9
16-Mar-09	09:42	48.9	50.1	49.2	49.3	51.7	50.9	50.1	53.1
21-Mar-09	09:40	49.3	48.2	50.7	51.9	48.4	50.9	50.1	53.1
27-Mar-09	10:15	50.9	54.8	56.7	50.3	49.7	51.4	53.1	56.1
Limit Level									75

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



Noise Monitoring Results at NM4

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected * Leq30
02-Oct-08	13:03	52.5	53.4	52.9	53.7	54.5	53.7	53.5	56.5
9-Oct-08	13:41	60.5	62.1	63.7	64.3	62.1	63.6	62.9	65.9
15-Oct-08	13:40	63.4	65.2	64.9	64.7	63.5	65.6	64.6	67.6
21-Oct-08	14:27	55.4	50.9	50.7	50.1	55.5	49.2	52.7	55.7
27-Oct-08	10:45	54.1	51.6	50.2	49.8	48.7	51.4	51.3	54.3
1-Nov-08	09:50	64.9	65.4	62.3	60.6	61.2	61.1	63.0	66.0
7-Nov-08	09:15	69.6	65.3	62.4	62.4	61.1	62.7	65.0	68.0
13-Nov-08	09:45	54.7	53.0	57.1	55.5	49.3	54.0	54.5	57.5
19-Nov-08	09:30	69.2	67.5	69.9	70.5	67.4	68.6	69.0	72.0
25-Nov-08	09:40	49.9	52.8	53.3	51.1	50.2	48.9	51.3	54.3
1-Dec-08	09:45	71.7	71.5	71.3	71.9	71.5	71.2	71.5	74.5
06-Dec-08	09:50	61.2	62.4	60.7	63.8	64.7	63.9	63.0	66.0
12-Dec-08	09:00	54.4	55.3	54.1	56.6	54.1	53.0	54.7	57.7
18-Dec-08	09:00	63.3	54.6	48.5	49.9	55.4	51.8	57.1	60.1
24-Dec-08	08:50	64.9	65.6	62.0	61.7	63.4	62.9	63.7	66.7
30-Dec-08	09:00	59.1	56.0	55.1	56.6	62.1	58.4	58.6	61.6
05-Jan-09	09:00	59.2	57.6	59.4	53.5	59.5	56.1	58.0	61.0
10-Jan-09	11:00	56.7	57.9	56.4	58.5	59.4	62.1	59.0	62.0
16-Jan-09	09:00	58.9	59.4	57.6	56.2	61.5	58.7	59.0	62.0
22-Jan-09	09:00	60.3	60.8	60.9	58.2	59.7	56.8	59.7	62.7
3-Feb-09	10:00	63.4	60.5	57.9	58.2	59.9	56.3	60.0	63.0
9-Feb-09	09:40	63.9	61.3	56.5	58.2	59.7	57.3	60.3	63.3
14-Feb-09	09:00	59.5	61.4	58.4	62.9	61.2	59.7	60.8	63.8
20-Feb-09	09:00	59.7	62.3	61.7	54.8	63.9	60.7	61.3	64.3
26-Feb-09	10:30	58.7	59.2	60.4	54.9	62.8	60.7	60.0	63.0
4-Mar-09	11:15	59.9	62.3	63.4	64.9	60.1	59.8	62.2	65.2
10-Mar-09	10:42	61.2	60.9	57.3	56.2	59.1	61.3	59.7	62.7
16-Mar-09	10:31	58.2	61.7	63.4	57.4	56.9	58.7	60.1	63.1
21-Mar-09	10:13	60.3	62.5	61.7	60.4	58.9	58.7	60.6	63.6
27-Mar-09	11:00	59.7	61.2	63.3	58.2	58.9	60.8	60.7	63.7
Limit Level									75

