China Harbour Engineering Company Limited

Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works – Stage V Phase II B

Quarterly Environmental Monitoring and Audit Summary Report (July to September 2011)

(Version 2.0)

Certified By	(Environm	ental Team/Leader)
REMARKS:		

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LTD Room 1710, Technology Park, 18 On Lai Street, Shatin, NT, Hong Kong Tel: (852) 2151 2083 Fax: (852) 3107 1388 Email: info@cinotech.com.hk

TABLE OF CONTENTS

ze	Pa
ze	Pa

		0
EX	KECUTIVE SUMMARY	1
	INTRODUCTION	
	ENVIRONMENTAL MONITORING AND AUDIT WORKS	
	ENVIRONMENTAL COMPLAINT AND PROSECUTION	
	ENVIRONMENTAL LICENSING AND PERMITTING	
1.	INTRODUCTION	
	BACKGROUND	
	PROJECT ORGANIZATIONS	
	TABLE 1.1 Key Project Contacts	4
	CONSTRUCTION PROGRAMME AND SYNOPSIS OF WORK	
	SUMMARY OF EM&A REQUIREMENTS	5
2.	ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS	6
	MONITORING PARAMETERS AND MONITORING LOCATIONS	6
	MONITORING METHODOLOGY AND CALIBRATION DETAILS	
	ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)	
	ENVIRONMENTAL MITIGATION MEASURES	
3.	MONITORING RESULTS	7
	WEATHER CONDITIONS	7
	AIR QUALITY	
	CONSTRUCTION NOISE	
	LANDFILL GAS	
4.	AUDIT RESULTS	8
	IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES	
	SITE AUDIT SUMMARY	8
	STATUS OF ENVIRONMENTAL LICENSING AND PERMITTING	
	Advice on Waste Management Status	11
5. PF	NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY CRFORMANCE LIMITS (ACTION AND LIMIT LEVELS)	12
	SUMMARY OF EXCEEDANCES	
	REVIEW OF THE REASONS FOR AND THE IMPLICATIONS OF NON-COMPLIANCE	
6.	ENVIRONMENTAL COMPLAINTS AND PROSECUTIONS	
7.	COMMENTS, CONCLUSIONS AND RECOMMENDATIONS	
	EFFECTIVENESS OF MITIGATION MEASURES	
	CONCLUSION	13

LIST OF TABLE

- Table I
 Summary Table for Events Recorded in the Reporting Quarter
- Table 1.1Key Project Contacts
- Table 4.1Observations and Recommendations of Site Audit

LIST OF FIGURES

Figure 1.1	Site Layout Plan
Figure 1.2	Locations of Air Quality and Noise Monitoring Stations
Figure 1.3	Landfill Gas Monitoring Area

LIST OF APPENDICES

Appendix A	Construction Programme
Appendix B	Monitoring Requirements
Appendix C	Action and Limit Levels
Appendix D	Graphical Presentation of 1-hr TSP Monitoring Results
Appendix E	Graphical Presentation of 24-hr TSP Monitoring Results
Appendix F	Graphical Presentation of Noise Monitoring Results
Appendix G	Graphical Presentation of Landfill Gas Monitoring Results
Appendix H	Updated Environmental Mitigation Implementation Schedule
Appendix I	Summary of Environmental Licensing and Permit Status
Appendix J	Waste Generation in the Reporting Quarter
Appendix K	Summary of Exceedance
Appendix L	Complaint Log

EXECUTIVE SUMMARY

Introduction

- This is the 5th Quarterly Environmental Monitoring and Audit (EM&A) Summary Report prepared by Cinotech Consultants Limited (the Environmental Team, ET) for DSD Contract no. DC/2009/09 "Construction of Tai Po Sewage Treatment Works – Stage V Phase IIB". This summary report presents EM&A works performed in the period between July and September 2011.
- 2. The construction activities undertaken in the reporting quarter include:
 - Construction of Decanting Chamber, FC11B, FC12B, Chemical & Oil Store;
 - Construction of Aeration Tanks, Primary Sedimentation Tank no.5, Bio-gas Holding Tank Valve Chamber, Cable Draw Pit and Laying Cable Duct;
 - Dismantling works;
 - Diversion works;
 - Drainage and Excavation works;
 - Landscaping works;
 - Mini-piling works;
 - Pre-drilling works;
 - Steelworks for Shelter of Ferric Chloride Dosing System;
 - Proof drilling works;
 - Pipeline works;
 - Paving works;
 - Finishing works at Decanting Chamber and Chemical & Oil Store; and
 - Installation of DN1500 Air Main.

Environmental Monitoring and Audit Works

- 3. Environmental monitoring and audit works for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
- 4. Summary of the events and action taken in the reporting quarter is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Quarter

Donomotor	No. of Ex	ceedance	No. of Events	A stion Taken
Parameter	Action Level	Limit Level	due to this Project	Action Taken
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	0	0	0	N/A

Construction Noise

5. All construction noise monitoring was conducted as scheduled in the reporting quarter.

6. No Action Level (public complaint) / Limit Level exceedance was recorded in the reporting quarter.

Air Quality

7. The air quality monitoring was conducted as scheduled in this reporting period. No Action/Limit Level exceedance was recorded in the reporting period.

Landfill Gas

8. In the reporting period, excavation works were undertaken within the 250m Consultation Zone of Shuen Wan Landfill. Landfill gas monitoring was performed by the Safety Officer of the Contractor. No Action/Limit Level exceedance was recorded in the reporting period.

