

**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**

**4rd Annual Construction Phase EM&A Report
 April 2009 - March 2010 (Designated Elements)**

PREPARED FOR

Leader Civil Engineering Corporation Ltd

Quality Index

Date	Reference No.		
21 December 2010	TCS00310/06/600/R1133v2		
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Version No.	Date	Remarks
1	6 December 2010	First Submission
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Your Ref.:
Our Ref.: J0511/03.08/10230/L
Date: 03 January 2011

Director of Environmental Protection
27/F Southorn Centre
130 Hennessy Road
Wan Chai, Hong Kong

By Hand

Attention: EIAO Register Office

Dear Sir,

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
4th Annual EM&A Report for Designated Element (April 2009 ~ March 2010)

We are pleased to submit 3 hard copies and 1 soft copy of the captioned EM&A report certified by the ETL and verified by the IEC for your retention.

Should you have any queries, please do not hesitate to contact the undersigned on Tel 2443 9835.

Yours faithfully
For and on behalf of
Leader Civil Engineering Corporation Limited

pp P. L. Chan

Vincent Chan
Site Agent

VC/mt

Encl.

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Executive Summary

ES.01 Leader Civil Engineering Corporation Limited (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 according to the requirements stated in the Environmental Permit (EP-220/2005) and the Project's Updated EM&A (Designated Elements) Manual.

ES.02 This is the Fourth Annual Construction Phase EM&A Summary Report (April 2009 – March 2010, Report No. A4) summarizing the environmental impact monitoring and audit (EM&A) results for the designated work areas during the period from **01 April 2009** to **31 March 2010** covered air quality, construction noise and waste management.

Breach of Action and Limit (AL) Levels

ES.03 All construction noise monitoring were complied with the Limit Level and no noise complaint (Action Level) was received in this reporting period.

ES.04 A total of two Action and eight Limit Levels exceedances were found in 24-hour TSP during the reporting period. The locations of 24-hour TSP exceedance included AM1, AM5, AM6 and AM7 of all designated Sensitive Receivers. Based on the information and investigation provided by the Contractor, the exceedances were considered not related to the project. The details of 24-hour TSP exceedance in this reporting period are listed as below.

Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Date of Exceeded	Concentration ($\mu\text{g}/\text{m}^3$)	Exceedance Level
AM1	184	260	28 Jan 09	276	limit
AM5	237	260	23 Apr 09	385	limit
	237	260	5 Oct 09	278	limit
	237	260	10 Oct 09	307	limit
	237	260	29 Oct 09	271	limit
	237	260	10 Nov 09	267	limit
	237	260	3 Dec 09	257	action
	237	260	28 Jan 09	299	limit
AM6	183	260	15 Dec 09	224	action
AM7	204	260	29 Oct 09	304	limit

Complaint Log

ES.05 No environmental complaint was received in the reporting period.

Notification of Any Summons and Successful Prosecution

ES.06 There was no environmental summon or prosecution in the reporting period.

Reporting Changes

ES.07 The format of the meteorological data presented in Annex I was changed in the reporting period.

Adequacy of EM&A

ES.08 Based on the data collected and reviewed for the period from April 2009 to March 2010, it can be confirmed that the monitoring work is effective and that it is generating data to categorically confirm the observe of impact attributable to the works.

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1. 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 fourth Annual Construction Phase EM&A Summary Report (April 2009 – March 2010, Report No. A4) summarizes the impact monitoring results and audit findings in the reporting period from April 2009 to March 2010.

PROJECT ORGANIZATION

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

CONSTRUCTION PROGRAM FOR THE REPORTING PERIOD

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

MANAGEMENT STRUCTURE

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

WORKS UNDERTAKEN DURING THE REPORTING PERIOD

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

Reporting Month	Construction Activities
April 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation and Pipe Jacking • Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • 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
May 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation, Pipe Jacking and Grouting • Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • 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
June 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation, Pipe Jacking and Grouting • Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) – Backfilling, Concreting, Excavation and Pipe laying
July 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Pipe Jacking and Grouting • Sha Po Pumping Station (P2) - Concreting • 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) – Sheet piling, Excavation, Pipe Laying, Backfilling and Concreting
August 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) - Pipe Jacking and Grouting • Sha Po Pumping Station (P2) - Concreting • 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

Reporting Month	Construction Activities
	<ul style="list-style-type: none"> • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling and Concreting
September 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation, and Sheet piling • Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
October 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Sheet piling and Excavation • Sha Po Pumping Station (P2) - Sheet piling, Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
November 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation • Sha Po Pumping Station (P2) - Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
December 2009	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation • Sha Po Pumping Station (P2) - Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
January 2010	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) –Excavation, Pipe laying, Backfilling and Concreting • Sha Po Pumping Station (P2) - Excavation , Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
February 2010	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) - Excavation, Pipe laying, Backfilling and Concreting • Sha Po Pumping Station (P2) - Excavation , Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile
March 2010	<ul style="list-style-type: none"> • Kam Tin Pumping Station (P1) – Excavation, Sheet piling, Backfilling and Concreting • Sha Po Pumping Station (P2) - Excavation, Backfilling and Concreting • Nam Sang Wai Pumping Station (P3) – Backfilling and Concreting • Nam Sang Wai Road (S4) - Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile • Pok Wai South Road (S5 and S6) –Sheet piling, Excavation, Pipe laying, Backfilling, Concreting and Extract sheet pile

2. 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 Undertaken in Reporting Period with Illustrations of Mitigation Measures

Location	Description of Construction Activities	Environmental Mitigation Measures	EM&A Ref.
P1 (Kam Tin Pumping Station)	<ul style="list-style-type: none"> Excavation Pipe laying Backfilling Concreting 	<ul style="list-style-type: none"> 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 	A1 & F6 A2 A3 A4
P2 (Sha Po Pumping Station)	<ul style="list-style-type: none"> Back filling Concreting 	<ul style="list-style-type: none"> 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
P3 (Nam Sang Wai Pumping Station)	<ul style="list-style-type: none"> Backfilling Concreting Excavation Extract sheet pile 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Sheet piling Excavation Pipe laying Backfilling Concreting Extract sheet pile 	<ul style="list-style-type: none"> Handle, store and dispose of chemical wastes as per relevant regulations Implement trip-ticket system for waste disposal Restrict open fires and provide fire fighting equipment in the works area Perform weekly inspection with ET and monthly audit with IEC Conduct noise and dust monitoring as per EM&A manual during construction Provide sedimentation tanks for treating site discharge. Recycle wheel washing water and provide sedimentation tanks for treating site discharge. 	D2, D3 & D4 D5 F9 H1 I1 & I2 - -
S5 & S6 (Pok Wai South Road)	<ul style="list-style-type: none"> Sheet piling Excavation Pipe laying Backfilling Concreting Pipe jacking Extract sheet pile 	<ul style="list-style-type: none"> Handle, store and dispose of chemical wastes as per relevant regulations Implement trip-ticket system for waste disposal Restrict open fires and provide fire fighting equipment in the works area Perform weekly inspection with ET and monthly audit with IEC Conduct noise and dust monitoring as per EM&A manual during construction Provide sedimentation tanks for treating site discharge. Recycle wheel washing water and provide sedimentation tanks for treating site discharge. 	D2, D3 & 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 Drawings showing the work areas under EP-220/2005 and the locations of the designated monitoring stations are presented in *Annex E*.

2.04 There are four designated air quality and four noise monitoring stations under the project EP. The location of monitoring stations is detailed to list in *Table 2-2*.

Table 2-2 Work Undertaken in Reporting Period with Illustrations of Mitigation Measures

Aspect	Station ID	Nature of Premise	Station Coordinates	
			Northern	Eastern
Air Quality	AM1	Site Boundary in NSW	835829	822910
	AM5	Site Boundary in FKH	835121	823515
	AM6	Site Boundary in KT	833308	823987
	AM7	Site Boundary in NSW	836171	822586

Aspect	Station ID	Nature of Premise	Station Coordinates	
			Northern	Eastern
Construction Noise	NM3	Village House in NSW	835808	822817
	NM4	Village House in NSW	835282	822811
	NM6	Village House in KT	833288	823999
	NM7	Village House in FKH	835121	823495

2.05 In this reporting period, the impact monitoring was carried out at four designated air and noise monitoring stations in accordance with the monitoring schedule.

3. SUMMARY OF EM&A REQUIREMENTS

MONITORING PARAMETERS

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

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

Table 3-1 Summary of EM&A Requirements

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

Monitoring Location	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1	>391	>184	>500	>260
AM5	>353	>237	>500	>260
AM6	>329	>183	>500	>260
AM7	>383	>204	>500	>260

Table 3-3 Action and Limit Levels for Construction Noise

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

EVENT AND ACTION PLANS

3.04 An Event Action Plan for air quality and construction noise has been implemented for this project. Details of the Event Action Plan are presented in **Annex 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. MITIGATION MEASURES AND STATUS OF PERMITS/LICENCES

- 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 In the reporting period, available of the permits, licences, and/or notifications on environmental protection for this Project summarized in *Table 4-1*.

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

Item	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 05
3	Chemical Waste Producer Registration (5213-528-L2544-08)	Registration on 27 Jan 06
4	Water Pollution Control (Discharge license No. 1U434/1)	Applied to EPD on 7 Feb 06
5	Account for Disposal of Construction Waste No. 5004959	Registration on 27 Dec 05

5. MONITORING RESULTS

MONITORING OF FREQUENCY AND STATUS

Air Quality of 24-Hour TSP Monitoring

- 5.01 The impact 24-hour TSP monitoring was conducted at the designated stations once every 6 days in compliance with the EM&A manual. For the EM&A requirement, there should be a total of 244 monitoring events in this annual period. However, 57 monitoring events were found unsuccessful, in which 54 events due to power failure incident and 3 events due to site access closure during Lunar New Year Holiday at AM5. In this reporting period, only 187 events of 24-hour monitoring were successful to be carried out. The air quality monitoring carried out at each monitoring stations in the reporting period is summarized in *Table 5-1*.

Table 5-1 Air Quality Monitoring Undertake in Reporting Period

Station	Successful	Unsuccessful
AM1	41	20
AM5	57	4
AM6	54	7
AM7	35	26

Construction Noise of Leq_{30min} Monitoring

- 5.02 The impact noise monitoring was conducted at the designated stations once every 6 days in compliance with the updated EM&A manual. For the EM&A requirement, there should be 244 noise monitoring events in this annual period. However, only 233 monitoring events were carried out the reporting period which due to holidays and bad weather. The construction noise monitoring event at each monitoring stations in the reporting period is summarized in *Table 5-2*.

Table 5-2 Construction Noise Monitoring Undertake in Reporting Period

Station	Number event of the Monitoring
NM3	58
NM4	58
NM6	59
NM7	58

SUMMARY OF MONITORING RESULTS IN THE REPORTING PERIOD

Air Quality of 24-Hour TSP Monitoring

- 5.03 In the reporting period, the result of 24-hr TSP at each monitoring station is summarized in **Table 5-3**.

Table 5-3 Summary of Air Quality Monitoring Result

Monitoring Station	Dust Concentration in Reporting period ($\mu\text{g}/\text{m}^3$)		
	Minimum	Maximum	Averaged
AM1	16 (Date: 30 Jun 09)	276 (Date: 28 Jan 10)	91
AM5	34 (Date: 17 Aug 09)	385 (Date: 29 Apr 09)	142
AM6	17 (Date: 19 May 09)	224 (Date: 15 Dec 09)	60
AM7	14 (Date: 26 Sep 09)	304 (Date: 29 Oct 09)	68

- 5.04 The graphical of air quality result is showed in **Annex H**.

Construction Noise of $\text{Leq}_{(30\text{min})}$ Monitoring

- 5.03 In the reporting period, $\text{Leq}_{(30\text{min})}$ of construction noise monitoring at each monitoring station is summarized in **Table 5-4**.

Table 5-4 Summary of Construction Noise ($\text{Leq}_{30\text{min}}$) Monitoring Result

Monitoring Station	$\text{Leq}_{30\text{min}}$ (dB(A))		
	Minimum	Maximum	Averaged
NM3	48.1 (Date: 25 Jun 09)	74.3 (Date: 30 Oct 09)	58.4
NM4	47.9 (Date: 08 May 09)	71.7 (Date: 30 Oct 09)	60.0
NM6	52.8 (Date: 06 Aug 09)	68.7 (Date: 20 Mar 10)	59.4
NM7	45.9 (Date: 19 Jun 09)	65.5 (Date: 17 Oct 09)	56.0

- 5.04 The graphical of construction noise measurement result is showed in **Annex H**.

SUMMARY OF MONITORING RESULTS BREACH CRITERIA DURING THE REPORTING PERIOD

- 5.05 All construction noise monitoring were complied with the Limit Level and no noise complaint (Action Level) was received in this reporting period.
- 5.06 However, a total of two (2) Action and eight (8) Limit Levels exceedances were record in 24-hour TSP monitoring during the reporting period. Notifications of exceedances and investigation reports were issued to relevant parties for their information and study. Based on the information and the investigation provided by the Contractor, all the exceedances were considered not related to the works under the project. The details of exceedance of 24-hour TSP monitoring in this reporting period are summarized in **Table 5-5**.

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

Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Date of Exceeded	Concentration ($\mu\text{g}/\text{m}^3$)	Exceedance Level
AM1	184	260	28 Jan 09	276	limit
AM5	237	260	23 Apr 09	385	limit
	237	260	5 Oct 09	278	limit
	237	260	10 Oct 09	307	limit
	237	260	29 Oct 09	271	limit
	237	260	10 Nov 09	267	limit
	237	260	3 Dec 09	257	action
	237	260	28 Jan 09	299	limit
AM6	183	260	15 Dec 09	224	action
AM7	204	260	29 Oct 09	304	limit

WEATHER CONDITIONS DURING THE MONITORING PERIOD

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

OTHER FACTORS INFLUENCING THE MONITORING RESULTS

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

QA/QC RESULTS AND DETECTION LIMITS

5.10 Not applicable.

6. 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

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (tons) – Disposed	19.39	Tuen Mun 38 Fill Bank
C&D Materials (Inert) (tons) – Reused	1.14	DSD Contract DC/2005/02
C&D Materials (Non-Inert) (tons)	0	NENT
Chemical Waste ('000kg)	0.5	License Collector
General Refuse ('000tons)	0.79	Refuse Collector

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

Type of Waste	Quantity	Disposal Location
Metals for Recycling ('000kg)	166.14	Recycling Company
Paper for Recycling ('000kg)	0	NA
Plastics for Recycling ('000kg)	5.25	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.

7. 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 exceedances were recorded in the reporting period. The summary of project- related exceedances were presented in *Table 7-1*.

Table 7-1 Summaries of Exceedance in the Reporting Period

Reporting Month	Work-Related Exceedance (%) for 24-hour TSP	Work-Related Exceedance (%) for Leq (30min) Daytime
April 2009	0	0
May 2009	0	0
June 2009	0	0
July 2009	0	0
August 2009	0	0

Reporting Month	Work-Related Exceedance (%) for 24-hour TSP	Work-Related Exceedance (%) for Leq (30min) Daytime
September 2009	0	0
October 2009	0	0
November 2009	0	0
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0

RECORD OF ENVIRONMENTAL COMPLAINTS RECEIVED

- 7.02 There were no environmental complaints received in the reporting period. The summary of environmental complaints was presented in *Table 7-2*.

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

Reporting Month	Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
April 2009	0	0	NA
May 2009	0	0	NA
June 2009	0	0	NA
July 2009	0	0	NA
August 2009	0	0	NA
September 2009	0	0	NA
October 2009	0	0	NA
November 2009	0	0	NA
December 2009	0	0	NA
January 2010	0	0	NA
February 2010	0	0	NA
March 2010	0	0	NA

RECORD OF NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTION

- 7.03 There were no notification of summon nor prosecution received in the reporting period. The summary of environmental summons and prosecution was presented in *Table 7-3*.

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

Reporting Month	Environmental Summons and Prosecution Statistics		
	Summons	Prosecution	Nature
April 2009	0	0	NA
May 2009	0	0	NA
June 2009	0	0	NA
July 2009	0	0	NA
August 2009	0	0	NA
September 2009	0	0	NA
October 2009	0	0	NA
November 2009	0	0	NA
December 2009	0	0	NA
January 2010	0	0	NA
February 2010	0	0	NA
March 2010	0	0	NA

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

- 7.04 No NC, complaints nor NoS were received in the reporting period.

DESCRIPTION OF FOLLOW-UP ACTIONS TAKEN

7.05 No NC, complaints nor NoS were received in the reporting period.

SUBMISSION OF PROFORMA

7.06 Representatives of the Engineer, the Contractor and ET would carry out regular weekly joint site inspection throughout the reporting period to evaluate the site environmental performance. The joint IEC site audits were conducted monthly during the reporting period. The relevant environmental site inspection checklists were presented in the previous monthly EM&A reports. In this reporting period, except no non-compliance was observed by IEC in the site audit, only minor deficiencies were found in the weekly site inspection which mostly could be rectified within the specified deadlines.