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



Start Time Date 1st Leq5 2nd Leq5 3rd Leq5 4th Leq5 5th Leq5 6th Leq5 Leq30 02-Oct-08 11:28 55.3 54.8 51.9 52.4 54.4 52.1 53.7 09-Oct-08 11:27 54.8 56.0 54.3 53.1 53.8 55.3 54.7 15-Oct-08 11:23 60.7 61.4 59.8 61.2 62.3 60.8 61.1 11:23 55.3 58.0 21-Oct-08 60.1 55.6 57.5 56.6 57.5 27-Oct-08 11:30 57.6 60.6 57.9 56.8 59.6 61.0 59.2 11:26 59.5 62.8 58.8 60.3 61.6 57.6 60.4 01-Nov-08 50.7 11:27 56.2 54.4 58.2 52.5 51.0 54.7 07-Nov-08 11:28 61.3 63.0 54.3 52.7 51.6 53.6 58.4 13-Nov-08 59.9 19-Nov-08 11:27 58.8 55.7 56.9 58.3 58.3 58.2 50.7 55.8 57.5 14:24 61.6 58.8 51.6 56.9 25-Nov-08 11:25 50.8 57.3 52.8 53.2 52.6 54.5 01-Dec-08 56.5 06-Dec-08 11:25 57.8 55.0 57.2 56.3 54.3 55.8 56.2 12-Dec-08 11:27 56.7 57.8 54.7 53.9 53.0 55.3 55.5 52.9 11:30 54.9 56.9 54.8 52.6 53.3 54.5 18-Dec-08 24-Dec-08 15:40 53.9 52.1 54.3 52.8 52.0 53.1 53.1 30-Dec-08 11:29 55.8 53.5 58.3 55.2 55.1 54.0 55.6 53.2 05-Jan-09 11:30 53.0 54.7 53.2 54.3 54.8 53.9 10-Jan-09 11:27 54.4 54.1 55.1 53.2 54.1 54.3 54.6 16-Jan-09 11:26 55.1 56.4 57.1 55.8 55.6 56.2 56.1 22-Jan-09 11:26 58.2 55.7 54.2 56.3 57.4 55.1 56.4 03-Feb-09 11:28 56.3 66.4 61.0 60.8 58.1 59.4 61.6 09-Feb-09 11:29 55.2 55.1 55.9 55.5 54.7 54.4 55.2 14-Feb-09 11:26 57.2 57.6 59.4 57.9 56.3 56.7 57.6 20-Feb-09 11:30 57.0 57.3 58.8 57.6 59.1 58.3 58.1 26-Feb-09 11:26 54.0 55.5 60.2 55.7 53.8 56.3 56.5 04-Mar-09 11:30 61.2 59.1 58.2 59.3 60.6 58.3 59.6 62.2 10-Mar-09 11:28 56.3 58.3 64.7 63.6 64.5 59.4 16-Mar-09 11:28 57.8 56.9 55.8 55.5 56.2 56.9 56.6 21-Mar-09 11:30 56.6 55.3 55.9 55.1 55.5 55.6 55.7 27-Mar-09 11:29 56.3 55.6 57.2 56.7 56.2 56.3 56.4 Limit Level 75