8. CONCLUSIONS FOR THE PERIOD APRIL 2009 TO MARCH 2010

8.01 Based on the data collected and reviewed for the period between April 2009 to March 2010 (as reported herein), it could 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

DATE: 11/15/50
PROJECT: [unclear]
DRAWN BY: [unclear]

PROJECT: [unclear]
DRAWN BY: [unclear]

PROJECT: [unclear]
DRAWN BY: [unclear]

PROJECT: [unclear]
DRAWN BY: [unclear]

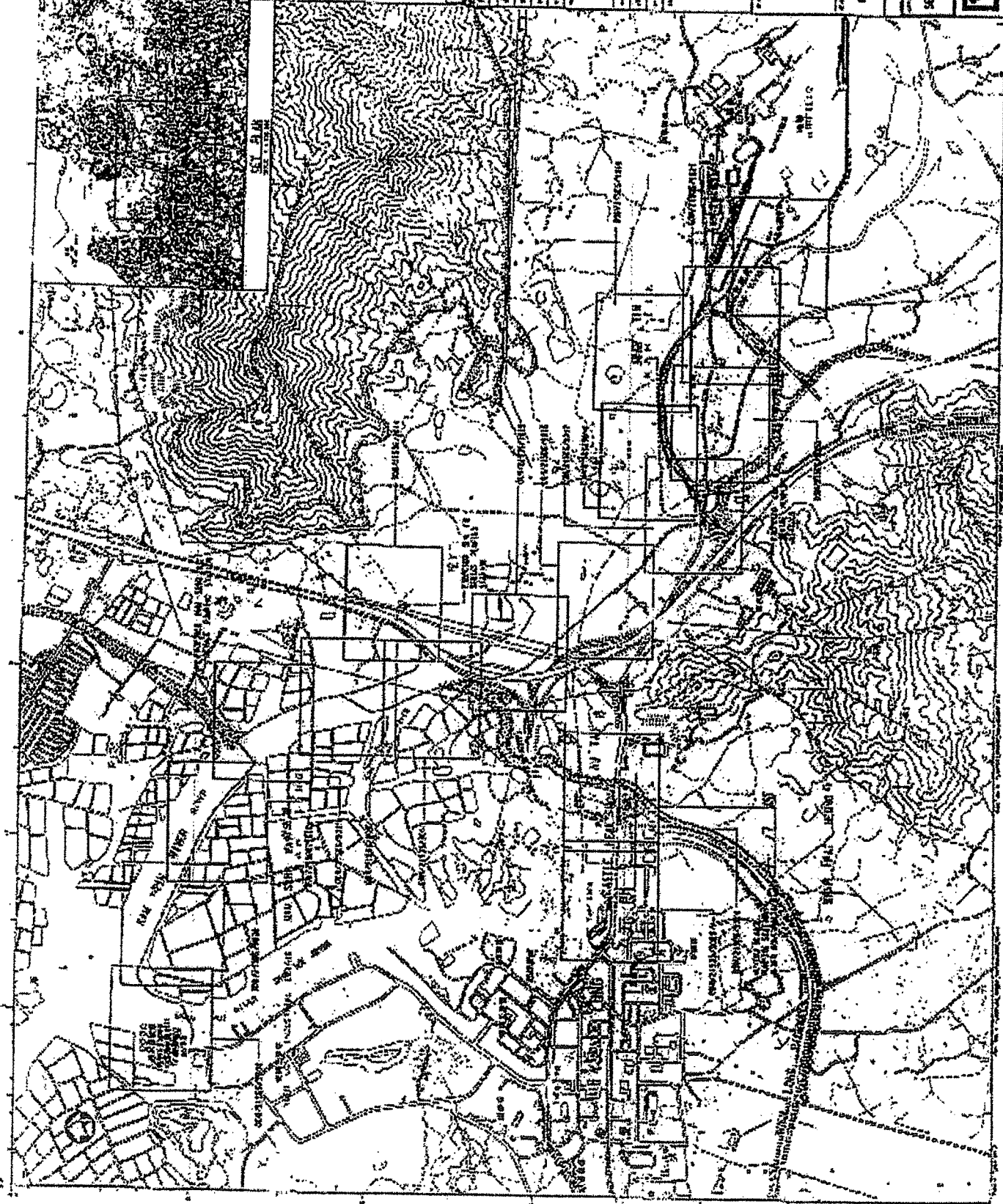
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DRAWN BY: [unclear]

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PROJECT: [unclear]
DRAWN BY: [unclear]



DATE OF WORK: [unclear]
PROJECT NO.: [unclear]
DRAWN BY: [unclear]

ENGINEERING PROJECTS DIVISION

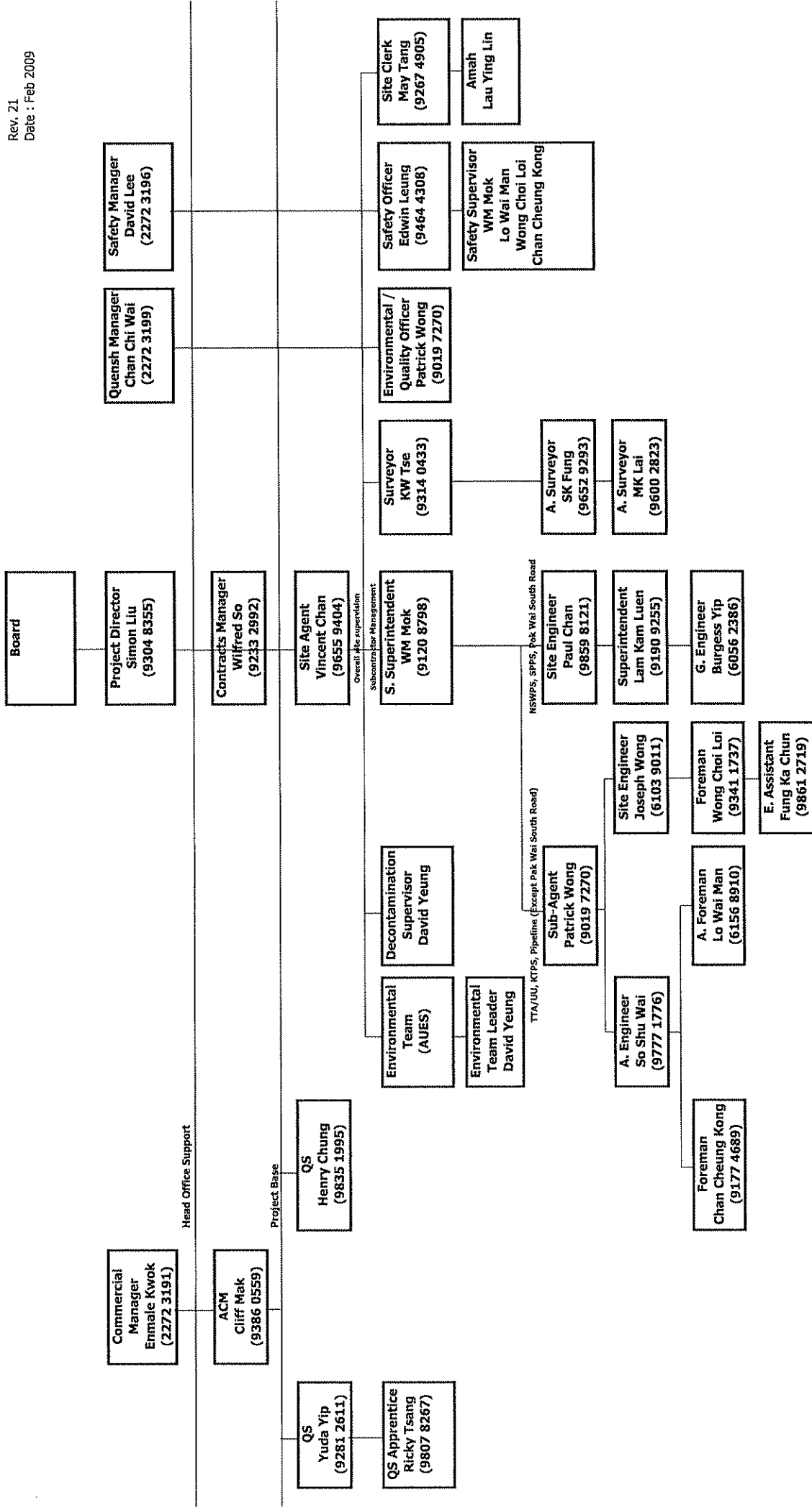


Annex B

Project Organization and Management Structure

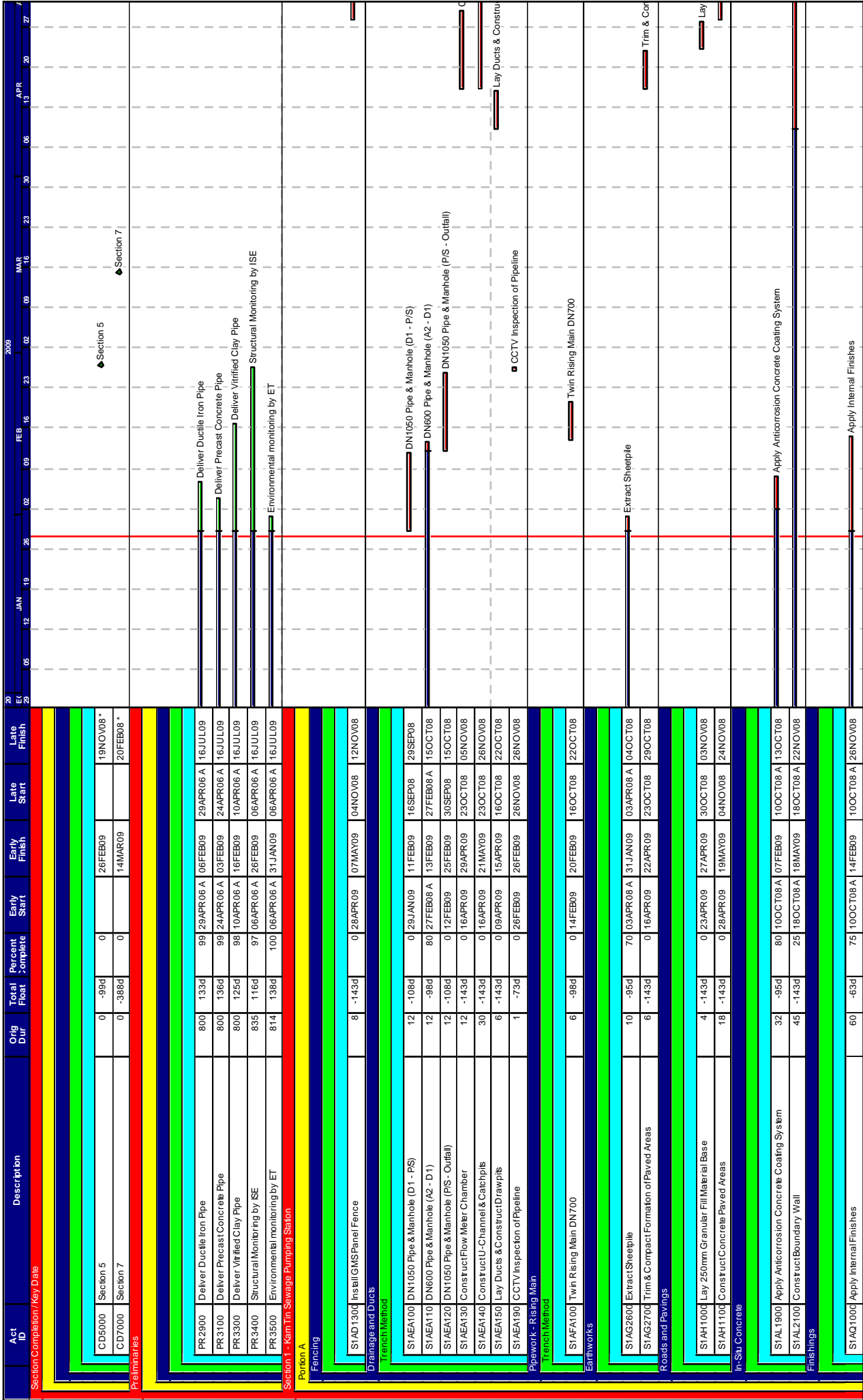
**DSD Contract No. DC/2005/02
Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin
Nam Sang Wai and Au Tau in Yuen Long
Contractor's Site Organization Chart**

Rev. 21
Date : Feb 2009



Annex C

Construction Program



Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
CD5000	Section 5	0	-99d	0	26FEB09	19NOV08*		
CD7000	Section 7	0	-388d	0	14MAR09	20FEB08*		
Preliminaries								
PR2900	Deliver Ductile Iron Pipe	800	133d	99	29APR06 A	06FEB09	29APR06 A	16JUL09
PR3100	Deliver Precast Concrete Pipe	800	136d	99	24APR06 A	03FEB09	24APR06 A	16JUL09
PR3300	Deliver Vitrified Clay Pipe	800	125d	98	10APR06 A	16FEB09	10APR06 A	16JUL09
PR3400	Structural Monitoring by ISE	835	116d	97	06APR06 A	26FEB09	06APR06 A	16JUL09
PR3500	Environmental monitoring by ET	814	138d	100	06APR06 A	31JAN09	06APR06 A	16JUL09
Section 1 - Kam Tin Sewage Pumping Station								
Portion A								
Fencing								
S1AD1300	Install GMS Panel Fence	8	-143d	0	28APR09	07MAY09	04NOV08	12NOV08
Drainage and Ducts								
Trench Method								
S1AE1100	DN1050 Pipe & Manhole (D1 - PS)	12	-108d	0	29JAN09	11FEB09	16SEP08	29SEP08
S1AE1200	DN600 Pipe & Manhole (A2 - D1)	12	-98d	80	27FEB08 A	13FEB09	27FEB08 A	15OCT08
S1AE1300	DN1050 Pipe & Manhole (PS - Outfall)	12	-108d	0	12FEB09	25FEB09	30SEP08	15OCT08
S1AE1400	Construct U-Channel & Catchpits	12	-143d	0	16APR09	29APR09	23OCT08	05NOV08
S1AE1500	Lay Ducts & Construct Drawpits	30	-143d	0	16APR09	21MAY09	23OCT08	26NOV08
S1AE1900	CCTV Inspection of Pipeline	1	-73d	0	09APR09	15APR09	16OCT08	22OCT08
Pipework - Rising Main								
Trench Method								
S1AF1000	Twin Rising Main DN700	6	-98d	0	14FEB09	20FEB09	16OCT08	22OCT08
Earthworks								
S1AG2600	Extract Sheeppile	10	-95d	70	03APR08 A	31JAN09	03APR08 A	04OCT08
S1AG2700	Trim & Compact Formation of Paved Areas	6	-143d	0	16APR09	22APR09	23OCT08	29OCT08
Roads and Pavings								
S1AH1000	Lay 250mm Granular Fill Material Base	4	-143d	0	23APR09	27APR09	30OCT08	03NOV08
S1AH1100	Construct Concrete Paved Areas	18	-143d	0	28APR09	19MAY09	04NOV08	24NOV08
In-Situ Concrete								
S1AL1900	Apply Anticorrosion Concrete Coating System	32	-95d	80	10OCT08 A	07FEB09	10OCT08 A	13OCT08
S1AL2100	Construct Boundary Wall	45	-143d	25	18OCT08 A	19MAY09	18OCT08 A	22NOV08
Finishings								
S1AQ1000	Apply Internal Finishes	60	-63d	75	10OCT08 A	14FEB09	10OCT08 A	26NOV08

Start date 19DEC05
 Finish date 13NOV10
 Data date 28JAN09
 Page number 1A
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Leader Civil Engineering Corp. Ltd.
 DSD Contract No. DC/2005/02
 3-Month Rolling Programme - 3M01 at 28 January 2009

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S1AQ105d	Apply Roof Finishes	10	-61d	0	02FEB09	12FEB09	15NOV08	26NOV08	
S1AQ110d	Apply External Finishes	30		100	23OCT08 A	23JAN09 A	23OCT08 A	23JAN09 A	
Testing									
S1AS1100	Watertightness of Structure - Compartments	72		100	10NOV08 A	20JAN09 A	10NOV08 A	20JAN09 A	
Miscellaneous									
S1AT1000	Install Doors, Louvres & Folding doors	30	-47d	95	14OCT08 A	02FEB09	14OCT08 A	02DEC08	
S1AT1100	Sundry Metalwork	12	-44d	60	15DEC08 A	06FEB09	15DEC08 A	10DEC08	
S1AT1200	Install Glass Block	12	-44d	0	07FEB09	20FEB09	11DEC08	24DEC08	
S1AT1300	Plumbing Work	24	-95d	40	14JAN09 A	24FEB09	14JAN09 A	29OCT08	
S1AT1400	Electrical and Mechanical Installations	24	-95d	0	25FEB09	24MAR09	30OCT08	26NOV08	
S1AT1500	Install FRP Water Storage Tanks	12	-93d	0	09FEB09	21FEB09	16OCT08	29OCT08	
S1AT1600	Install FRP Cat Ladders & Handrails	24	-93d	0	23FEB09	21MAR09	30OCT08	26NOV08	
Section 2 - Sha Po Sewage Pumping Station									
Potion B									
Drainage and Ducts									
Trench Method									
S2BEA100	DN900 Pipe & Manhole (F1 - P/S)	12	-156d	0	24APR09	09MAY09	16OCT08	29OCT08	
In-Situ Concrete									
S2BL1800	Apply Anticorrosion Concrete Coating System	24	-111d	95	10DEC08 A	29JAN09	10DEC08 A	11SEP08	
S2BL2000	Construct Boundary Wall	47	-120d	5	12JAN09 A	21MAR09	12JAN09 A	25OCT08	
Finishings									
S2BQ1000	Apply Internal Finishes	50	-111d	50	09DEC08 A	30MAR09	09DEC08 A	13NOV08	
S2BQ105d	Apply Roof Finishes	10	-69d	0	29JAN09	09FEB09	03NOV08	13NOV08	
S2BQ1100	Apply External Finishes	25	-27d	25	15JAN09 A	22APR09	15JAN09 A	25MAY09	
Testing									
S2BS1000	Pressure Testing to Twin Rising Main DN500	12	-71d	0	29JAN09	11FEB09	31OCT08	13NOV08	
S2BS1100	Watertightness of Structure - Compartments	66	-111d	45	14JAN09 A	11MAR09	14JAN09 A	25OCT08	
Miscellaneous									
S2BT1000	Install Doors, Louvres & Folding doors	30	-82d	95	22DEC08 A	30JAN09	22DEC08 A	20OCT08	
S2BT1100	Sundry Metalwork	12	-82d	95	27DEC08 A	30JAN09	27DEC08 A	20OCT08	
S2BT1200	Install Glass Block	12	-82d	0	31JAN09	13FEB09	21OCT08	03NOV08	
S2BT1300	Plumbing Work	24	-103d	40	22JAN09 A	14FEB09	22JAN09 A	10OCT08	
S2BT1400	Electrical and Mechanical Installations	24	-103d	0	10FEB09	09MAR09	04OCT08	01NOV08	
S2BT1500	Install FRP Water Storage Tanks	12	-106d	0	30JAN09	12FEB09	19SEP08	03OCT08	
S2BT1600	Install FRP Cat Ladders & Handrails	24	-111d	0	19FEB09	19MAR09	04OCT08	01NOV08	
Additional Works / Disruption									
Revised BW all Details at SPPS (Claim No. 030)									
S2BV2000	Drive Sheepiles	10	-485d	0	29JAN09	09FEB09	11JUN07	22JUN07	
S2BV2010	Excavate to 1st Layer of Walling & Strut	6	-485d	0	10FEB09	16FEB09	23JUN07	29JUN07	
S2BV2020	Install 1st Layer of Walling & Strut	6	-485d	0	17FEB09	23FEB09	30JUN07	07JUL07	

Start date 19DEC05

Finish date 13NOV10

Data date 26JAN09

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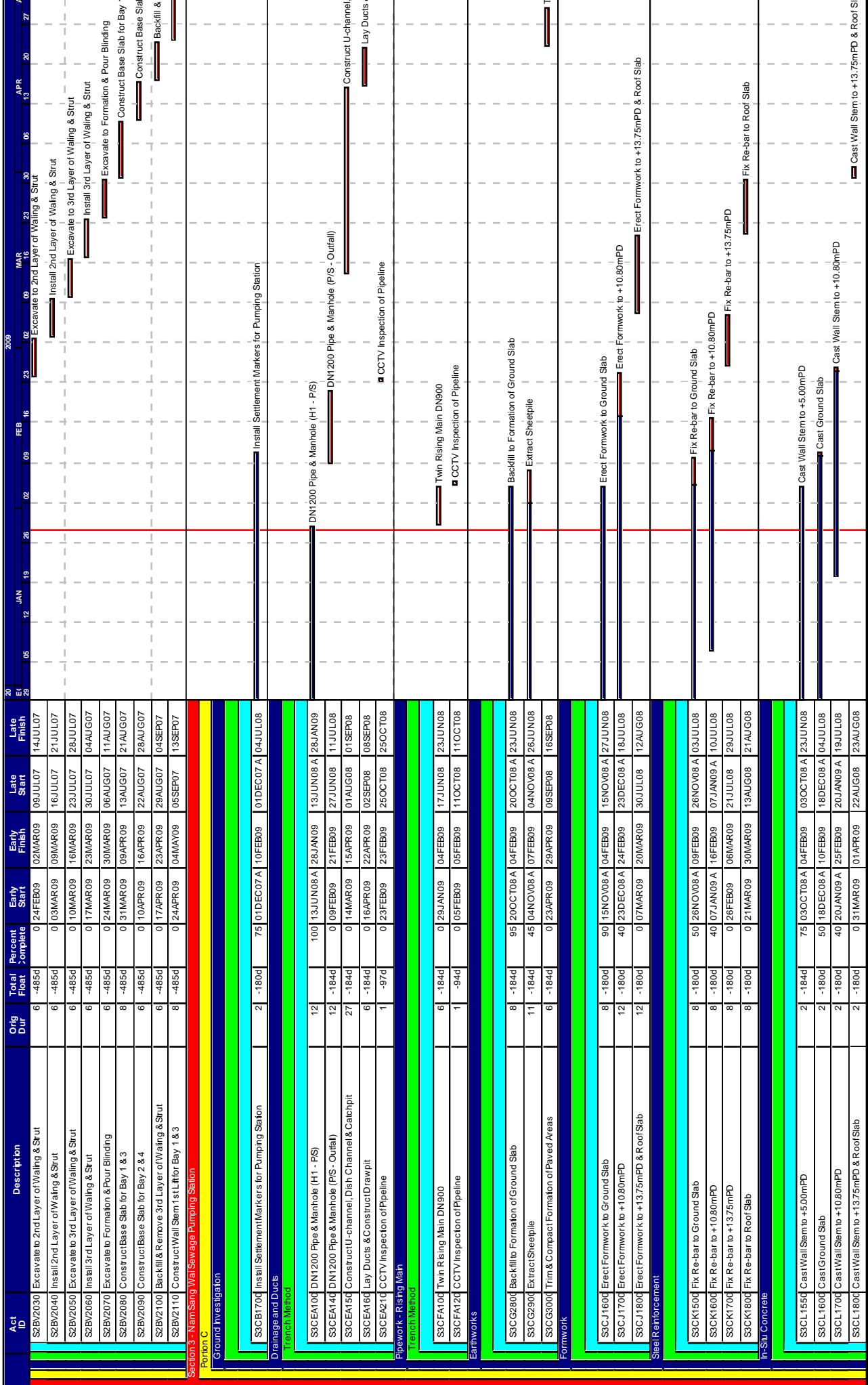
Leader Civil Engineering Corp. Ltd.

DSD Contract No. DC/2005/02

3-Month Rolling Programme - 3M01 at 28 January 2009

Legend:

- █ Early bar
- █ Progress bar
- █ Critical bar
- █ Summary bar
- ◆ Start milestone point
- ◇ Finish milestone point



Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S2BV2030	Excavate to 2nd Layer of Waling & Strut	6	-485d	0	24FEB09	02MAR09	09JUL07	14JUL07
S2BV2040	Install 2nd Layer of Waling & Strut	6	-485d	0	03MAR09	09MAR09	16JUL07	21JUL07
S2BV2050	Excavate to 3rd Layer of Waling & Strut	6	-485d	0	10MAR09	16MAR09	23JUL07	28JUL07
S2BV2060	Install 3rd Layer of Waling & Strut	6	-485d	0	17MAR09	23MAR09	30JUL07	04AUG07
S2BV2070	Excavate to Formation & Pour Blinding	6	-485d	0	24MAR09	30MAR09	06AUG07	11AUG07
S2BV2080	Construct Base Slab for Bay 1 & 3	8	-485d	0	31MAR09	09APR09	13AUG07	21AUG07
S2BV2090	Construct Base Slab for Bay 2 & 4	6	-485d	0	10APR09	16APR09	22AUG07	28AUG07
S2BV2100	Backfill & Remove 3rd Layer of Waling & Strut	6	-485d	0	17APR09	23APR09	29AUG07	04SEP07
S2BV2110	Construct Wall Stem 1s Lift for Bay 1 & 3	8	-485d	0	24APR09	04MAY09	05SEP07	13SEP07

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CB1700	Install Settlement Markers for Pumping Station	2	-180d	75	01DEC07 A	10FEB09	01DEC07 A	04JUL08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CEA100	DN1200 Pipe & Manhole (H1 - PS)	12	-184d	100	13JUN08 A	28JAN09	13JUN08 A	28JAN09
S3CEA140	DN1200 Pipe & Manhole (PS - Outfall)	12	-184d	0	09FEB09	21FEB09	27JUN08	11JUL08
S3CEA150	Construct U-channel, Dish Channel & Catchpit	27	-184d	0	14MAR09	15APR09	01AUG08	01SEP08
S3CEA160	Lay Ducts & Construct Drawpit	6	-184d	0	16APR09	22APR09	02SEP08	08SEP08
S3CEA210	CCTV Inspection of Pipeline	1	-97d	0	23FEB09	23FEB09	25OCT08	25OCT08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CFA100	Twin Rising Main DN900	6	-184d	0	29JAN09	04FEB09	17JUN08	23JUN08
S3CFA120	CCTV Inspection of Pipeline	1	-94d	0	05FEB09	05FEB09	11OCT08	11OCT08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CG2800	Backfill to Formation of Ground Slab	8	-184d	95	20OCT08 A	04FEB09	20OCT08 A	23JUN08
S3CG2900	Extract Sheepile	11	-184d	45	04NOV08 A	07FEB09	04NOV08 A	26JUN08
S3CG3000	Trim & Compact Formation of Paved Areas	6	-184d	0	23APR09	29APR09	08SEP08	16SEP08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CJ1600	Erect Formwork to Ground Slab	8	-180d	90	15NOV08 A	04FEB09	15NOV08 A	27JUN08
S3CJ1700	Erect Formwork to +10.80mPD	12	-180d	40	23DEC08 A	24FEB09	23DEC08 A	18JUL08
S3CJ1800	Erect Formwork to +13.75mPD & Roof Slab	12	-180d	0	07MAR09	20MAR09	30JUL08	12AUG08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CK1500	Fix Re-bar to Ground Slab	8	-180d	50	26NOV08 A	09FEB09	26NOV08 A	03JUL08
S3CK1600	Fix Re-bar to +10.80mPD	8	-180d	40	07JAN09 A	19FEB09	07JAN09 A	10JUL08
S3CK1700	Fix Re-bar to +13.75mPD	8	-180d	0	26FEB09	06MAR09	21JUL08	29JUL08
S3CK1800	Fix Re-bar to Roof Slab	8	-180d	0	21MAR09	30MAR09	13AUG08	21AUG08

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
S3CL1550	Cast Wall Stem to +5.00mPD	2	-184d	75	03OCT08 A	04FEB09	03OCT08 A	23JUN08
S3CL1600	Cast Ground Slab	2	-180d	50	18DEC08 A	10FEB09	18DEC08 A	04JUL08
S3CL1700	Cast Wall Stem to +10.80mPD	2	-180d	40	20JAN09 A	25FEB09	20JAN09 A	19JUL08
S3CL1800	Cast Wall Stem to +13.75mPD & Roof Slab	2	-180d	0	31MAR09	01APR09	22AUG08	23AUG08

Start date 19DEC05
 Finish date 13NOV10
 Data date 26JAN09
 Page number 3A
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Leader Civil Engineering Corp. Ltd.
 DSD Contract No. DC/2005/02
 3-Month Rolling Programme - 3M01 at 28 January 2009

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

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S3CL1900	Apply Anticorrosion Concrete Coating System	24	-176d	0	04MAR09	31MAR09	31JUL08	27AUG08	
S3CL2100	Construct Boundary Wall	17	-184d	0	23FEB09	13MAR09	12JUL08	31JUL08	
Geotechnical works									
S3CP1000	Monitoring of Instruments	787	-94d	98	06APR06 A	19FEB09	06APR06 A	25OCT08	
Finishings									
S3CQ1000	Apply Internal Finishes	45	-180d	0	10APR09	03JUN09	01SEP08	25OCT08	
S3CQ1050	Apply Roof Finishes	10	-139d	0	02APR09	14APR09	15OCT08	25OCT08	
Testing									
S3CS1000	Pressure Testing to Twin Rising Main DN900	12	-94d	0	06FEB09	19FEB09	13OCT08	25OCT08	
S3CS1100	Watertightness of Structure - Grid D-E	40	-176d	0	18MAR09	05MAY09	14AUG08	30SEP08	
S3CS1210	Watertightness of Structure - Grid F-G	40	-176d	0	18MAR09	05MAY09	14AUG08	30SEP08	
Miscellaneous									
S3CT1000	Install Doors, Louvres & Folding doors	30	-180d	0	17APR09	22MAY09	08SEP08	15OCT08	
S3CT1100	Sundry Metalwork	12	8d	0	17APR09	30APR09	27APR09	11MAY09	
S3CT1300	Plumbing Work	24	8d	0	17APR09	15MAY09	27APR09	25MAY09	
S3CT1400	Electrical and Mechanical Installations	24	8d	0	17APR09	15MAY09	27APR09	25MAY09	
S3CT1500	Install FRP Water Storage Tanks	12	8d	0	17APR09	30APR09	27APR09	11MAY09	
Section 4 - Sewers & RM in Portion D, F, G, H, J									
Portion D									
Drainage and Ducts									
Trench Method									
S4DEA100	DN1200 Pipe & Manhole (G1-Treatment Plant)	60	-6d	40	31MAR08 A	01JUN09	31MAR08 A	23MAY09	
Pipework - Rising Main									
Trench Method									
S4DFA110	Twin Rising Main DN900 (CHA1850 - WOIC1)	107	-15d	55	15DEC06 A	12JUN09	15DEC06 A	25MAY09	
S4DFA120	Twin Rising Main DN900 (CHA2095 - CHA2215)	148	-15d	55	20DEC07 A	17APR09	20DEC07 A	30MAR09	
S4DFA130	CCTV Inspection of Pipeline	5	-1d	20	16AUG08 A	12MAY09	16AUG08 A	11MAY09	
Trenchless Method									
S4DFB110	Construct WOIC1	30	22d	0	29JAN09	04MAR09	24FEB09	30MAR09	
S4DFB120	CCTV Inspection of Pipeline	3	53d	0	05MAR09	07MAR09	08MAY09	11MAY09	
Geotechnical works									
S4DPI1000	Monitoring of Instruments	602	61d	94	02NOV06 A	12MAR09	02NOV06 A	25MAY09	
Portion F									
Ground Investigation									
S4FBI1500	Install Settlement Markers	698	63d	95	27APR06 A	10MAR09	27APR06 A	25MAY09	
Drainage and Ducts									
Trench Method									
S4FEA100	DN900 Pipe & Manhole (H8 - H7) 1st Stage	53	-77d	0	31MAR09	03JUN09	24DEC08	02MAR09	
Trenchless Method									
S4FEB104	Construct Manhole H2 & H1	27	84d	65	27SEP08 A	07FEB09	27SEP08 A	19MAY09	

Start date: 19DEC05
 Finish date: 13NOV10
 Data date: 26JAN09
 Page number: 4A

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

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

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S4FFB160	CCTV Inspection of Pipeline	5	84d	0	09FEB09	13FEB09	20MAY09	25MAY09	
Pipework - Rising Main									
Trenchless Method									
S4FFA130	Twin Rising Main DN700 (WOIC5 - ChC2000)	80	22d	30	05JUN08 A	09APR09	05JUN08 A	30APR09	
S4FFA200	Twin Rising Main DN700 (ChC2300 - ChC2350)	45	24d	20	07JAN09 A	01APR09	07JAN09 A	30APR09	
S4FFA220	Twin Rising Main DN700 (ChC2400 - WOIC4)	93	24d	80	13SEP08 A	18FEB09	13SEP08 A	18MAR09	
S4FFA230	Twin Rising Main DN700 (ChC2639 - H7)	52	-77d	0	29JAN09	30MAR09	24OCT08	23DEC08	
S4FFA240	Construct AVIC5	30	33d	10	22JAN09 A	21MAR09	22JAN09 A	30APR09	
S4FFA260	CCTV Inspection of Pipeline	8	22d	0	06APR09	14APR09	02MAY09	11MAY09	
Trenchless Method									
S4FFB120	Construct WOIC4	30	36d	80	10JUN08 A	04FEB09	10JUN08 A	18MAR09	
S4FFB130	Construct WOIC5	30	75d	90	28JUN08 A	31JAN09	28JUN08 A	30APR09	
S4FFB140	CCTV Inspection of Pipeline	5	81d	10	16AUG08 A	03FEB09	16AUG08 A	11MAY09	
Geotechnical works									
S4FFP1000	Monitoring of Instruments	772	75d	97	05JUN06 A	24FEB09	05JUN06 A	25MAY09	
Portion G									
Pipework - Rising Main									
Trenchless Method									
S4GFA100	Twin Rising Main DN500 (AVIC4 - ChB250)	98	60d	90	26JUN08 A	21FEB09	26JUN08 A	05MAY09	
S4GFA130	Twin Rising Main DN500 (ChB450 - ChB550)	84	9d	50	16JAN08 A	18MAR09	16JAN08 A	28MAR09	
S4GFA170	Construct WOIC3	30	9d	0	19MAR09	23APR09	30MAR09	05MAY09	
S4GFA190	CCTV Inspection of Pipeline	9	9d	50	06MAR07 A	29APR09	06MAR07 A	11MAY09	
Trenchless Method									
S4GFB110	Construct AVIC4	30	60d	30	09JUL08 A	21FEB09	09JUL08 A	05MAY09	
S4GFB120	CCTV Inspection of Pipeline	2	63d	0	23FEB09	24FEB09	09MAY09	11MAY09	
Geotechnical works									
S4GPI000	Monitoring of Instruments	720	83d	98	22APR06 A	14FEB09	22APR06 A	25MAY09	
Portion H									
Ground Investigation									
S4HBI000	Install Settlement Markers	727	-35d	82	26MAY06 A	07JUL09	26MAY06 A	25MAY09	
Drainage and Ducts									
Trenchless Method									
S4HEA100	DN500 Pipe & Manhole (A3 - A6)	90	-105d	40	03OCT08 A	01APR09	03OCT08 A	22NOV08	
S4HEA190	DN300 Pipe & Manhole (B4 - B6)	67	-179d	0	21MAR09	10JUN09	14AUG08	03NOV08	
S4HEA200	DN300 Pipe & Manhole (B6 - B8)	44	-179d	0	29JAN09	20MAR09	23JUN08	13AUG08	
Trenchless Method									
S4HEB100	Jacking DN600 (A2 - A3)	57	-105d	0	29JAN09	06APR09	19SEP08	26NOV08	
S4HEB104	Construct Manholes A2 & A3	27	-105d	0	07APR09	08MAY09	27NOV08	30DEC08	
Pipework - Rising Main									
Trenchless Method									
S4HFA100	Twin Rising Main DN700 (ChC63 - ChC170)	45	-7d	40	08OCT08 A	05MAY09	08OCT08 A	25APR09	
S4HFA180	Twin Rising Main DN700 (ChC850 - ChC950)	125	-95d	0	21MAR09	19AUG09	24NOV08	25APR09	

Start date: 19DEC05
 Finish date: 13NOV10
 Data date: 26JAN09
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Leader Civil Engineering Corp. Ltd.
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Legend:

- █ Early bar
- █ Progress bar
- █ Critical bar
- █ Summary bar
- ◆ Start milestone point
- ◇ Finish milestone point