Noise Monitoring Results at NM6

* No façade correction was required

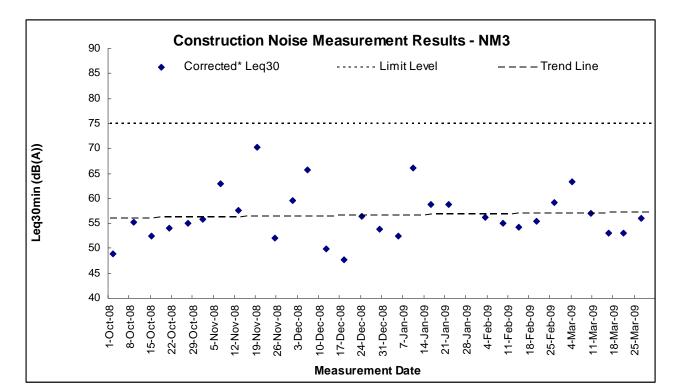


Noise Monitoring Results at NM7

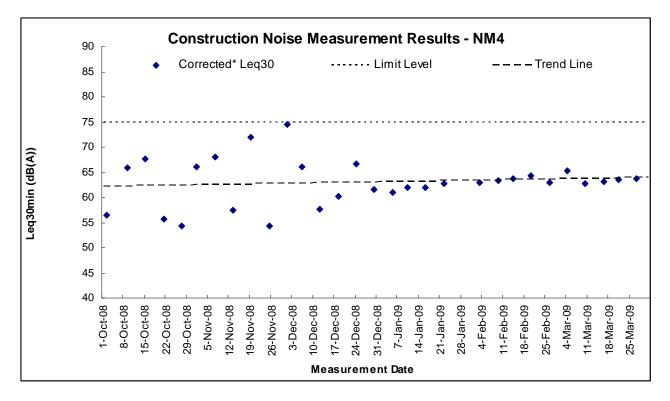
Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30
			-	-	-	-	-	-
02-Oct-08	10:15	51.9	49.7	49.1	48.6	49.1	50.4	49.9
09-Oct-08	10:21	52.7	52.8	52.4	53.6	53.3	52.7	52.9
15-Oct-08	10:27	51.9	51.9	50.8	50.5	51.2	53.2	51.7
21-Oct-08	13:00	54.7	50.6	50.1	49.7	47.8	54.8	52.1
27-Oct-08	11:50	42.2	59.4	58.5	48.8	49.0	51.3	55.0
1-Nov-08	13:00	66.1	68.4	60.6	57.5	60.3	56.6	63.8
7-Nov-08	12:00	60.1	60.2	60.0	62.4	58.2	59.1	60.2
13-Nov-08	12:20	63.1	51.8	54.1	52.4	51.1	51.3	56.8
19-Nov-08	11:45	67.8	69.9	70.4	69.8	70.3	71.4	70.1
25-Nov-08	13:00	68.4	65.2	67.1	64.3	63.7	58.4	65.5
1-Dec-08	11:30	67.0	63.5	64.7	64.5	67.5	61.5	65.2
06-Dec-08	09:00	61.8	58.7	57.6	56.2	57.0	58.2	58.7
12-Dec-08	11:15	56.4	60.7	59.4	59.3	61.2	60.7	59.9
18-Dec-08	11:20	62.4	61.5	63.4	61.4	61.5	62.9	62.3
24-Dec-08	10:05	57.9	55.9	60.1	60.3	59.4	58.6	58.9
30-Dec-08	11:10	57.7	55.5	60.9	62.5	57.2	56.3	59.1
05-Jan-09	11:20	56.7	58.9	60.0	57.4	56.3	54.1	57.6
10-Jan-09	09:00	60.0	61.2	59.4	58.4	60.2	59.3	59.8
16-Jan-09	11:15	61.2	59.7	62.9	58.7	59.3	62.5	61.0
22-Jan-09	11:20	56.4	57.9	56.5	60.5	57.8	58.4	58.1
3-Feb-09	09:00	61.9	59.4	58.7	60.5	58.2	59.6	59.9
9-Feb-09	09:00	59.2	57.3	60.2	58.9	57.4	60.9	59.2
14-Feb-09	11:30	60.9	61.2	58.2	60.4	59.7	60.2	60.2
20-Feb-09	13:00	56.4	57.9	60.2	60.3	59.1	54.7	58.5
26-Feb-09	09:00	62.5	60.4	61.7	59.5	63.1	62.7	61.8
4-Mar-09	09:34	63.4	60.9	62.3	59.7	61.3	58.9	61.3
10-Mar-09	09:08	56.2	55.1	55.8	56.7	58.2	55.9	56.4
16-Mar-09	09:00	56.4	56.9	55.5	58.7	60.2	61.3	58.7
21-Mar-09	09:00	56.2	58.3	60.9	62.7	63.5	60.9	61.1
27-Mar-09	09:22	54.2	55.7	55.1	53.1	54.5	56.7	55.0
Limit Level								75

* No façade correction was required

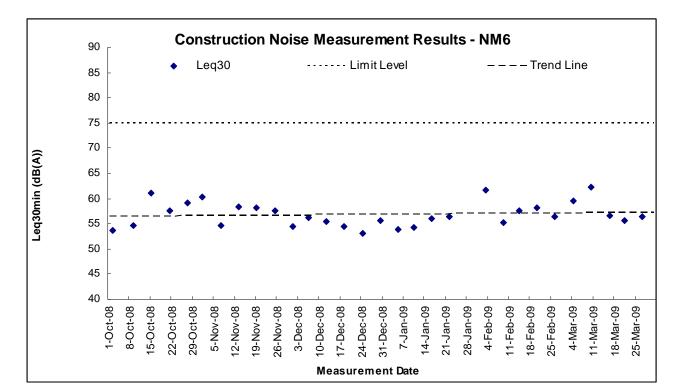
DSD Contract DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Bi-Annual EM&A Summary Report for October 2008 to March 2009 (No. 6) (Designated Elements)