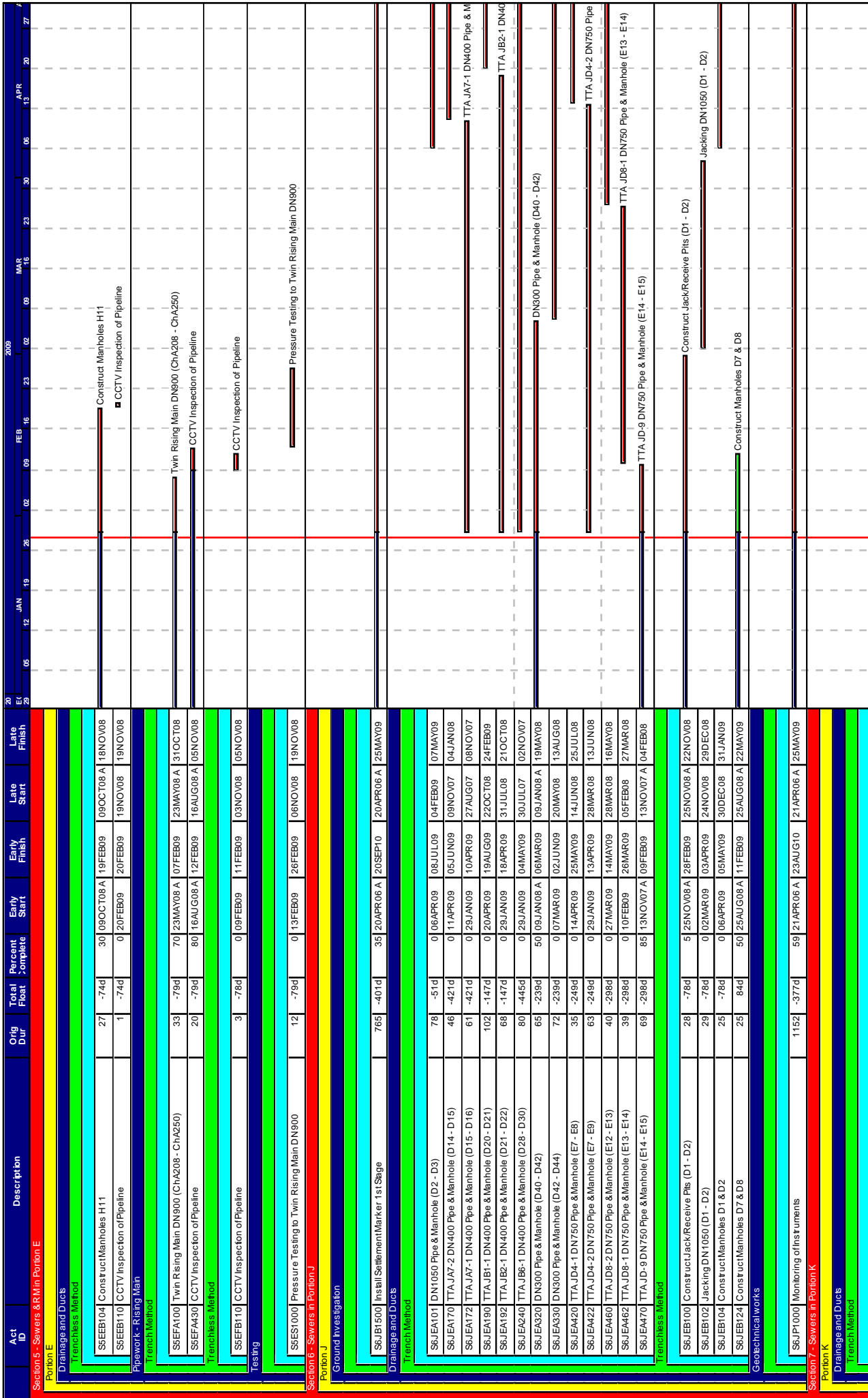
Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S4HFA199	Twin Rising Main DN700 (ChC950 - ChC1000)	44	-95d	0	29/JAN/09	20/MAR/09	02/OCT/08	22/NOV/08	
S4HF222d	Twin Rising Main DN700 (ChC1250 - WOIC7)	104	-32d	40	20/AUG/08	04/JUN/09	20/AUG/08	25/APR/09	
S4HF244d	Twin Rising Main DN700 (ChC1450 - ChC1550)	110	-160d	0	29/JAN/09	09/JUN/09	16/JUL/08	24/NOV/08	
S4HF255d	Twin Rising Main DN700 (ChC1600 - ChC1618)	44	-106d	100	10/JUN/08	29/DEC/08	10/JUN/08	29/DEC/08	
S4HF255d	Twin Rising Main DN700 (WOIC6 - ChC1664)	47	-106d	80	12/JUN/08	07/FEB/09	12/JUN/08	27/SEP/08	
S4HF261d	Twin Rising Main DN700 (ChC1715 - ChC1750)	47	-106d	0	09/FEB/09	03/APR/09	29/SEP/08	24/NOV/08	
S4HF270d	Twin Rising Main DN700 (ChC1750 - AVIC6)	124	-106d	0	06/APR/09	31/AUG/09	25/NOV/08	25/APR/09	
S4HFA300	Construct WOIC9	20	10d	0	21/MAR/09	14/APR/09	02/APR/09	25/APR/09	
S4HFA310	Construct WOIC8	20	10d	0	21/MAR/09	14/APR/09	02/APR/09	25/APR/09	
S4HFA350	Construct AVIC6	30	44d	0	29/JAN/09	04/MAR/09	21/MAR/09	25/APR/09	
Trenchless Method									
S4HFB100	Construct Jack/Receive Pits (ChC42 - ChC63)	57		100	24/OCT/08	05/JAN/09	24/OCT/08	05/JAN/09	
S4HFB102	Jacking Twin DN700 (ChC42 - ChC63)	65	-143d	0	06/JAN/09	15/APR/09	06/JAN/09	22/OCT/08	
S4HFB112	Jacking Twin DN700 (AIC9 - WOIC7)	69		100	05/DEC/08	20/JAN/09	05/DEC/08	20/JAN/09	
S4HFB120	Construct WOIC7	30	-74d	0	06/APR/09	11/MAY/09	05/JAN/09	11/FEB/09	
S4HFB130	CCTV Inspection of Pipeline	2	19d	0	16/APR/09	17/APR/09	09/MAY/09	11/MAY/09	
Geotechnical works									
S4HP1000	Monitoring of Instruments	947	-94d	80	26/MAY/06	14/SEP/09	26/MAY/06	25/MAY/09	
Additional Works / Disruption									
Re-alignment ChC420 & ChC607 (Claim No. 118)									
S4HV1310	Twin Rising Main DN700 (ChC610 - ChC680)	40		100	23/JUL/08	15/JAN/09	23/JUL/08	15/JAN/09	
S4HV1340	Twin Rising Main DN700 (ChC515 - ChC490)	20		100	06/OCT/08	21/JAN/09	06/OCT/08	21/JAN/09	
S4HV1350	Twin Rising Main DN700 (ChC490 - ChC460)	20		100	06/OCT/08	21/JAN/09	06/OCT/08	21/JAN/09	
S4HV1360	Twin Rising Main DN700 (ChC460 - ChC436)	20		100	10/OCT/08	28/JAN/09	10/OCT/08	28/JAN/09	
S4HV1380	Construct WOIC9	20		100	29/AUG/08	15/JAN/09	29/AUG/08	15/JAN/09	
S4HV1410	DN500 Pipe & Manhole (A14 - A15)	30	53d	30	24/OCT/08	21/FEB/09	24/OCT/08	25/APR/09	
Portion I									
Ground Investigation									
S4IB1300	Install Settlement Markers	736	-60d	79	26/JUN/06	05/AUG/09	26/JUN/06	25/MAY/09	
Drainage and Ducts									
Trench Method									
S4IEA1000	DN500 Pipe & Manhole (C2 - C4)	58	-65d	35	24/DEC/08	27/APR/09	24/DEC/08	09/FEB/09	
S4IEA1020	DN500 Pipe & Manhole (C4 - C6)	76	-65d	50	27/AUG/08	13/MAR/09	27/AUG/08	20/DEC/08	
S4IEA1200	DN400 Pipe & Manhole (C7a - C7)	36	62d	0	29/JAN/09	11/MAR/09	13/APR/09	25/MAY/09	
S4IEA1330	DN500 Pipe & Manhole (C11 - C12)	35	-65d	0	28/APR/09	09/JUN/09	10/FEB/09	21/MAR/09	
S4IEA1920	DN500 Pipe & Manhole (C22 - C23)	65	58d	50	28/NOV/08	06/MAR/09	28/NOV/08	15/MAY/09	
S4IEA2320	DN500 Pipe & Manhole (C31 - C32)	53	-164d	0	29/JAN/09	31/MAR/09	11/JUL/08	10/SEP/08	
S4IEA2400	DN500 Pipe & Manhole (C32 - C34)	70	-164d	0	01/APR/09	24/JUN/09	11/SEP/08	04/DEC/08	
Trenchless Method									
S4IEB1000	Construct Jack/Receive Pits (C1 - C2)	30	-52d	0	29/JAN/09	04/MAR/09	22/NOV/08	29/DEC/08	
S4IEB1020	Jacking DN500 (C1 - C2)	78	-52d	0	05/MAR/09	06/JUN/09	30/DEC/08	03/APR/09	
Geotechnical works									
S4IF1000	Monitoring of Instruments	827	-76d	79	28/JUN/06	24/AUG/09	28/JUN/06	25/MAY/09	

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Legend:

- █ Early bar
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- █ Critical bar
- █ Summary bar
- ◆ Start milestone point
- ◇ Finish milestone point

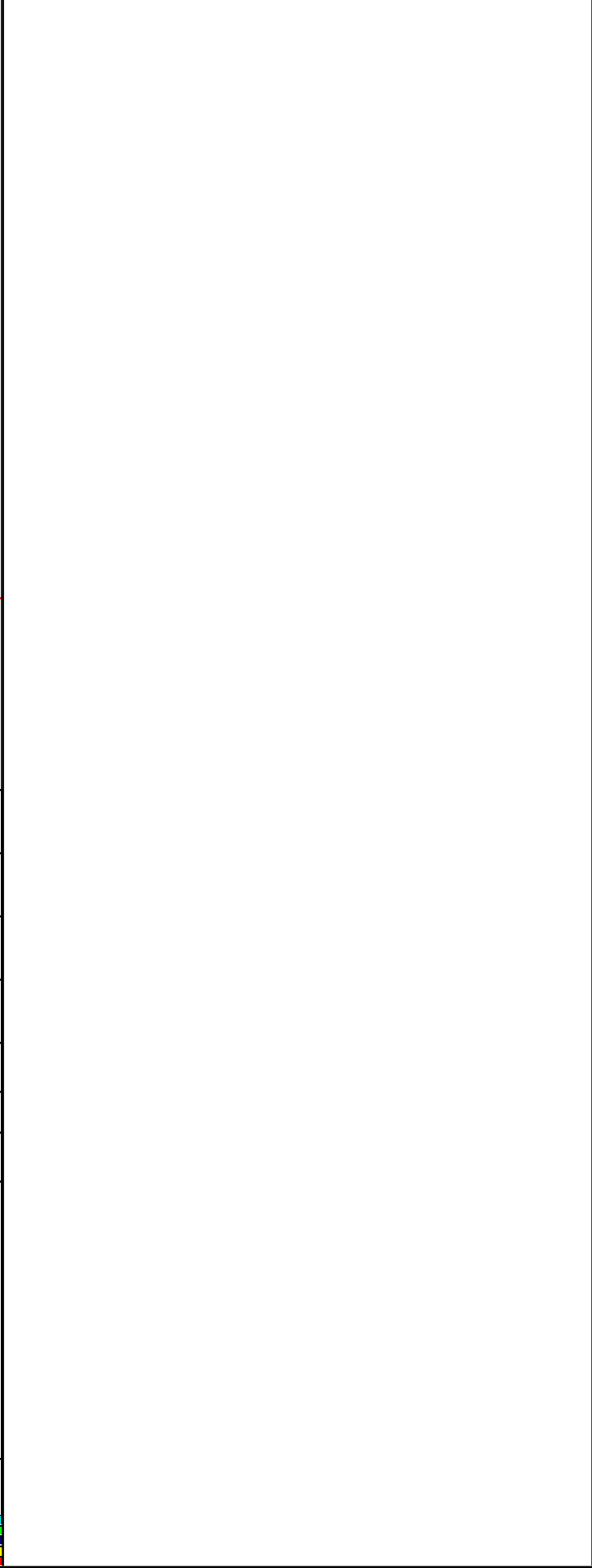


Start date: 19DEC05
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Legend:
 Early bar
 Progress bar
 Critical bar
 Summary bar
 Start milestone point
 Finish milestone point

Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S7KEA110	DN600 Pipe & Manhole (M2 - M3) Stage 2	35	-316d	0	29/JAN/09	10/MAR/09	03/JAN/08	15/FEB/08	
S7KEA161	DN900 Pipe & Manhole (M11 - M12) Stage 2	54	-286d	90	20/AUG/08 A	03/FEB/09	20/AUG/08 A	15/FEB/08	
S7KEA210	CCTV Inspection of Pipeline	5	-316d	30	16/AUG/08 A	14/MAR/09	16/AUG/08 A	20/FEB/08	
Trenchless Method									
S7KEB130	CCTV Inspection of Pipeline	2	-278d	30	16/AUG/08 A	29/JAN/09	16/AUG/08 A	20/FEB/08	
Roads and Pavings									
S7KH1000	Concrete Footpath from M14 to M16a	18	-282d	70	25/OCT/08 A	03/FEB/09	25/OCT/08 A	20/FEB/08	
Section 8 - Preservation and Protection of Trees									
All Portions									
Landscape Softworks and Establishment Works									
S8QR1100	Preservation & Protection of Preserved Trees	744	-21d	84	29/JUL/06 A	19/JUN/09	29/JUL/06 A	25/MAY/09	
Decontamination Works									
Portion H									
Decontamination									
S8HU1000	Decontamination Works	48	60d	0	23/FEB/09	20/APR/09	06/MAY/09	02/JUL/09	



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Leader Civil Engineering Corp. Ltd. DSD Contract No. DC/2005/02 3-Month Rolling Programme - 3M01 at 28 January 2009	
e.Primavera Systems, Inc.	

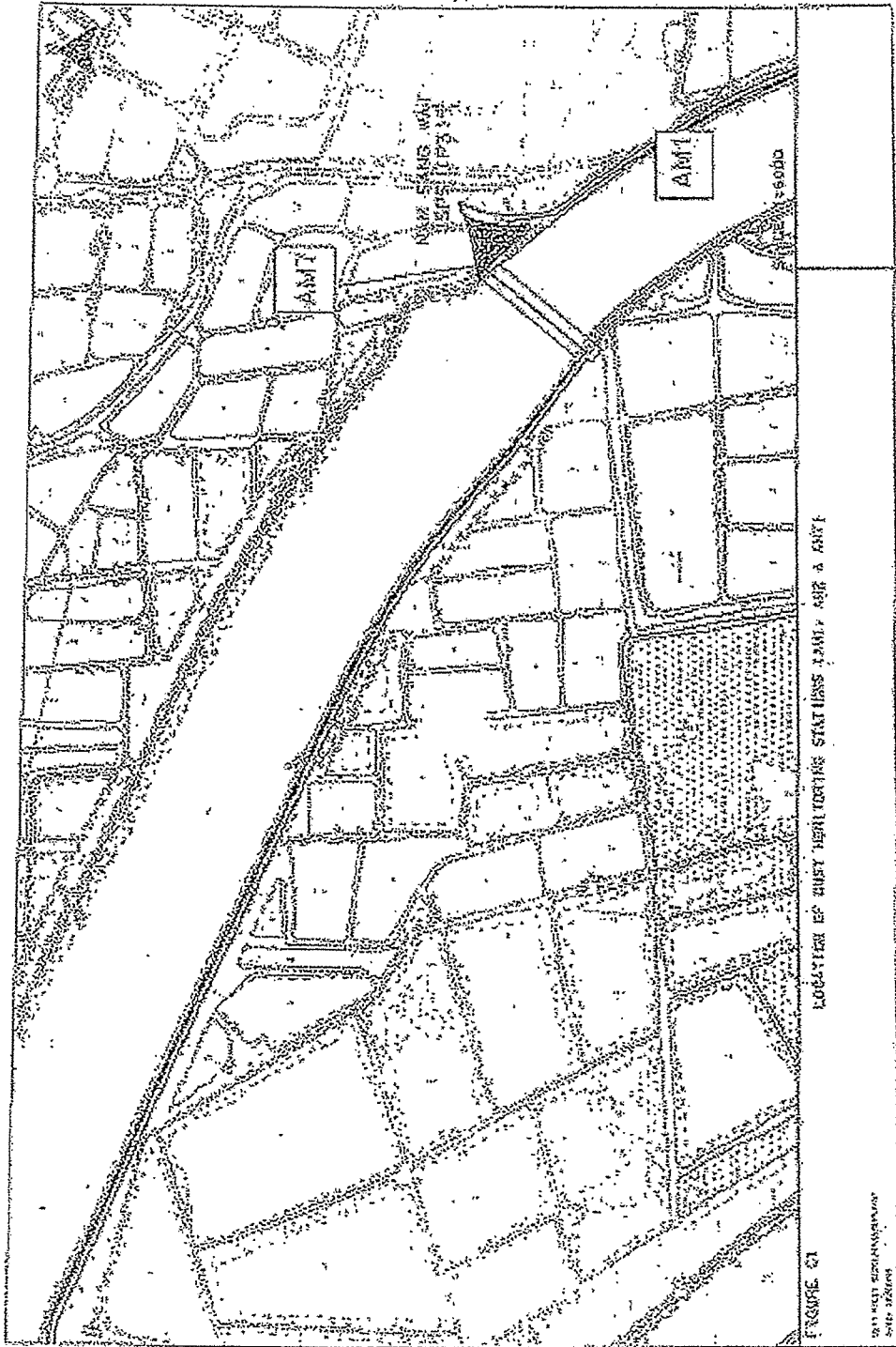
Annex D

Photographical Records – Noise Barrier On-Site



Annex E

Locations of Monitoring Stations



LOCATION OF CHRY HERITORS STATISS JAMI & A.M.T.

FIGURE 61

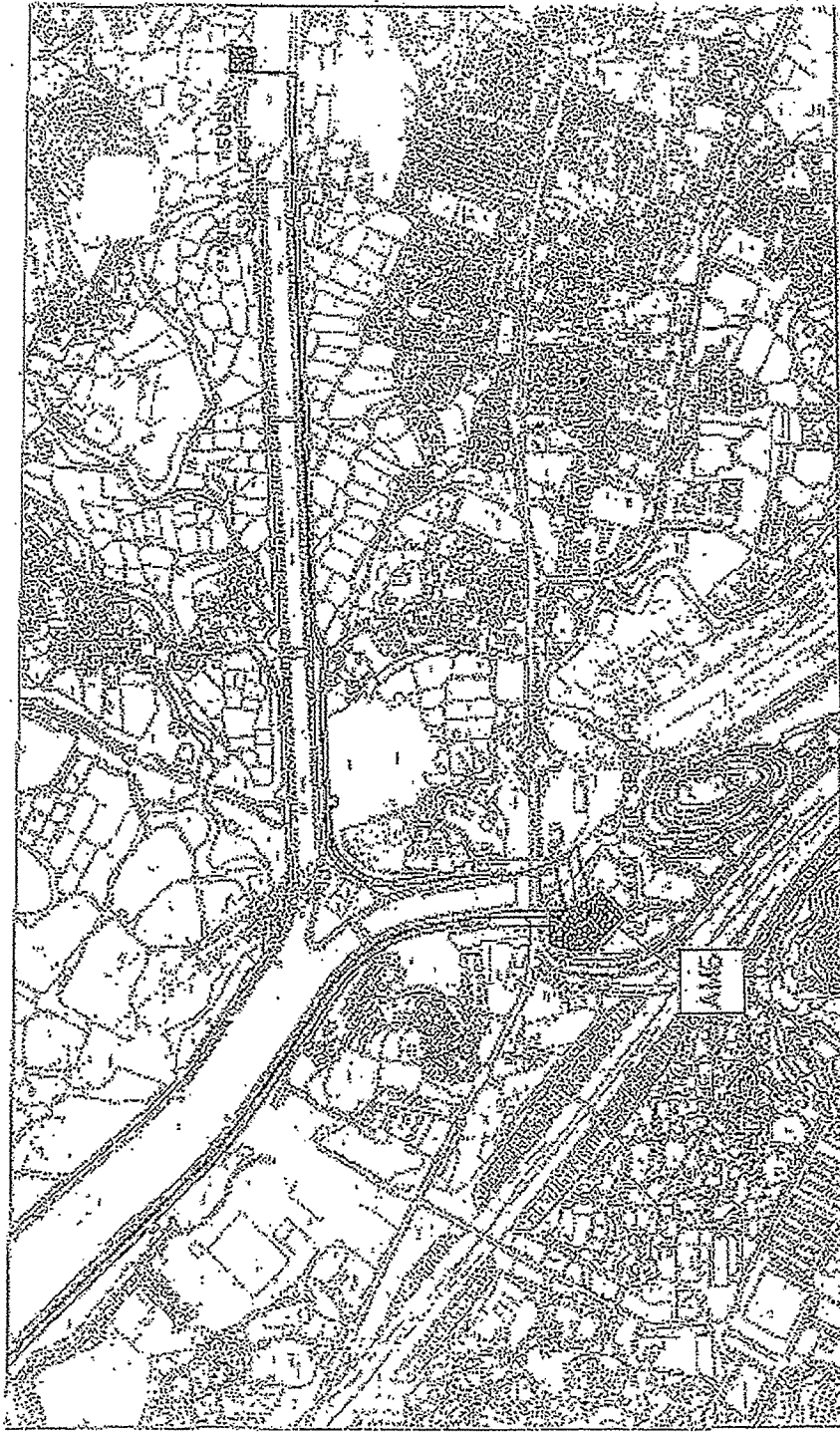
BY THE NATIONAL ARCHIVES



FIGURE OF EAST MONITORING STATION (1881)

FIGURE 62

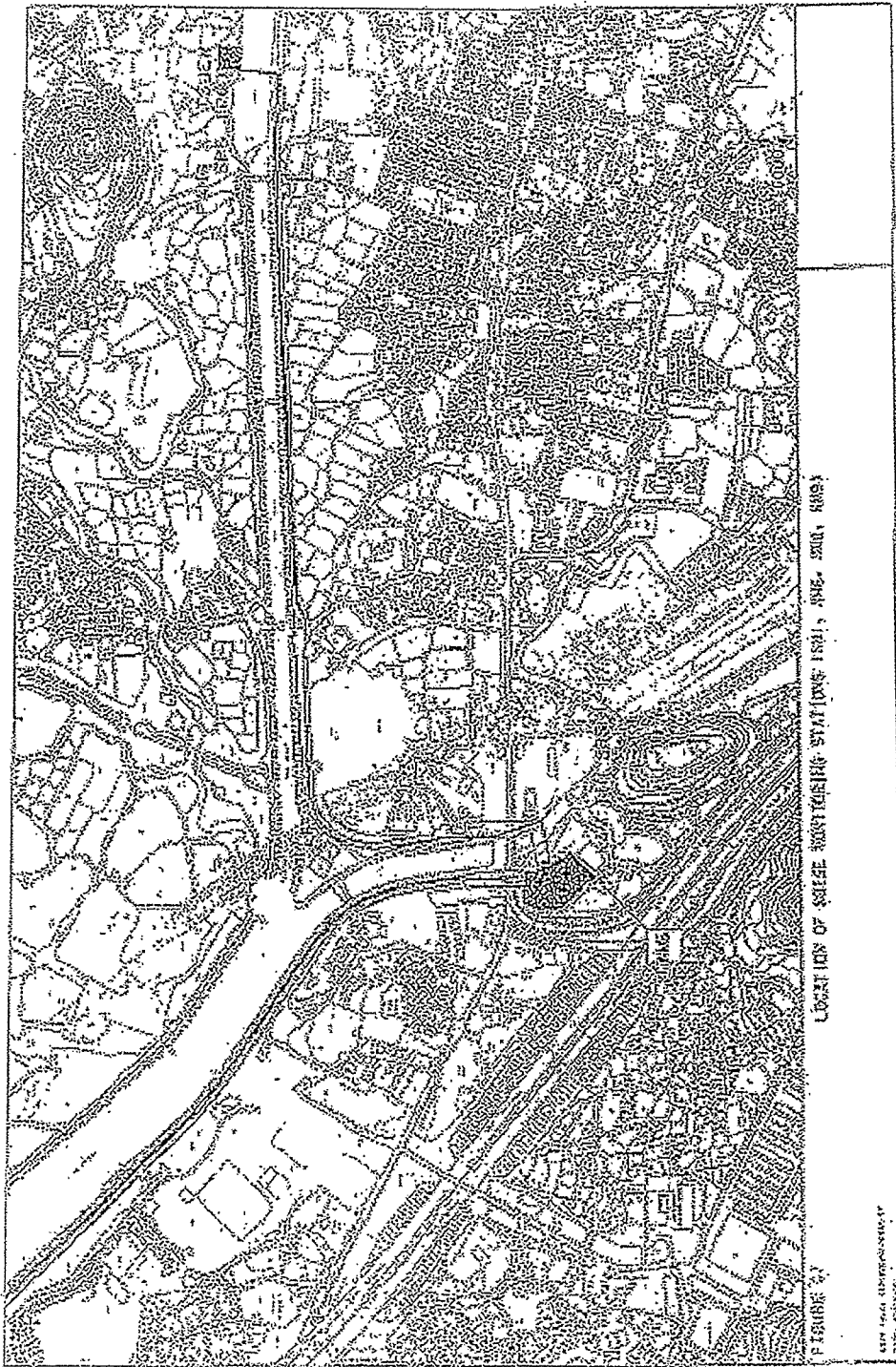
Scale: 1 inch = 100 feet
6000 feet



LOCATION OF BEST MONITORING STATIONS (AMC), AMS & AMOS

FIGURE 20

AMERICAN OVERSEAS AIRWAYS
1960-1961



LOCATIONS OF SILENT INVESTING STATIONS 1931, 1932, 1933, 1934

FIGURE 4

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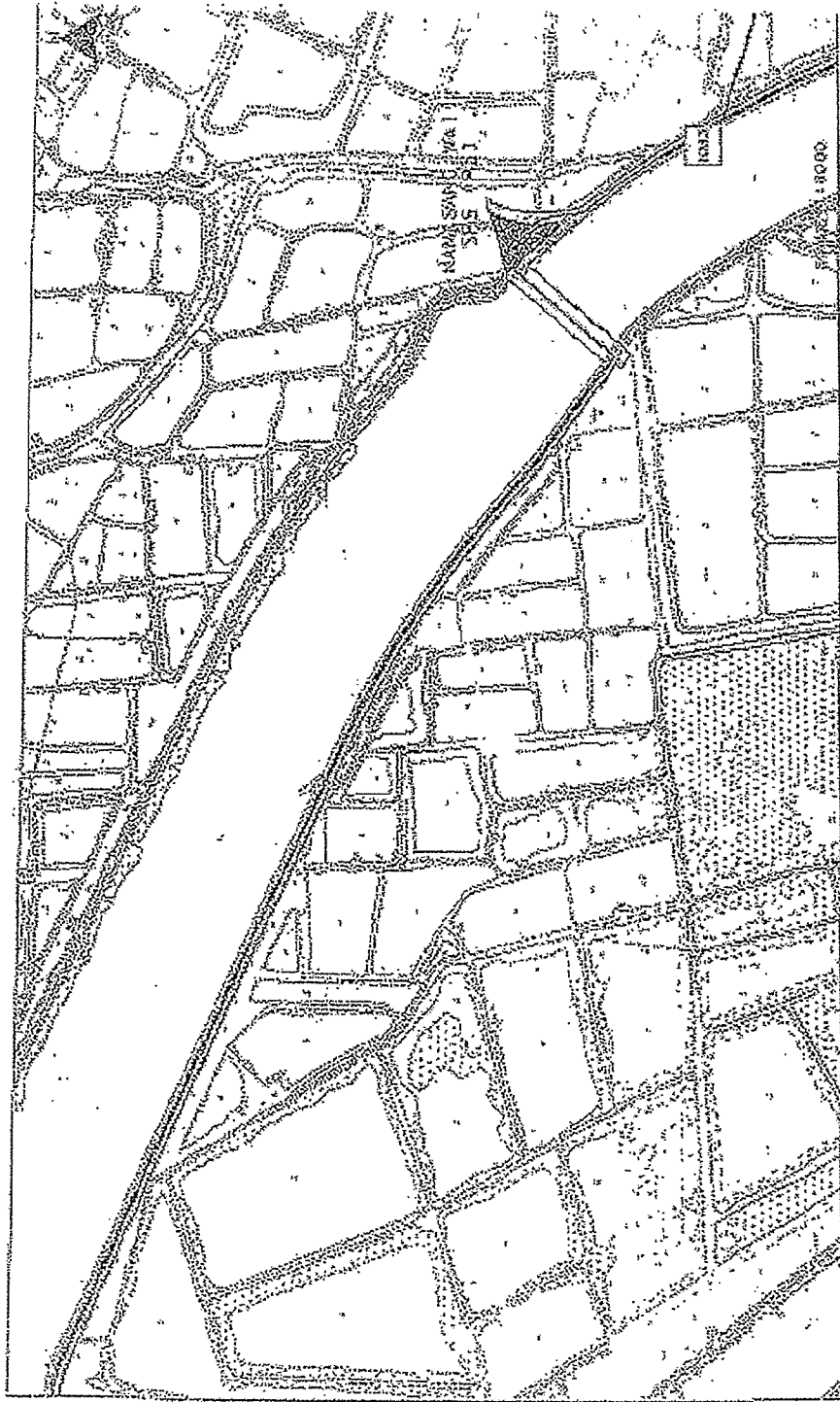


FIGURE 10

LOCATION OF HOUSE PUMPING STATIONS (IND. RW-1)

GENERAL ENGINEERING
AND ARCHITECTURE



LOCATION OF NOISE MONITORING STATIONS FROM MAP 2

SCALE 1:500

BY: J. L. GIBSON
DATE: 10/1/68

Annex F

Event and Action Plan

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Action Level Exceedance for one sample	<ol style="list-style-type: none"> Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings Increase monitoring frequency to daily Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and working methods are appropriate 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Inform complainant of actions taken, if necessary 	<ol style="list-style-type: none"> Rectify any unacceptable practice Liaise with Engineer and IEC to develop appropriate remedial measures to reduce dust impact Amend working methods and remedial proposals if required by the Engineer or IEC Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed Discuss remedial actions with IEC and Contractor If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions
Limit Level				

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION				
	ET Leader	IEC	Engineer	Contractor	
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. Increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, Engineer and EPD informed 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Check and confirm Contractors proposed remedial actions and working methods are appropriate 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC, 4. Ensure remedial measures are properly implemented 5. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 	
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat measurements to confirm findings 3. Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed 4. Discuss remedial actions with IEC and Contractor 5. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 6. If exceedance stops, inform the Contractor and cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss with Contractor and Engineer on possible remedial measures 2. Check and confirm Contractors proposed remedial measures are appropriate 3. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Ensure remedial measures are properly implemented 5. If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated 6. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if possible 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 	

Event and Action Plan for Construction Noise				
EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Limit Level Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. If repeat measurements confirm exceedance ,increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 5. If exceedance stops, inform Contractor and cease additional noise monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Check and confirm Contractors proposed remedial actions and working methods are appropriate 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Inform complainant of actions taken, if necessary 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Liaise with Engineer and IEC to develop appropriate remedial measures to reduce noise impact 3. Amend working methods and remedial proposals if required by the Engineer or IEC 4. Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat measurements to confirm findings 3. Increase the monitoring frequency to daily 4. Discuss remedial actions with IEC, Engineer and the EPD 5. Assess the efficacy of remedial measures and keep the Contractor informed 6. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 7. If exceedance stops, inform the Contractor and cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Discuss with Contractor and Engineer on possible remedial measures proposed 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Ensure remedial measures are properly implemented 5. Contractor to stop the relevant portion of work until the exceedance is abated 6. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if possible 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 6. Stop the relevant portion of work as determined by the Engineer until the exceedance is abated

Annex G

Mitigation Implementation Schedule

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
		CONSTRUCTION PHASE AIR QUALITY - Construction Phase The following measures are enforceable under the <i>Air Pollution Control (Construction Dust) Regulations</i>									
3.5	A1	Site boundary and entrance <ul style="list-style-type: none"> 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; Access Road <ul style="list-style-type: none"> 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; Stockpiling of Dusty Materials <ul style="list-style-type: none"> 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; Loading, unloading or transfer of dusty materials <ul style="list-style-type: none"> 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; Use of vehicles <ul style="list-style-type: none"> every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site; 	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), <i>Air Pollution Control (Construction Dust) Regulations</i>	
3.5	A2		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), <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A3		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), <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A4		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, <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A5		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), <i>Air Pollution Control (Construction</i>

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
3.5	A6	<ul style="list-style-type: none"> where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; 	To control potential dust impacts 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	<p>Power-driven drilling, and cutting</p> <ul style="list-style-type: none"> water should be continuously sprayed on the surface where any mechanical breaking operation that causes dust emission is carried out, unless the process is accompanied by the operation of an effective dusty extraction and filtering device; 	To control potential dust impacts during mechanical breaking.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Part IV, Clause 22, Air Pollution Control (Construction Dust) Regulations
3.5	A8	<p>Excavation and earth moving</p> <ul style="list-style-type: none"> 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	<p>Construction of the superstructure of a building</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> any skip hoist for material transport should be totally enclosed by the impervious sheeting. 	To control potential dust impacts during material transportation.	Full duration of SPS construction contract.	The Contractor		✓			Part I, Clause 6, (b), Air Pollution Control (Construction Dust) Regulations

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
4.7.1	B1	<p>NOISE - Construction Phase</p> <p>General Site Clearance – Demolition Works</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997 (Examples of these PME are shown in Table F2)</i>, <p>Construction of Sewage Pumping Stations P1, P2 & P3</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, 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. <p>Sewers and Rising Mains using Open Trench Method</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, 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. 	<p>To control potential noise impacts during site clearance and demolition works</p> <p>To minimise potential noise impacts arising during the construction of P1, P2 & P3</p> <p>To minimise potential noise impacts arising during the construction of P1, P2 & P3</p> <p>To control potential noise impacts during excavation works.</p> <p>To control potential noise impacts during road opening activities.</p> <p>To control potential noise impacts during road opening activities</p>	<p>Site wide and throughout the full duration of the construction contract.</p> <p>Site wide and throughout the full duration of the construction contract.</p> <p>Site wide and throughout the full duration of the construction contract.</p> <p>Site wide and throughout the full duration of the construction contract.</p> <p>Where there are NSRs located within 50m of the line of sight. Throughout the full duration of the road opening activities.</p> <p>Where there are NSRs located within 50m of the</p>	<p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>			<p>Annex 5 of EIAO-TM</p> <p>Annex 5 of EIAO-TM</p> <p>Annex 5 of EIAO-TM</p> <p>Annex 5 of EIAO-TM</p>		
4.7.1	B2										
4.7.1	B3										
4.7.1	B4										
4.7.1	B5										

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
4.7.1	B6	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.							
4.7.1	B7	<p>Sewers and Rising Mains using Pipe Jacking Method</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, <p>Road Pavement and Finishes</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, 	To control potential noise impacts from PME during construction works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Annex 5 of EIAO-TM	
		<p>WATER QUALITY - Construction Phase</p> <p>No water quality monitoring is required under this study.</p>									
6.6.2	D1	<p>WASTE - Construction Phase</p> <p>The Contractor shall obtain the necessary waste disposal permits from the appropriate authorities for the disposal of chemical and C&D waste,</p> <ul style="list-style-type: none"> Chemical Waste Producer and Chemical Waste Disposal Licence (<i>Waste Disposal (Chemical Waste) (General) Regulations</i>); and Dumping Licence (<i>Land (Miscellaneous Provisions) Ordinance (Cap 28)</i>) 	To monitor the collection, handling and disposal of chemical waste and C&D waste, and in compliance with relevant Hong Kong Standards and Regulations.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓	✓			Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste)(General) Regulation (Cap 354), the Land (Miscellaneous Provisions) Ordinance (Cap 28))	

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
6.6.2	D2	<p>Chemical Waste Chemical waste that is produced, as defined by Schedule 1 of the <i>Waste Disposal (Chemical 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.</p> <p>Storage, Packaging and Labelling of Chemical Waste Containers used for storage of chemical wastes should:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 L unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. <p>Storage of chemical waste The storage area for chemical wastes should:</p> <ul style="list-style-type: none"> 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 	<p>To control the handling, storage and disposal of chemical waste, in order to minimise potential spillages/leakages and human health and environmental impacts.</p> <p>To ensure the proper storage, packaging and labelling of chemical waste in accordance with the Regulations.</p> <p>To ensure the proper storage of chemical waste in accordance with the Regulations.</p>	<p>To be implemented at all worksites throughout the full duration of the construction phase.</p> <p>To be implemented at all worksites throughout the full duration of the construction phase.</p> <p>To be implemented at all worksites throughout the full duration of the construction phase.</p>	<p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p>	<p>✓</p> <p>✓</p> <p>✓</p>			<p>Part II, (6) Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Part IV, (9, 10, 11 & 12) Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Part IV, (13, 14, 15, 16, 17, & 18) Waste Disposal (Chemical Waste) (General) Regulation</p>	

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
		adequately separate									
		<p>Disposal of chemical waste</p> <ul style="list-style-type: none"> The Contractor should ensure that the disposal of chemical waste is via a licensed Waste Collector and in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulations</i>. 	To control the disposal of chemical waste in accordance with the Regulations.	To be implemented at all workites throughout the full duration of the construction phase.	The Contractor		✓			Part IV, (20 -25) <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	
6.6.2	D5	<p><i>Management of Waste Disposal</i></p> <p>A trip-ticket system should be established which monitors the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping, in accordance with <i>Land (Miscellaneous Provisions) Ordinance (Cap28)</i> and the <i>Works Bureau Technical Circular No. 5/99</i>.</p> <p>LAND CONTAMINATION- Construction Phase</p> <p>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.</p> <p>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</p>	To monitor the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping.	To be implemented at all workites throughout the full duration of the construction phase.	The Engineer/ Contractor		✓			<i>Land (Miscellaneous Provisions) Ordinance (Cap 295) and Works Bureau Technical Circular No. 5/99.</i>	
7.5.6	E1		To determine the presence of soil and groundwater contamination and remedy any potential concerns to acceptable levels.	To be implemented before the commencement of the construction works.	To be Implemented by DSD or their sub-consultants at the Detailed Design Stage, depending upon when site access can be gained.			✓			EIAO TM Annex 19/3.1.1 & 3.1.2