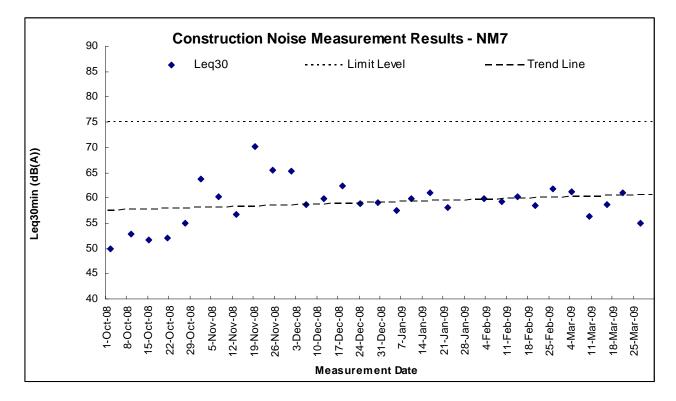
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DSD Contract DC/2005/02 Construction of Sewers, Rising Mains & Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long Bi-Annual EM&A Summary Report for October 2008 to March 2009 (No. 6) (Designated Elements)



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Annex I

Meteorological Data in the Reporting Period



Meteorological Data Extracted From the HK Observatory at Lau Fau Shan Weather Station <u>October 2008</u>

				Lau F	Lau Fau Shan Weather Station				
Date	e	Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction		
1-Oct-08	Wed	Holiday							
2-Oct-08	Thu	sunny periods/moderate	3	27.9	9	68	E/NE		
3-Oct-08	Fri	cloudy/overcast/rain/moderate/fresh/strong	2.4	27.6	17	70	Е		
4-Oct-08	Sat	cloudy/scattered showers/squally thunderstorm/moderate/fresh	14	28.1	17	78	Е		
5-Oct-08	Sun	cloudy/moderate/fresh	122.6	25	29.5	88.5	S/SE		
6-Oct-08	Mon	cloudy/moderate/fresh	Trace	24	27.5	80.5	N/NW		
7-Oct-08	Tue	Holiday							
8-Oct-08	Wed	cloudy/sunny periods/moderate/fresh	0.5	25	12	77	E/NE		
9-Oct-08	Thu	sunny periods/cloudy/moderate/fresh	Trace	27.7	14	72	Е		
10-Oct-08	Fri	fine/dry/moderate	0	28.3	10	70	E/SE		
11-Oct-08	Sat	fine/dry/moderate/fresh	0	28.2	13.5	68.5	E/NE		
12-Oct-08	Sun	cloudy/rain/fresh/strong	Trace	26.6	12	73	E/NE		
13-Oct-08	Mon	cloudy/rain/fresh/strong	0.3	24.5	11	83	E/NE		
14-Oct-08	Tue	cloudy/haze/sunny periods/moderate/fresh	Trace	25.6	13.5	75.5	E/NE		
15-Oct-08	Wed	fine/dry/moderate/fresh	Trace	26.9	9	71	Е		
16-Oct-08	Thu	fine/hazy/cloudy/moderate	0	27.4	12	71	E/SE		
17-Oct-08	Fri	cloudy/rain/moderate/fresh	0.1	26.8	11.7	69.5	E/SE		
18-Oct-08	Sat	sunny periods/cloudy/moderate/fresh	0	28.5	10.7	71.5	E/SE		
19-Oct-08	Sun	fine/dry/moderate/fresh	1.6	28.6	9.5	66.2	E/SE		
20-Oct-08	Mon	fine/dry/moderate/fresh	Trace	28.3	14.5	66.5	E/SE		
21-Oct-08	Tue	fine/moderate	0	27.4	13.5	66.5	Е		
22-Oct-08	Wed	fine/moderate	0	27	9	74	E/SE		
23-Oct-08	Thu	fine/hot/haze/light winds	0	26.7	10.5	76.2	S/SE		
24-Oct-08	Fri	cloudy/sunny intervals/moderate/fresh	0	28	11.5	68	E/NE		
25-Oct-08	Sat	cloudy/sunny intervals/moderate/fresh	Trace	27.6	15.5	68	Е		
26-Oct-08	Sun	cloudy/sunny intervals/moderate/fresh	0	27.4	11.7	70.5	E/SE		
27-Oct-08	Mon	fine/haze/moderate	Trace	27.3	10.5	74.3	E/NE		
28-Oct-08	Tue	fine/cloudy/rain/moderate/fresh	0.1	26	9.7	73.5	Е		
29-Oct-08	Wed	sunny intervals/cloudy/moderate	0	27.5	10.2	6.9	E/SE		
30-Oct-08	Thu	fine/moderate/fresh/rain	0	28	9	71.5	E/SE		
31-Oct-08	Fri	sunny intervals/cloudy/moderate/fresh	0	28.5	12.5	71.7	Е		