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.1	F1	<p>EPD, the contaminated site(s) shall be remediated in accordance with the approved CAR/RAP.</p> <p>ECOLOGICAL - 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</p>	To schedule construction works in order to minimise potential impacts to winter visiting birds. To be confirmed by regular site inspections.	At identified location (Figure 8.7a) for the full duration of the construction contract.	The Contractor		✓			
8.7.2	F2	<p>Mitigation Measures Adopted - Minimisation Pipe jacking method should be used instead of dredging where sewers and rising mains cross over existing MDC within the WCA and WBA.</p>	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	<p>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.</p> <p>The site inspections shall check and report the number of workfronts and implementation of</p>	To schedule noisy construction activities to minimise potential impacts to winter visiting birds.	Work fronts other than identified sections within WBA & WCA (see Figure 8.7a attached) throughout the full duration of the construction contract.	The Contractor		✓			

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.3	F5	<p>mitigation measures (i.e. erection of movable noise barriers with a suitable footing along the sites) in the monthly EM&A reports.</p> <p>Mitigation Measures Adopted</p> <p>Quietened construction plant and equipment (as shown in Table F2) should be used for the construction of pumping stations (P3 and P2) and sewerage alignment (S4, S5 and S6) located within the WCA and WBA.</p>	<p>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</p>	<p>At described locations and throughout the full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F6	<p>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);</p>	<p>To erect fences to prevent encroachment of construction activities onto adjacent areas.</p>	<p>At P1 to P3 for full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F7	<p>No filling and dumping to the remaining abandoned fishpond at P2.</p>	<p>To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.</p>	<p>At P2 for full duration of the construction contract</p>	The Contractor	✓				
8.7.4	F8	<p>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 15m³.</p>	<p>To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.</p>	<p>At P1 to P3 for full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F9	<p>No open fires within the site boundary during</p>	<p>To prohibit open fires, thereby</p>	<p>Site wide and throughout</p>	The Contractor	✓				Air Pollution Control

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.4	F7	construction and provide temporary fire fighting equipment in the work areas. No filling and dumping to the remaining abandoned fishpond at P2.	minimising potential damage to trees and shrubs. To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.	the full duration of the construction contract. At P2 for full duration of the construction contract	The Contractor	✓				(Open Burning) Regulation
8.7.4	F8	Installation and operation of silt removal facilities at construction sites of P1 to P3. The silt removal facilities should be designed in accordance with Appendix A1 of ProPECC Note PN1/94 Construction Site Drainage.	To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.	At P1 to P3 for full duration of the construction contract.	The Contractor	✓				
8.7.4	F9	No open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.	To prohibit open fires, thereby minimising potential damage to trees and shrubs.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Air Pollution Control (Open Burning) Regulation
		FISHERIES - Construction Phase								
		No specific 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. The first monthly EM&A Report should also report the appearance of the temporary hoarding barriers.	To minimise potential landscape and visual impacts.	To be implemented during the construction phases of the project.	The Contractor	✓				
	H2	Prior to application for an Environmental Permit, a set of landscape plans and building elevations of the proposed pumping stations should be	To minimise potential landscape and visual impacts.	To be implemented during the design and construction phases of the	DSD and The Contractor	✓				

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		submitted for approval by the EPD. The landscape plans and pumping station elevations should demonstrate that the following elements are considered: <ul style="list-style-type: none"> 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. 		project.						
3.7	I1	EM&A REQUIREMENTS - Construction Phase <i>Air Quality</i> Subject to the Environmental Protection Departments (EPDs) agreement, construction phase dust monitoring shall be undertaken at the following locations in accordance with the recommendations of the EIA. <ul style="list-style-type: none"> Worksite boundary facing Scattered house in Nam Sang Wai (AM1); Worksite boundary facing Fung Kat Heung (AM5); Worksite boundary facing Scattered House near Route 3 (AM6); 	Installations of the dust monitoring stations to ensure the action and limit levels are not exceeded.	At specified dust monitoring locations for the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer /DSD		✓			<i>Air Pollution Control (Construction Dust) Regulations</i>

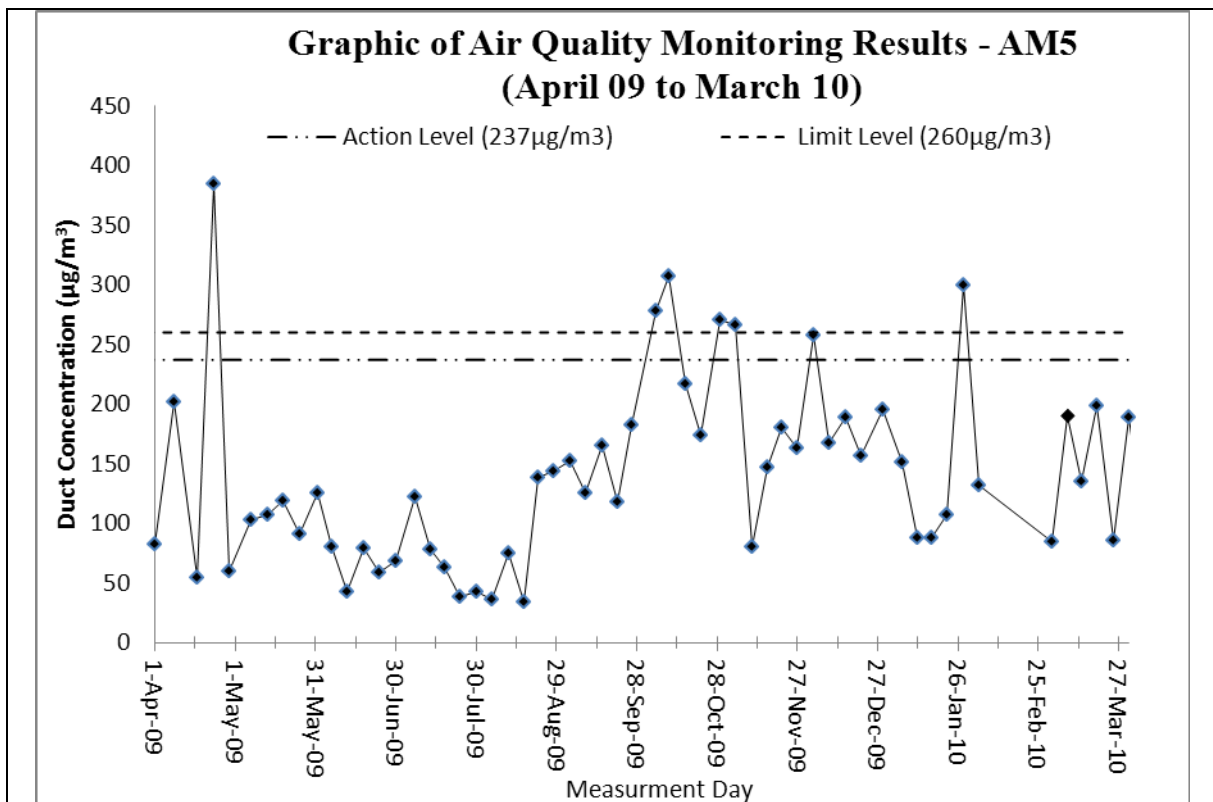
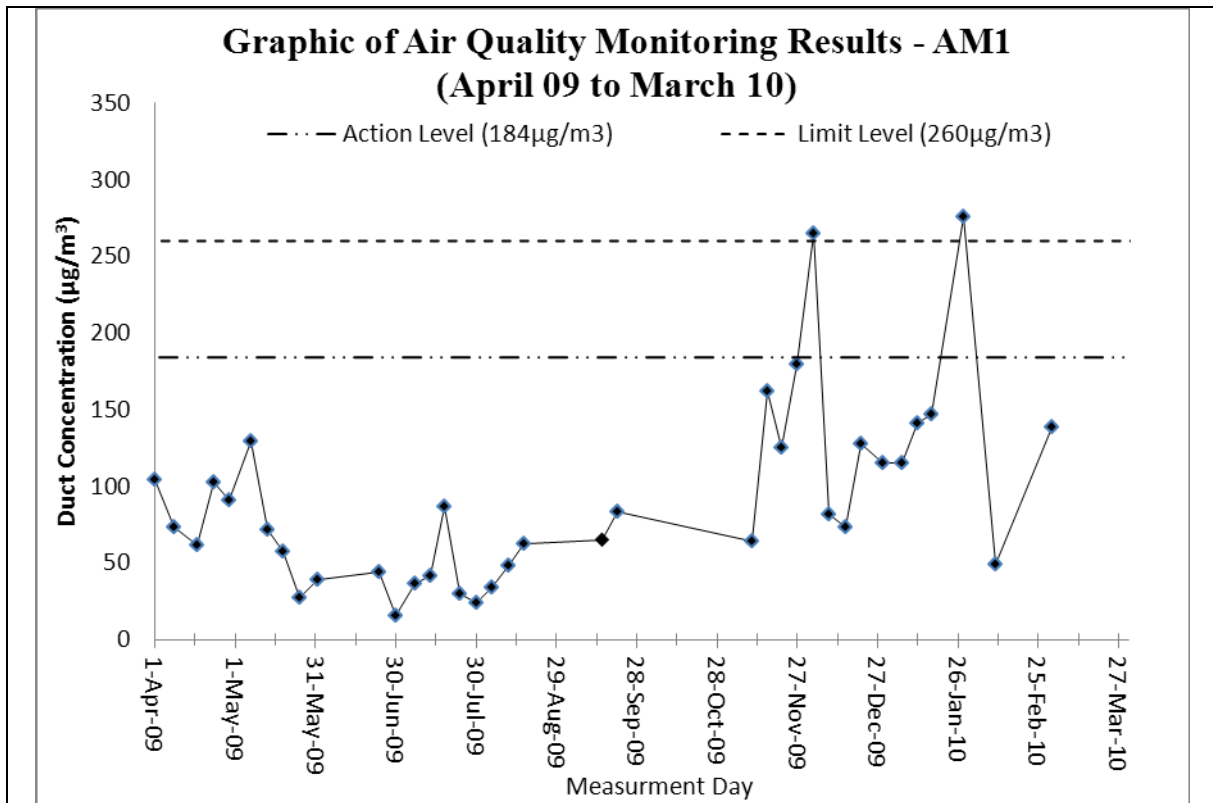
EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
4.9.1	I2	<ul style="list-style-type: none"> at any additional locations, where considered necessary, in agreement with EPD. <p><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.</p> <ul style="list-style-type: none"> (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.	At specified noise monitoring locations throughout the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer	✓				Noise Control Ordinance
Des = Design, C = Construction, O = Operation, Dec = Decommissioning										

Annex H

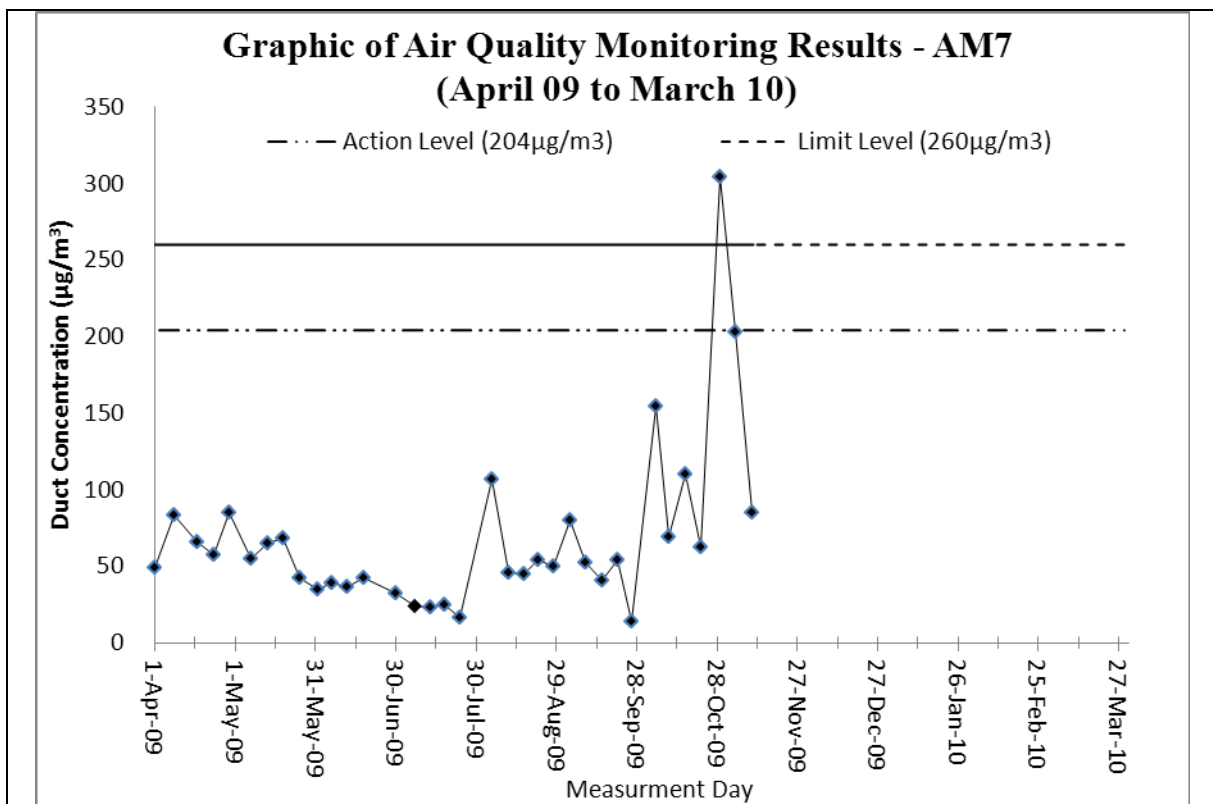
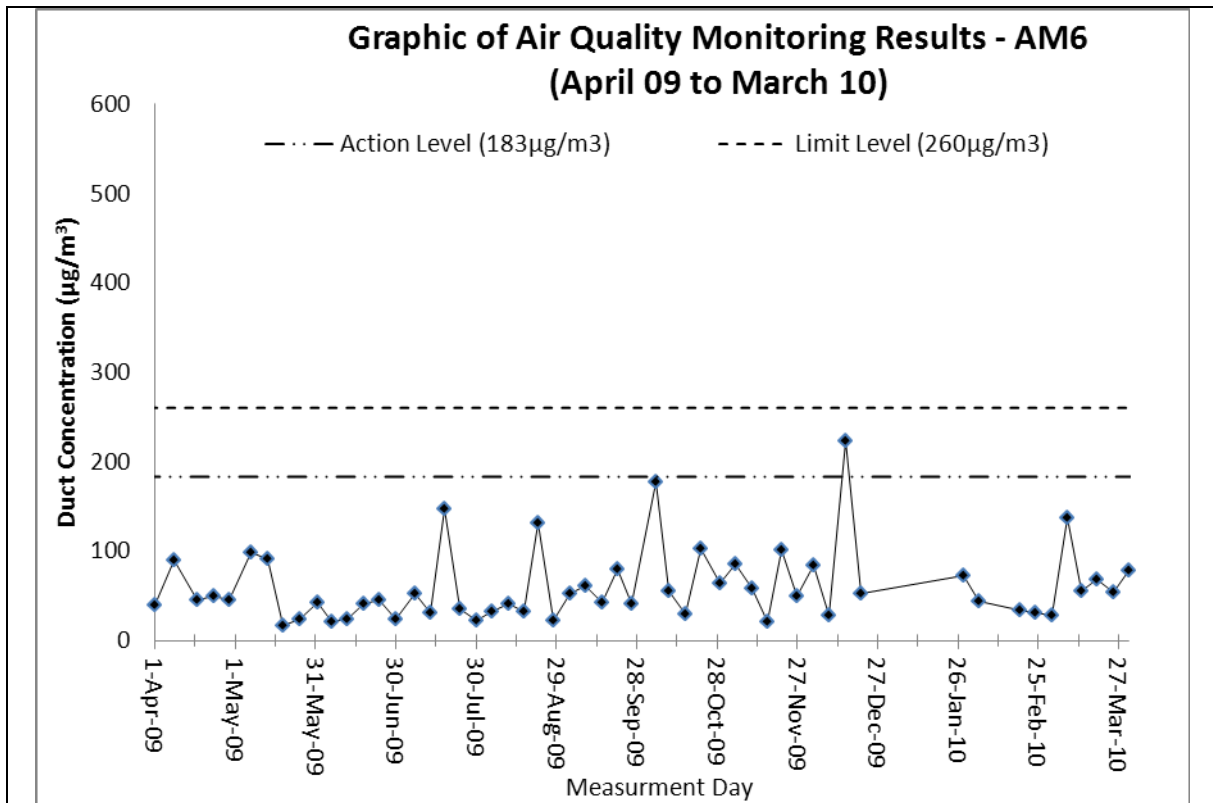
**Graphical Plots of Air Quality
and
Noise Monitoring Results**