November 2008

				Lau F	'au Shan V	Veather Stat	ion
Date		Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Nov-08	Sat	cloudy/sunny intervals/rain/moderate/fresh	0.2	27.1	15.5	70.7	Е
2-Nov-08	Sun	cloudy/rain/moderate/fresh	2.6	27.7	13.5	77	E/SE
3-Nov-08	Mon	cloudy/rain/thunderstorm/moderate/fresh	51.2	23.7	12	91	E/NE
4-Nov-08	Tue	cloudy/rain/moderate/fresh	Trace	25.1	17	81	E/NE
5-Nov-08	Wed	cloudy/sunny intervals/rain/moderate/fresh	0.3	26.6	15	76	E/NE
6-Nov-08	Thu	sunny periods/cloudy/moderate	0	27.6	11	75.5	Е
7-Nov-08	Fri	fine/cloudy/rain/moderate	Trace	27.9	9	76.5	E/SE
8-Nov-08	Sat	cloudy/rain/fresh/strong	Trace	27.5	16.5	78	N/NW
9-Nov-08	Sun	fine/very dry/fresh/strong	Trace	Maintenance	27.5	Maintenance	N/NE
10-Nov-08	Mon	fine/very dry/fresh/strong	0	19.5	26	Maintenance	N/NE
11-Nov-08	Tue	fine/very dry/moderate/fresh	0	18.9	20.5	45	NE
12-Nov-08	Wed	fine/very dry/moderate	0	19.6	15	42	E/NE
13-Nov-08	Thu	fine/dry/moderate	Trace	21.5	11	45	Е
14-Nov-08	Fri	fine/dry/moderate	Trace	23.7	9.2	61.5	E/NE
15-Nov-08	Sat	fine/moderate	0	24.1	7.2	66	E/NE
16-Nov-08	Sun	fine/moderate	0	25.8	13.2	54	E/SE
17-Nov-08	Mon	fine/moderate	0	24.8	12	68.5	E/SE
18-Nov-08	Tue	fine/dry/haze/cloudy/fresh/strong	0	21.2	14.5	64	E/NE
19-Nov-08	Wed	fine/dry/cool/moderate/fresh	0	18.7	21.5	47	NE
20-Nov-08	Thu	fine/dry/cool/moderate/fresh	0	16.9	12.7	42.5	E/NE
21-Nov-08	Fri	fine/dry/moderate/fresh	0	18.7	8.2	52.5	E/NE
22-Nov-08	Sat	sunny periods/dry/cloudy/moderate	0	20.6	8.5	59	E/NE
23-Nov-08	Sun	fine/moderate/fresh	Trace	22.9	10	96.5	W/SW
24-Nov-08	Mon	fine/dry/moderate/fresh	0	22.6	15	95.5	N/NE
25-Nov-08	Tue	fine/dry/moderate	0	21.7	15	50	E/NE
26-Nov-08	Wed	fine/dry/moderate	0	20.8	11.2	57.5	E/NE
27-Nov-08	Thu	fine/very dry/cool/fresh/strong	0	18.3	22.7	44.5	N/NE
28-Nov-08	Fri	fine/very dry/moderate/fresh	0	15.2	33.5	27.2	NE
29-Nov-08	Sat	fine/very dry/cool/moderate	0	17.1	12	30	E/NE
30-Nov-08	Sun	fine/dry/moderate	0	16.9	9.2	38	Ν



December 2008

				Lau F	'au Shan V	Veather Stat	ion
Date		Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Dec-08	Mon	fine/dry/moderate	0	17.3	8.5	57.2	E/SE
2-Dec-08	Tue	fine/dry/light winds/moderate	0	17.4	8.5	49.5	E/SE
3-Dec-08	Wed	sunny intervals/cloudy/moderate/fresh	Trace	19.9	11.5	58.5	E/NE
4-Dec-08	Thu	sunny intervals/moderate/rain/cool	0.2	23.9	11	59	Е
5-Dec-08	Fri	fine/very dry/cool/moderate/fresh	Trace	18.2	22	52	NE
6-Dec-08	Sat	fine/very dry/moderate/fresh	0	15.4	14.5	33.5	NE
7-Dec-08	Sun	sunny periods/dry/moderate	0.4	15.6	8.7	35.2	E/SE
8-Dec-08	Mon	sunny periods/very dry/moderate	Trace	18.1	16	38.7	N/NE
9-Dec-08	Tue	fine/very dry/moderate	0	16.8	13	36	E/SE
10-Dec-08	Wed	fine/very dry/moderate	0	19.5	11	54	E/SE
11-Dec-08	Thu	fine/very dry/haze/moderate	0	18.6	8.5	44	E/SE
12-Dec-08	Fri	dry/sunny intervals/cloudy/moderate/fresh	0	22.3	10	54.5	Е
13-Dec-08	Sat	sunny periods/dry/fine/moderate/fresh	0	21.4	10	63	E/NE
14-Dec-08	Sun	fine/dry/hazy/moderate	0	18.7	4	12	E/NE
15-Dec-08	Mon	fine/dry/hazy/moderate	0	15.4	14.5	Maintenance	E/NE
16-Dec-08	Tue	fine/dry/hazy/moderate	0	16.1	9	62	Е
17-Dec-08	Wed	fine/dry/haze/moderate	0	17.2	7.2	58	E/SE
18-Dec-08	Thu	fine/dry/haze/light winds/moderate	0	17.4	9.2	53	E/SE
19-Dec-08	Fri	fine/dry/haze/moderate	0	21.2	13.5	51	Е
20-Dec-08	Sat	fine/dry/haze/moderate	0	21.9	9	57.5	E/SE
21-Dec-08	Sun	fine/dry/haze/moderate	0	21.8	8.5	56	Е
22-Dec-08	Mon	fine/dry/fresh/strong	Trace	14.9	19	59.7	E/NE
23-Dec-08	Tue	fine/dry/moderate	0	12.6	19	45	NE
24-Dec-08	Wed	cloudy/dry/sunny intervals/moderate	0	17.3	10.5	49.7	N/NE
25-Dec-08	Thu	Holiday					
26-Dec-08	Fri	Holiday					
27-Dec-08	Sat	cloudy/rain/moderate/fresh	Trace	20	9	64	E/NE
28-Dec-08	Sun	cloudy/haze/moderate/fresh	0.1	19.4	8.2	81	N/NE
29-Dec-08	Mon	cloudy/haze/moderate/fresh	2	19.5	11.7	76	N/NE
30-Dec-08	Tue	cloudy/rain/cool/moderate/fresh	5.2	15.9	12.2	76	E/NE
31-Dec-08	Wed	rain/fine/moderate/fresh	1.1	13.9	19	72.5	NE