Air Quality Monitoring

Air Quality Monitoring

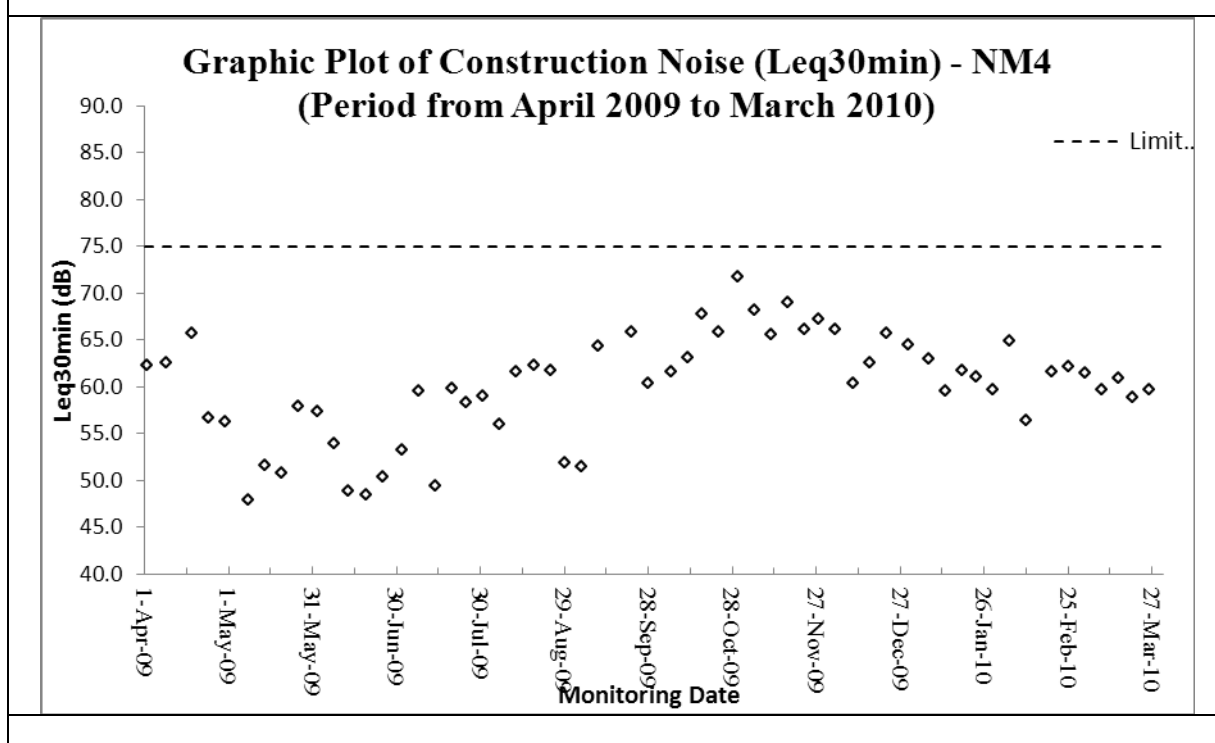
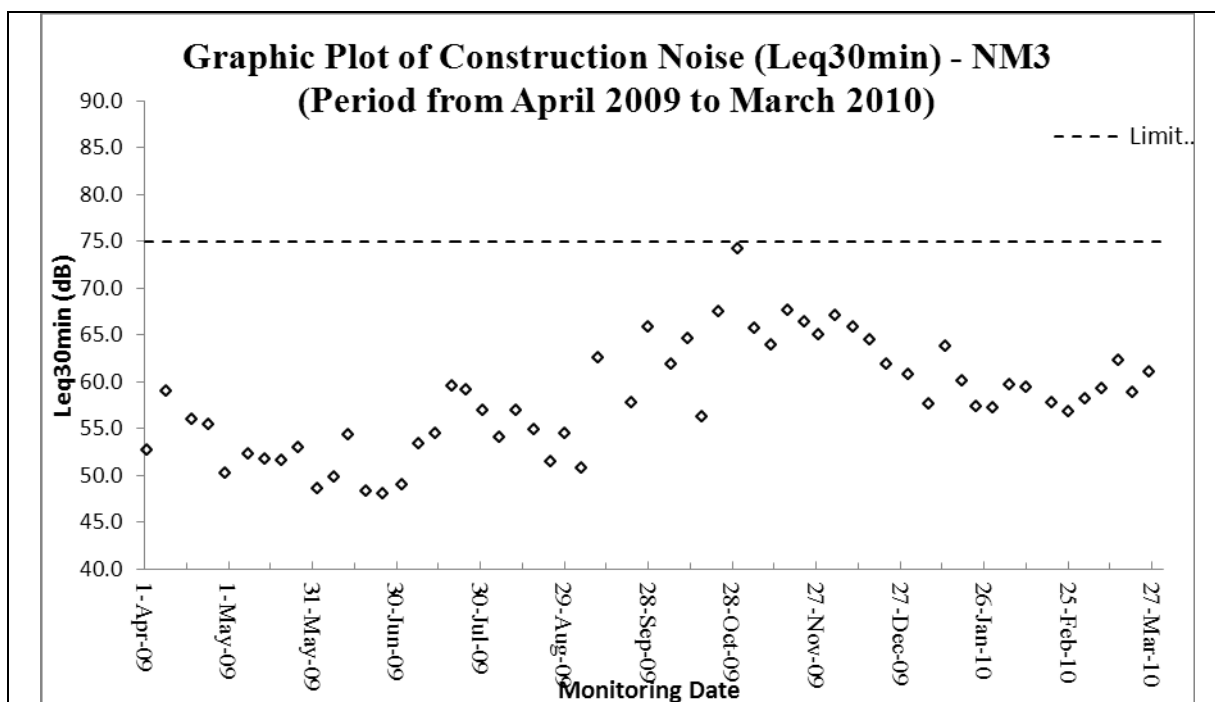


Air Quality Monitoring

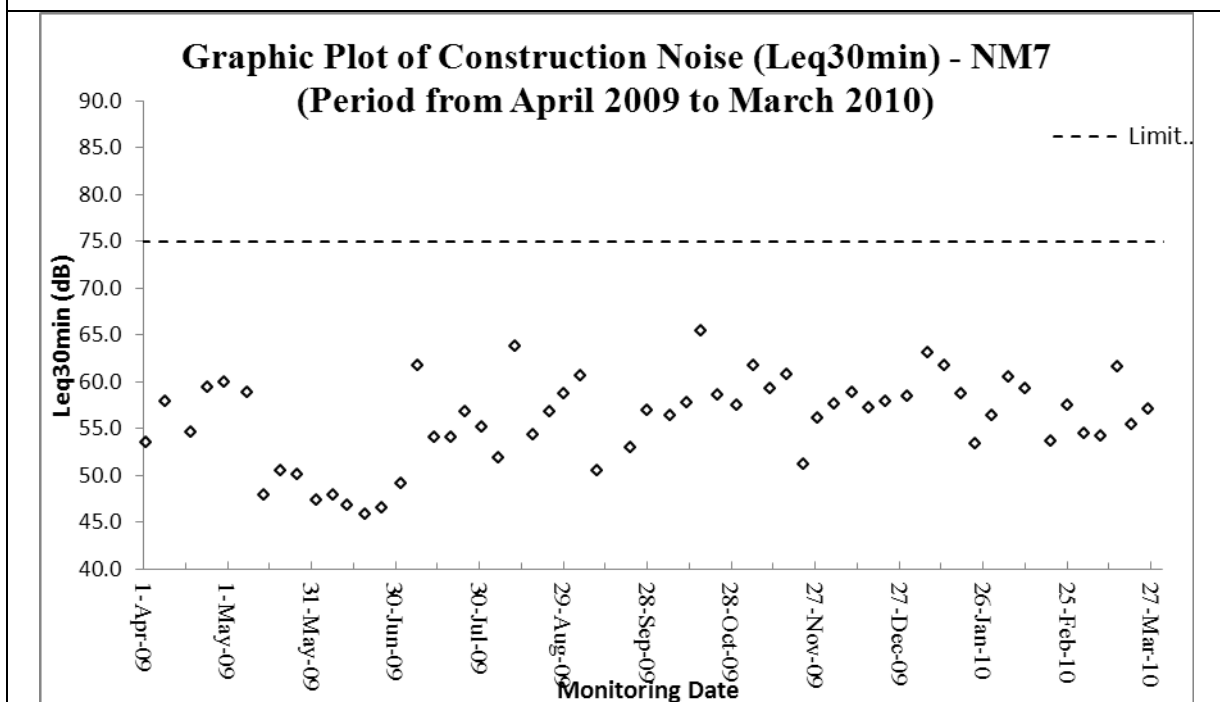
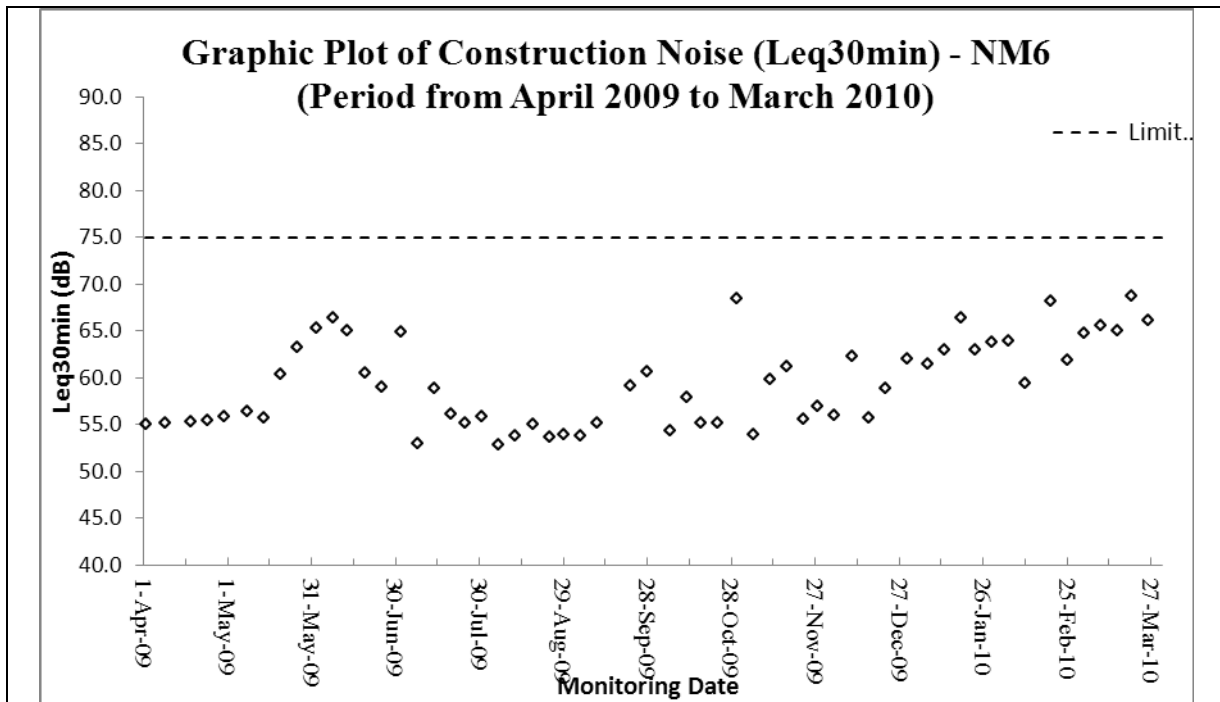


*The monitoring was affected since 16 November 2009 due to power failure of the HVS.

Construction Noise Monitoring



Construction Noise Monitoring



Annex I

Meteorological Data in the Reporting Period

Meteorological Data Extracted From The HK Observatory

April 2009 was drier and cooler than usual. The mean temperature was 22.0 degrees, 0.5 degrees below the normal figure of 22.5 degrees. The total rainfall in the month was 108.7 millimetres, about 42 percent below the normal figure of 188.5 millimetres. The accumulated rainfall since 1 January was 230.5 millimetres, about 32 percent below the normal figure of 337.1 millimetres for the same period.

Under the influence of a dry northeast monsoon, it was dry with sunny periods for the first two days of the month. With winds strengthening from the east, local weather became cloudy with some rain patches on 3 April. With the easterly winds moderating, sunny intervals developed on 4 and 5 April.

A cold front formed over the northern part of southern China on 4 April and moved across the south China coastal areas in the afternoon of 5 April. Locally, the weather became cooler and rainy on 6 and 7 April. Affected by a dry easterly airstream over the coastal areas of southern China, it was mainly fine for the ensuing four days.

A trough of low pressure over the south China coastal areas brought showery weather to Hong Kong from 12 to 16 April. With the trough of low pressure dissipating, local weather turned mainly fine on 17 April. A fresh to strong easterly airstream over southern China brought windy and rainy weather to the territory in the next two days. With winds subsiding gradually, local weather became sunny and hot during the day on 20 April. The temperature at the Hong Kong Observatory rose to 30.1 degrees on that day, the highest of the month.

Affected by another fresh to strong easterly airstream over the south China coastal areas, it was windy and rainy in Hong Kong from 21 to 23 April. With moderation of the easterly airstream, it was cloudy and misty on 24 April. An active trough of low pressure formed over central China on 24 April and crossed the coast of Guangdong the next day, bringing heavy rain and squally thunderstorms to Hong Kong on the morning of 25 April.

Under the influence of the northeast monsoon, it was cooler and rainy in Hong Kong on 26 April. A dry easterly airstream associated with a ridge of high pressure over the southeastern coast of China brought mainly fine and dry weather to Hong Kong for the last four days of the month. There was no tropical cyclone over the South China Sea and the western North Pacific in the month.

May 2009 was drier and sunnier than usual. The total rainfall of 245.2 millimetres in the month, which was mainly recorded in the last 10 days, was about 26 percent below the normal figure of 329.5 millimetres. The accumulated rainfall since 1 January was 475.7 millimetres, about 29 percent below the normal figure of 666.6 millimetres for the same period. The total bright sunshine duration was 169.8 hours, about 23 percent above normal. The mean temperature was 25.5 degrees, 0.3 degrees below the normal figure of 25.8 degrees.

Under the influence of a ridge of high pressure over southeastern China, the weather in Hong Kong was fine and dry on the first three days of the month. A cloud band developed over southern China, moved southwards to the coastal areas and brought a few light rain patches to Hong Kong on 4 May. With dissipation of the cloud band, local weather turned fine on 5 May. Fine and dry weather persisted for the ensuing four days.

Another cloud band moved from west to east across southern China and brought a few light rain patches to Hong Kong on 10 May. After the passage of the cloud band, the weather turned fine again on 11 May. It was sunny and hot for the following two days. Affected by an easterly airstream, local weather turned mainly cloudy with a few rain patches from 14 to 16 May.

The easterly airstream was replaced by a southwesterly airstream on 17 May. Local weather became sunny and hot apart from a few showers from 17 to 19 May. A trough of low pressure developed over the south China coastal areas and brought cloudy weather and a few thundery showers to the territory for the next three days.

Affected by an area of low pressure near Hainan, local weather became more unsettled with occasional heavy downpour and squally thunderstorms from 23 to 25 May. The rain eased off gradually with some bright periods on 26 May. A fresh to strong easterly airstream associated with a ridge of high pressure over southeastern China brought cloudy and rainy weather to the territory for the following three days. Under the influence of a dry continental airstream, it was dry and mainly fine for the last two days of the month. Two tropical cyclones occurred in the western North Pacific and the South China Sea in the month.

June 2009 was drier than usual. The total rainfall of 341.8 millimetres in the month was about 12 percent below the normal figure of 388.1 millimetres. The accumulated rainfall since 1 January was 817.5 millimetres, about 22 percent below the normal figure of 1054.7 millimetres for the same period. The mean temperature was 28.1 degrees, 0.2 degrees above the normal figure of 27.9 degrees.

A ridge of high pressure brought mainly fine weather to Hong Kong on the first day of the month. Under the influence of a southerly airstream over the coastal areas of Guangdong, the weather turned cloudy with isolated showers on 2 June. At the same time, a trough of low pressure developed over the northern part of southern China and moved south gradually. It brought heavy rain and squally thunderstorms to the territory on 3 and 4 June. More than 70 millimetres of rainfall were recorded over parts of the New Territories on the morning of 4 June. With the westward extension of the Pacific ridge, local weather turned fine in the afternoon of 4 June. It remained sunny and hot from 5 to 7 June. The temperature at the Hong Kong Observatory rose to a maximum of 32.9 degrees on 6 June, the highest of the month.

A humid maritime airstream dominated over the coastal areas of Guangdong and brought cloudy and showery weather to Hong Kong for the ensuing three days. Affected by an active trough of low pressure over southern China, local weather deteriorated further with occasional rain and squally thunderstorms from 11 to 16 June. A ridge of high pressure developed over southern China on 17 June, bringing fine and hot weather to Hong Kong on that day.

Affected by the subsidence airmass associated with Severe Tropical Storm Linfa over the northern part of the South China Sea, local weather remained sunny and hot apart from a few isolated showers from 18 to 21 June. After Linfa made landfall over Fujian on the night of 21 June, an active southwesterly airstream prevailed over the coastal areas of southern China and brought thundery showers to Hong Kong from 22 to 24 June.

Tropical Storm Nangka entered the South China Sea on the evening of 24 June and edged towards the coast of eastern Guangdong in the next two days. Nangka made landfall over the vicinity of Daya Bay and weakened into an area of low pressure inland Guangdong in the morning of 27 June. Locally, it was mainly cloudy with showers on 25 and 26 June. Affected by the remnants of Nangka, the weather was cloudy with heavy rain and a few squally thunderstorms on 27 and 28 June. The heavy rain eased off and there were sunny periods on 29 June. A ridge of high pressure brought mainly fine and hot weather to the territory on 30 June. Two tropical cyclones occurred in the western North Pacific and the South China Sea in the month.

July 2009 was warmer than usual. The mean temperature was 29.1 degrees, 0.4 degrees above the normal figure of 28.7 degrees. The total rainfall of 389.4 millimetres in the month was about 4 percent above the normal figure of 374.4 millimetres. The accumulated rainfall since 1 January was 1206.9 millimetres, about 16 percent below the normal figure of 1429.1 millimetres for the same period.

Under the influence of a weak ridge of high pressure over the south China coastal areas, the weather in Hong Kong was generally fine for the first two days of the month. Affected by an active southwest monsoon, it turned mainly cloudy with a few showers on 3 July. A trough of low pressure over

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southern China brought cloudy weather with scattered showers and squally thunderstorms to the territory from 4 to 6 July.

With the strengthening of a ridge of high pressure over southeastern China, local weather became fine and hot on 7 July apart from some showers in the morning. It remained sunny and hot for the ensuing three days

Tropical Storm Soudelor moved across the northern part of the South China Sea and passed at a distance of about 240 kilometres to the south of Hong Kong on 11 July. Local winds picked up from the east and there were occasional squally showers on that day. After Soudelor made landfall over Vietnam and weakened into a tropical depression on 12 July, local winds subsided gradually and it became sunny and hot during the day. A ridge of high pressure over southeastern China brought mainly fine and hot weather to the territory for the next two days.

Affected by a broad trough of low pressure over the South China Sea, local weather turned mainly cloudy with some showers on 15 July. It became sunny and very hot on the following two days when a ridge of high pressure prevailed over the south China coastal areas.