January 2009

				Lau Fa	au Shan	Weather Sta	ation
Date		Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Jan-09	Thu	Holiday					
2-Jan-09	Fri	fine/dry/moderate	0	10.7	19	35.5	E/NE
3-Jan-09	Sat	fine/dry/cloudy/moderate/fresh	0	14.7	9	48.5	E/NE
4-Jan-09	Sun	fine/dry/moderate/fresh	Trace	18	13	50	E/NE
5-Jan-09	Mon	fine/dry/moderate/fresh	0	18	7.5	43.5	E/NE
6-Jan-09	Tue	fine/fresh/strong	0	19.3	10.5	66.7	E/SE
7-Jan-09	Wed	fine/dry/hazy/moderate/fresh	0	16.5	14.7	65	E/NE
8-Jan-09	Thu	fine/dry/moderate/fresh	0	13.8	17	57	NE
9-Jan-09	Fri	fine/dry/cold/fresh/strong	0	12.1	22.5	48.5	N/NE
10-Jan-09	Sat	fine/very dry/cold/fresh/strong	0	12.1	21.5	32.5	NE
11-Jan-09	Sun	fine/cold/very dry/moderate/fresh	0	11.6	9	Maintenance	E/SE
12-Jan-09	Mon	fine/very dry/cold/moderate/fresh	0	13.8	17.7	Maintenance	E/NE
13-Jan-09	Tue	fine/cold/very dry/moderate/fresh	0	12.5	18.7	28	E/NE
14-Jan-09	Wed	fine/dry/cold/moderate/fresh	0	11.8	16.5	25	E/NE
15-Jan-09	Thu	fine/very dry/cool/moderate	0	12.9	10.7	47.5	E/NE
16-Jan-09	Fri	fine/dry/cool/moderate	0	13.4	11.5	52.7	E/SE
17-Jan-09	Sat	fine/dry/cool/moderate	0	15.9	11	57.5	E/SE
18-Jan-09	Sun	fine/haze/moderate/fresh	0	17.7	8	63.5	W/SW
19-Jan-09	Mon	fine/haze/moderate/fresh	0	22	10	60.5	E/SE
20-Jan-09	Tue	sunny periods/cloudy/moderate/fresh	0	18.8	12.2	54.5	Е
21-Jan-09	Wed	fine/hazy/light winds/moderate	0	21.7	9	63	Е
22-Jan-09	Thu	fine/dry/hazy/moderate	0	18.5	12	66	W/SW
23-Jan-09	Fri	cloudy/dry/hazy/moderate/fresh	0	16.3	16	70	E/NE
24-Jan-09	Sat	cloudy/very dry/cold/fresh/strong			22.5	47	NE
25-Jan-09	Sun	cloudy/very dry/cold/fresh/strong	0	12.6	24	43.5	NE
26-Jan-09	Mon	Holiday					
27-Jan-09	Tue	Holiday					
28-Jan-09	Wed	Holiday					
29-Jan-09	Thu	cloudy/haze/sunny intervals/moderate	0	14.9	12	72	W/SW
30-Jan-09	Fri	fine/dry/moderate/fresh	0	16.1	14.5	75.5	W/NW
31-Jan-09	Sat	fine/cloudy/moderate/fresh	0	17.4	18.5	58.5	E/NE



February 2009

				Lau Fau Shan Weather Station							
Date	:	Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction				
1-Feb-09	Sun	sunny periods/moderate/fresh	Trace	20.4	13.5	57.5	Е				
2-Feb-09	Mon	fine/moderate	0	20.5	10.5	58.7	E/NE				
3-Feb-09	Tue	fine/haze/light winds	0	17.8	13	67.5	E/SE				
4-Feb-09	Wed	sunny periods/cloudy/moderate/fresh	0	19.9	11.7	67.2	E/SE				
5-Feb-09	Thu	fine/haze/moderate	0	18.3	13.2	68.7	E/NE				
6-Feb-09	Fri	fine/moderate/fresh	0	19.5	11.2	73	E/SE				
7-Feb-09	Sat	fine/haze/moderate	0	19.7	14.5	68	E/SE				
8-Feb-09	Sun	fine/haze/moderate	0	22	10	61	E/SE				
9-Feb-09	Mon	fine/moderate/haze	0	20.2	13.5	67.5	E/NE				
10-Feb-09	Tue	fine/hazy/moderate/fresh	0	27.3	13.5	67	E/SE				
11-Feb-09	Wed	fine/hazy/light winds	0	19.2	10.5	66	E/SE				
12-Feb-09	Thu	fine/misty/moderate	0	22.2	15.5	70.5	S/SE				
13-Feb-09	Fri	cloudy/warm/sunny intervals/moderate	0	23.9	15.5	68	S/SE				
14-Feb-09	Sat	cloudy/rain/fog/moderate	Trace	24.5	16	79.5	S/SE				
15-Feb-09	Sun	cloudy/rain/mist/strong	0.1	24.3	18	79	E/NE				
16-Feb-09	Mon	Cloudy/rain/mist/fresh/strong	0.06	23.5	14.5	73.5	Е				
17-Feb-09	Tue	sunny periods/fresh/strong	Trace	20.2	15	68.5	E/NE				
18-Feb-09	Wed	sunny periods/cloudy/moderate	Trace	21.5	10.5	63.5	E/NE				
19-Feb-09	Thu	cloudy/rain/moderate	0.3	23	13	74.5	E/NE				
20-Feb-09	Fri	cloudy/bright/moderate/fresh	Trace	20.9	19	73.5	E/NE				
21-Feb-09	Sat	sunny intervals/rain/fresh/strong	Trace	22.6	12	64.5	E/SE				
22-Feb-09	Sun	fog/sunny periods/moderate	Trace	24.6	26.5	67	S/SE				
23-Feb-09	Mon	cloudy/fog/sunny periods/moderate	0	26	15	72.5	S/SE				
24-Feb-09	Tue	cloudy/sunny periods/mist/moderate	Trace	26.7	17	71	S/SE				
25-Feb-09	Wed	sunny periods/cloudy/fog/moderate	Trace	25.5	13.5	69.2	S/SE				
26-Feb-09	Thu	cloudy/foggy/drizzle/moderate/fresh	0.3	24.8	11.7	73.5	E/SE				
27-Feb-09	Fri	cloudy/mist/moderate	Trace	24.1	15.5	72	Е				
28-Feb-09	Sat	cloudy/rain/moderate/fresh	Trace	22.6	12.7	73.7	E/NE				



<u>March 2009</u>

				Lau F	au Shar	Weather Statio	n
Date	:	Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Mar-09	Sun	cloudy/rain/moderate/fresh	0.8	18.6	8.7	74.5	E/NE
2-Mar-09	Mon	cloudy/rain/moderate/fresh	Trace	18.1	10	80.5	E/NE
3-Mar-09	Tue	cloudy/sunny intervals/moderate	Trace	18.6	9.2	67	E/NE
4-Mar-09	Wed	cloudy/rain/mist/moderate/fresh	0.4	19.7	9.5	72.5	E/NE
5-Mar-09	Thu	foggy/rain/moderate/fresh	28.5	23.3	21.5	78	E/NE
6-Mar-09	Fri	cloudy/rain/squally thunderstorm/cool/moderate/fresh	11.6	15.4	27	84.5	E/NE
7-Mar-09	Sat	cool/rain/moderate/fresh	0.2	12.9	17	85.7	N/NE
8-Mar-09	Sun	cloudy/moderate/sunny intervals	0.1	13.7	8.5	90	E/NE
9-Mar-09	Mon	sunny intervals/cloudy/moderate/warm	0.4	16.1	10.2	77.7	N/NE
10-Mar-09	Tue	cloudy/fresh/strong	0	19.2	10.5	67.7	E/SE
11-Mar-09	Wed	cloudy/sunny intervals/fresh/strong	Trace	22.4	11.5	69.5	Е
12-Mar-09	Thu	cloudy/sunny intervals/misty/fresh/strong	Trace	23.2	19.5	71	E/SE
13-Mar-09	Fri	cloudy/rain/fog/light winds	Trace	19.1	19	75.5	E/NE
14-Mar-09	Sat	fine/dry/moderate/fresh	Trace	16.4	34	58.5	N/NE
15-Mar-09	Sun	fine/moderate	0	17.4	9	52	S/SE
16-Mar-09	Mon	fine/moderate	0	19.4	7.7	72	E/NE
17-Mar-09	Tue	fine/moderate	0	22.3	12	74.5	W/SW
18-Mar-09	Wed	fine/warm/cloudy/light winds	0	23	11.5	66.5	S/SE
19-Mar-09	Thu	mist/sunny periods/cloudy/light winds	0	22	14.5	80	S/SE
20-Mar-09	Fri	fog/sunny periods/cloudy/light winds	0	24.1	8.5	84.5	W/SW
21-Mar-09	Sat	cloudy/fog/rain/moderate/fresh	0.1	25.1	12.2	78.7	S/SE
22-Mar-09	Sun	fog/light winds/rain	Trace	26.4	15.2	78	SW
23-Mar-09	Mon	foggy/rain/moderate	Trace	26.7	9.7	80.7	S/SE
24-Mar-09	Tue	cloudy/rain/moderate/fresh	27.1	20.8	18	76.5	E/NE
25-Mar-09	Wed	cloudy/rain/squally thunderstorm/moderate/fresh	27.9	18.1	13	83.2	E/NE
26-Mar-09	Thu	cloudy/rain/moderate/fresh	Trace	18.1	11.5	76.5	E/NE
27-Mar-09	Fri	cloudy/rain/mist/moderate/fresh	10.4	20.6	14	84.5	Е
28-Mar-09	Sat	cloudy/fog/rain/thunderstorm/moderate	0.6	24.4	10	86.2	E/NE
29-Mar-09	Sun	cloudy/rain/fresh/strong	2.6	19.1	11.5	84.5	E/NE
30-Mar-09	Mon	sunny intervals/cloudy/fresh/strong	Trace	18.7	12.5	78.5	E/NE
31-Mar-09	Tue	sunny periods/cloudy/iterate/fresh	Trace	20	12	75	E/NE