On 16 July, Molave intensified into a tropical storm and tracked northwestwards over the western North Pacific to the east of the Philippines. It further intensified into a severe tropical storm while crossing the Luzon Strait on 17 July and became a typhoon the next day after entering the South China Sea. The subsidence air mass ahead of Molave and the northerly winds associated with the typhoon brought very hot weather to Hong Kong in the afternoon of 18 July. The temperature recorded at the Hong Kong Observatory rose to a maximum of 34.3 degrees on that day, the highest in the month. With Molave moving closer to the coast of Guangdong, local winds strengthened gradually with squally showers in the evening of 18 July. Molave made landfall in the vicinity of Mirs Peninsula in the early hours of 19 July. Gale force winds with maximum gusts up to 148 kilometres per hour and heavy rain with squalls affected the territory during the period. Local winds subsided appreciably in the afternoon of 19 July as Molave weakened into a tropical depression and moved further inland over western Guangdong.

A ridge of high pressure over southeastern China brought generally fine weather to Hong Kong from 20 to 22 July. Under the influence of a southwest monsoon, it was showery in the following four days. A trough of low pressure over southern China brought cloudy conditions with a few episodes of thunderstorms to the territory from 27 to 29 July. With the weakening of the trough, there were some sunny periods for the last two days of the month. Three tropical cyclones occurred in the western North Pacific and the South China Sea in the month.

August 2009 was hotter and drier than usual. The mean temperature was 29.4 degrees, 1.0 degrees above the normal of 28.4 degrees. There were 14 very hot days, making it the hottest August since 1963. The mean minimum temperature of 27.7 degrees was the highest for August since record began. The total rainfall of 334.1 millimetres in the month was about 25 percent below the normal figure of 444.6 millimetres. The accumulated rainfall since 1 January was 1541.0 millimetres, about 18 percent below the normal figure of 1873.7 millimetres for the same period.

Under the influence of a ridge of high pressure, local weather was sunny for the first day of the month. Affected by the subsidence air mass associated with a tropical depression over the northern part of the South China Sea, it was very hot on 2 and 3 August. Temperatures recorded at the Hong Kong Observatory rose to a maximum of 34.9 degrees on 3 August, the highest of the month.

The tropical depression over the northern part of the South China Sea intensified into a tropical storm and was named Goni on 3 August. The outer rainbands of Goni brought squally showers and thunderstorms to Hong Kong in that afternoon. Goni further intensified into a severe tropical storm while edging towards the coast of Guangdong on 4 August. Local winds strengthened gradually and there were some squally showers on that day. Gale force winds with maximum gusts up to 85 kilometres per hour were recorded at Cheung Chau in that evening. Goni made landfall over the coast of western Guangdong and weakened gradually the next day. However, the outer-rainbands of Goni continued to bring showers to Hong Kong on 5 and 6 August.

Meanwhile, Morakot gained typhoon intensity over the western North Pacific and tracked westward in the generally direction of Taiwan on 5 and 6 August. Under the influence of the subsidence air mass associated with Morakot, the weather in Hong Kong became fine and very hot for the ensuing three days. A trough of low pressure developed over the south China coastal areas on 10 August and brought thundery showers to the territory from 10 to 14 August. Affected by a ridge of high pressure, local weather turned mainly fine for the next two days.

Another trough of low pressure developed over the western coast of Guangdong and brought mainly cloudy weather with a few showers to the territory on 17 and 18 August. A weak ridge of high pressure brought generally fine and very hot conditions apart from a few isolated showers and thunderstorms to Hong Kong for the rest of the month. Seven tropical cyclones occurred in the western North Pacific and the South China Sea in the month.

Very hot weather warnings were issued for 18 days in the month to remind the public to mitigate the health impact of very hot weather. Following the usual practice, advance information on hot weather and daily temperature forecasts were included in the Observatory's 7-day forecasts. Special mentions of high temperatures, when expected in the following few days, were made in the weather outlook to alert the public.

September 2009 was hotter and wetter than usual. The mean temperature was 28.8 degrees, 1.2 degrees above the normal of 27.6 degrees. There were 10 Very Hot Days with daily maximum temperatures of 33.0 degrees or above in the month, breaking the record for September in 1963 and 1969. The mean minimum temperature of 26.9 degrees was also the highest for September since record began. The total rainfall of 486.3 millimetres in the month was about 69 percent above the normal figure of 287.5 millimetres. The accumulated rainfall since 1 January was 2027.3 millimetres, about 6 percent below the normal figure of 2161.2 millimetres for the same period.

Under the influence of a ridge of high pressure over southern China, the weather in Hong Kong was fine and very hot for the first eight days of the month. Affected by an easterly airstream, the weather became cloudy with showers on 9 September. Meanwhile, an area of low pressure over the northern part of the South China Sea intensified into a tropical depression and tracked west-northwestwards. It further intensified into a tropical storm named Mujigae on 10 September. Locally, winds strengthened gradually and there were some scattered squally showers on that day. Affected by the outer rainbands associated with Mujigae, the weather remained cloudy with occasional rain on 11 September. The rain eased off while Mujigae made landfall over northern Vietnam and weakened on 12 September.

A tropical depression over the western North Pacific entered the northern part of the South China Sea on 13 September. It intensified into a tropical storm that evening and was named Koppu. The outer rainbands of Koppu brought a few thundery showers to Hong Kong in that evening. Koppu intensified into a typhoon on 14 September and the weather became cloudy with squally showers. Local winds also strengthened gradually towards the evening. Gale force southeasterly winds with maximum gusts up to 151 kilometres per hour were recorded at the Cheung Chau Beach in the late evening of 14 September. Koppu made landfall over the western coast of Guangdong in the morning of 15 September and weakened into a tropical storm in the afternoon. The rainbands associated with Koppu brought heavy squally showers to the territory on that day. With Koppu moving further inland and dissipating, the showers eased off gradually on 16 September.

A ridge of high pressure brought generally fine weather to Hong Kong from 17 to 20 September. A cold front formed over the northern part of southern China in the morning of 21 September and crossed the coastal areas of Guangdong in that evening, bringing a few thundery showers to Hong Kong. The northeast monsoon behind the cold front brought generally fine weather condition from 22 to 27 September. In the mean time, Tropical

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Storm Ketsana entered the South China Sea on 26 September and intensified into a severe tropical storm on the next day. It gained typhoon intensity while crossing the northern part of the South China Sea on 28 September. Under the combined effect of Ketsana and the northeast monsoon, local weather was windy with rain on 28 and 29 September. Ketsana made landfall over the coast of central Vietnam in the afternoon of 29 September and weakened gradually afterwards. The weather remained rainy for the last day of the month. Nine tropical cyclones occurred in the western North Pacific and the South China Sea in the month.

October 2009 was warmer and drier than usual. The mean temperature of the month was 26.2 degrees, 0.9 degrees above the normal of 25.3 degrees. The daily minimum temperatures during the month never fell below 23.0 degrees, which only occurred once on record in 2006. The total rainfall of 44.4 millimetres in the month was about 71 percent below the normal figure of 151.9 millimetres. The accumulated rainfall since 1 January was 2071.7 millimetres, about 10 percent below the normal figure of 2313.1 millimetres for the same period.

Affected by a dry northeast monsoon over southern China, the weather in Hong Kong was generally fine and dry for the first six days of the month. Brief showers occurred on the morning of 7 October and fine and dry weather resumed for the next three days.

Tropical Storm Parma entered the South China Sea on 9 October and moved across the northern part of the South China Sea on the next day. Under the combined effect of the northeast monsoon and Parma, the weather in Hong Kong became windy with a few rain patches from 11 to 14 October. With the dissipation of Parma over Vietnam on 15 October, local winds moderated and the weather became brighter with some haze on 15 and 16 October. It was sunny and dry on the next two days.

An area of low pressure over the northwestern part of the South China Sea intensified into a tropical depression on 19 October. Under the influence of the peripheral rain bands associated with the tropical depression, local weather turned cloudy with a few rain patches.

The northeast monsoon over southern China strengthened on 20 October, bringing cloudy, windy and slightly cooler weather to Hong Kong on that day. It remained cloudy on the next day. With the moderation of the northeast monsoon, the weather turned fine and dry on 22 October. Affected by a dry continental airstream, the weather continued to be mainly fine and dry over the territory till the end of the month. Six tropical cyclones occurred over the western North Pacific and the South China Sea in the month.

November 2009 was cooler than usual. The mean temperature of the month was 20.5 degrees, 0.9 degrees below the normal of 21.4 degrees. The first cold day with daily minimum temperature of 12.0 degrees or below occurred on 17 November and was the earliest for winter since 1981. The total rainfall of 60.4 millimetres in the month was about 72 percent above the normal of 35.1 millimetres. The accumulated rainfall since 1 January was 2132.1 millimetres, about 9 percent below the normal figure of 2348.2 millimetres for the same period.

The month started with a fine and hot day. A cold front over northern Guangdong moved across the south China coastal areas in that evening. Under the influence of an intense northeast monsoon behind the cold front, local weather was windy, dry and cooler with minimum temperatures falling below 20 degrees from 2 to 4 November. As the northeast monsoon weakened, it became warmer with sunny periods for the ensuing three days.

With a warm maritime airstream dominating over the south China coastal areas, local weather turned mainly cloudy with a few light rain patches from 8 to 11 November. Meanwhile, another cold front had formed over southern China and moved across Hong Kong late on 12 November, bringing occasional rain. The northeast monsoon behind the cold front brought noticeably cooler weather with some rain to the territory for the next three days.

An intense surge of northeast monsoon reached the south China coastal areas on 16 November. Locally, it was rainy in the morning and the temperature started to fall significantly during the day. Winds strengthened on 17 November and the weather became cold. The temperature recorded at the Hong Kong Observatory fell to a minimum of 9.7 degrees on 18 November, the lowest of the month. With the northeast monsoon persisting over the south China coast, local weather remained rather cold and dry for the following three days.

With moderation of the northeast monsoon, temperatures started to rise gradually on 22 November. It remained mainly fine from 23 to 28 November. A weak replenishment of the northeast monsoon reached the south China Coastal areas on 29 November and brought slightly cooler weather to Hong Kong for the last two days of the month. Six tropical cyclones occurred over the western North Pacific and the South China Sea in the month.

December 2009 was cooler and wetter than usual. The monthly mean temperature of 17.3 degrees was 0.5 degrees below normal. The total rainfall of 50.2 millimetres in the month was about 46 percent above the normal figure of 34.5 millimetres. The annual rainfall for 2009 was 2182.3 millimetres, about 8 percent below the normal figure of 2382.7 millimetres.

A dry northeast monsoon brought generally fine weather to Hong Kong for the first six days of the month. Affected by a fresh to strong easterly airstream over the coastal areas of Guangdong, it became windy and cloudy with rain on 7 and 8 December. The weather remained generally cloudy with a few rain patches for the next two days. A ridge of high pressure established over southeastern China brought sunny periods to the territory from 10 to 14 December.

As a cold front developed over southern China on 15 December and crossed the coastal areas of Guangdong in the evening, local weather turned cloudy with a few rain patches. The winter monsoon behind the cold front brought cold weather to Hong Kong for the following six days.

With the weakening of the winter monsoon, temperatures started to rise on 22 December. It was mainly fine and mild for the following three days. However, the light wind condition brought low visibility to parts of the territory on 24 and 25 December. Under the influence of an easterly airstream over the south China coastal areas, the weather turned cloudy with mist on 26 December.

A strong cold front formed over southern China on 27 December and moved southwards quickly. With the passage of the cold front over the territory that afternoon, local weather turned cold and rainy. The temperature at the Hong Kong Observatory fell from about 18 degrees to a minimum of 9.4 degrees on the morning of 28 December, the lowest of the month. The weather remained cloudy with rain and mist for the next two days. A fresh to strong easterly airstream brought generally cloudy condition with a few rain patches to the territory for the last day of the month. One tropical cyclone occurred over the western North Pacific and the South China Sea in the month.

January 2010 was milder than usual. The first half of January was cooler than normal while the weather became significantly milder than usual in the second half, resulting in a mean temperature of 16.8 degrees for the whole month which was 0.7 degrees above normal. There were only four cold days (daily minimum temperature at 12.0 degrees or below) in the month, the least for January since 2001. The month was also cloudier than normal. The mean cloud amount for the month was 73 percent, about 13 percent above normal. The total bright sunshine duration was 108.7 hours, about 23 percent below the normal figure of 141.7 hours.

Under the influence of an easterly airstream, it was generally cloudy with a few light rain patches for the first three days of the month. A ridge of high pressure established over southeastern China and brought sunny periods to Hong Kong on 4 January.

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An easterly airstream affected the coast of Guangdong and brought cloudy and cooler conditions to the territory on 5 January. A cold front crossed the coastal areas of Guangdong on 6 January, bringing a few rain patches and a significant drop in temperature during the day over the territory. The weather remained cloudy and cold for the next two days. With moderation of the winter monsoon, the temperatures rose gradually and there were sunny periods on 9 and 10 January.

The winter monsoon over the south China coastal areas strengthened on 11 January. Local weather turned overcast with rain and temperatures dropped gradually that day. Clouds started to thin the next morning but cold weather persisted over the territory on 12 and 13 January. The temperatures recorded at the Hong Kong Observatory fell to a minimum of 9.8 degrees on 13 January, the lowest of the month. The weather remained fine and dry for the ensuing five days.

A mild easterly airstream affecting the coastal areas of Guangdong brought mild weather with some sunny periods for Hong Kong from 19 to 21 January. Meanwhile, a cold front over southern China moved southward gradually on 21 January and crossed the coastal areas of Guangdong the next morning. The northeast monsoon behind the cold front brought cooler weather with some light rain patches to Hong Kong from 22 to 24 January. Weather improved the next day with some sunny intervals.

A humid maritime airstream over the coastal areas of Guangdong brought cloudy and misty weather with some light rain patches to the territory from 26 to 28 January. Affected by a fresh easterly airstream, it was slightly cooler on 29 January. With moderation of the easterly winds, local weather became mainly fine apart from some mist patches on 30 January. With abundant sunshine, the temperature rose to 24.5 degrees on the last day of the month, the highest of the month. There was no tropical cyclone over the South China Sea and the western North Pacific in the month.

February 2010 was more than counter-balanced by a persistently warm and humid maritime airstream towards the end of the month, making February 2010 wetter and milder than usual. The mean temperature for the month was 17.9 degrees, about 1.6 degrees above normal. The monthly mean relative humidity of 88 percent was about 10 percent above normal, the highest since 1959. The month was also gloomier than usual. The total bright sunshine duration of 31.8 hours was only about one-third of the normal figure of 93.8 hours, the smallest since 1985. The total rainfall in the month was 113.1 millimetres, more than double the normal figure of 52.3 millimetres.

With a warm maritime airstream prevailing over the coastal areas of Guangdong, it was foggy in Hong Kong for the first day of the month. A fresh northeast monsoon arrived at the south China coastal areas on 2 February, bringing cooler weather with fog and light rain patches to the territory. Local weather remained cloudy with mist and light rain for the ensuing four days.

Under the influence of an unstable airstream, it was overcast with periods of rain on 7 and 8 February. A total of 94.1 millimeters of rainfall was recorded at the Hong Kong Observatory on 7 February, the highest daily rainfall for February on record. Affected by a warm and humid maritime airstream, it was warm with coastal mist and fog from 9 to 11 February. The daily minimum and mean temperatures recorded at the Hong Kong Observatory on 11 February were 23.9 degrees and 25.0 degrees respectively, both the highest for February on record.

Meanwhile, a cold front had formed over central China, and moved southwards steadily over inland Guangdong. It crossed the coastal areas on the morning of 12 February. Affected by the intense northeast monsoon behind the cold front, local temperatures fell significantly from about 25 degrees at first to around 12 degrees by midnight. It remained cold and windy with a few rain patches the next day. Despite the weakening of the northeast monsoon, local weather remained cool with fog and a few rain patches on 14 February.

The northeast monsoon over south China intensified significantly on 15 February and brought cold and rainy weather to the territory for the ensuing six days. The temperatures recorded at the Hong Kong Observatory dropped to a minimum of 7.7 degrees on 19 February, the lowest of the month.

The northeast monsoon over the coastal areas of Guangdong moderated and replaced by a humid easterly airstream on 21 February. Local temperatures started to rise on that day. It was rather mild with mist from 21 to 24 February. With a maritime airstream prevailing, it was foggy with local temperature and relative humidity rising further for the last four days of the month. There was no tropical cyclone over the South China Sea and the western North Pacific in the month.

March 2010 was mild and dry. The mean temperature for the month was 20.2 degrees, about 1.3 degrees above normal. The total rainfall in the month was 17.5 millimetres, about 75 percent below the normal figure of 71.4 millimetres. The total bright sunshine duration was 110.1 hours, about 23 percent above the normal figure of 89.6 hours.

Under the influence of a humid maritime airstream, the weather in Hong Kong was mainly cloudy, warm and humid with fog for the first six days of the month.

A cold front crossed the coast of Guangdong on the morning of 7 March, bringing some rain patches and significantly cooler weather to the territory. Affected by the intense northeast monsoon behind the cold front, local temperatures dropped further the next day and the weather became cold on 9 and 10 March. The temperature at the Hong Kong Observatory dropped to a minimum of 8.1 degrees on 10 March, the lowest of the month. In the meantime, the northeast monsoon turned dry and it was fine in Hong Kong on 10 and 11 March. As the northeast monsoon moderated, the weather became cloudy and foggy for the ensuing four days with temperatures rising gradually to above 20 degrees on 15 March.

After the passage of another cold front across the south China coast early on 16 March, local weather was relatively cool while remaining cloudy for two days. Under the influence of a ridge of high pressure over southeast China, it became mainly fine on 18 and 19 March. A weak maritime airstream over the south China coastal areas brought misty weather for the territory on 20 March.

With the establishment of another ridge of high pressure over eastern China, the associated fresh northeast monsoon carried the sand and dust originated from sandstorms over northern China, to reach the coast of Guangdong on 21 March. Locally, visibility in the harbour generally dropped below 3000 metres later in the afternoon on that day. The visibility remained rather low on 22 March but improved slightly over the next two days as the winds turned to southerly.

A cold front moved southwards across the coast of Guangdong later on 24 March, bringing some rain and a significant drop in temperature of about 10 degrees in Hong Kong overnight. With a strong monsoon prevailing, it was mainly cloudy and cool with significant improvement in the visibility during the day on 25 March.

Under the influence of a dry northerly airstream, the weather turned fine and dry on 26 March. It remained rather dry with relative humidity decreasing generally to below 50 percent during the day on 27 and 28 March.

A fresh to strong easterly airstream prevailed over the southeastern China coastal areas bringing cloudy weather to Hong Kong on 29 and 30 March. With the moderation of the easterlies, it was rather warm with sunny periods on the last day of the month. One tropical cyclone occurred over the western North Pacific and the South China Sea in the month.