Environmental Complaint and Prosecution

9. No environmental complaint, prosecution or notification of summons was received in this reporting quarter.

Environmental Licensing and Permitting

10. Environmental related licenses/permits granted to the Project include the Environmental Permit (EP) for the Project, the Discharge Licence, Construction Noise Permit and the Waste Disposal (Chemical Waste) Licence.

Future Key Issues

- 11. The anticipated environmental impacts will be mainly on ponding water and surface runoff after rain as well as the noise nuisance and dust emission from the major construction activities will be undertaken in the coming quarter, including:
 - Construction of MLC and Foam Removal Chamber;
 - Construction of FMC1B & FMC2B, Aeration Tank No.5 & 6, Primary Sedimentation Tank No.5, Valve Chamber for Bio-gas Holding Tank;
 - Demolition Existing Final Settlement Tank No.9, Draw-off Chamber No. 3 & 4 and Control Room;
 - Drainage and Excavation works;
 - Finishing works for Decanting Chamber and Chemical & Oil Store;
 - Landscaping works;
 - Load test on existing tubular piles at FC7B;
 - Modification works at Central Building Complex and Service Tower Building;
 - Piling works at MCL, FC7B, FC8B & FC10B; and
 - Pipeline works.

1. INTRODUCTION

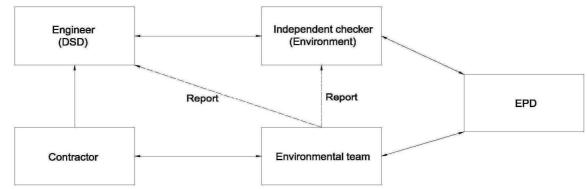
Background

- 1.1 Tai Po Sewage Treatment Works (TPSTW) is located within the Tai Po Industrial Estate. It currently comprises four Stages: I, II, IVA and IVB works. The TPSTW Stage V aims to upgrade the existing STW to provide additional sewage treatment capacity from the present design flow of 88,000 m³/day to 130,000 m³/day to meet the demands of both the existing and future developments, and to meet the revised discharge license requirements.
- 1.2 The TPSTW Stage V, Phase I and Phase II are Designated Projects under the Environmental Impact Assessment Ordinance (Cap. 449) with the same EIAO Register No. AEIAR – 081/2004. A study of environmental impact assessment (EIA) was undertaken to evaluate various environmental impacts associated with the works within these two Designed Projects. An EIA Report as well as an Environmental Monitoring and Audit (EM&A) Manual were approved by the Environmental Protection Department (EPD) on 28 October 2004.
- 1.3 The Stage V works will be implemented in 2 phases. The design capacities of Phase I and Phase II works are 100,000 m³/d and 130,000 m³/d respectively. An Environmental Permit (EP) No. EP-265/2007 was issued on 22 March 2007 for the TPSTW Stage V Phase II to the Drainage Services Department (DSD) as the Permit Holder. The project "Tai Po Sewage Treatment Works Stage V Phase IIB" formed part of the Phase II works, includes additional secondary treatment process units (1 primary clarifier; 3 bioreactors and 2 final clarifiers) in TPSTW for its future extended plant design capacity of 120,000 m³/day. A master construction programme of the Project is provided in Appendix A. A site layout plan is provided in Figure 1.1. The construction activities of the Project commenced on 3 July 2010.
- 1.4 Cinotech Consultants Ltd. was commissioned by the Contractor as the Environmental Team (ET) to undertake the EM&A works for the Project. Dr. Priscilla CHOY of Cinotech Consultants Ltd. was appointed as the ET Leader as per the Condition 2.1 of the EP. Ove Arup and Partners Hong Kong Limited. was appointed as the IEC under Condition 2.2 of the EP. This is the 5th quarterly EM&A summary report summarizing the EM&A works for the Project between July and September 2011.

Project Organizations

- 1.5 Different parties with different levels of involvement in the project organization include:
 - Project Proponent / Engineer's Representative (ER) Drainage Services Department
 - Environmental Team (ET) Cinotech Consultants Ltd.
 - Independent Environmental Checker (IEC) Ove Arup and Partners Hong Kong Limited
 - E&M Contractor China Harbour Engineering Company Ltd.
- 1.6 The responsibilities of respective parties are detailed in Section 1.10 of the Final EM&A Manual of the Project.

1.7 The Project Organization during Construction Phase



1.8 The key contacts of the Project are shown in **Table 1.1**.

Party	Role	Name	Position	Phone No.	Fax No.
		Mr. LAI cheuk-ho	Chief Engineer	2594 7500	
DSD	SP Division	Mr. IP Shu-kuen	Senior Engineer	2594 7502	2827 8700
		Mr. TSANG Lap-kei	Engineer	2594 7459	
		Dr. Priscilla CHOY	ET Leader	2151 2089	
Cinotech	Environmental Team	Mr. William Lai	Project Coordinator and Audit Team Leader	2151 2078	3107 1388
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087	
Arrup	Independent Environmental	Mr. Coleman NG	Independent Environmental Checker	2268 3097	2528 3031
Arup	Checker	Mr. Lawrence KAN Assistant to Independent Environmental Checker		2268 3212	2528 5031
		Mr. TK CHEUNG	Project Manager	9863 2954	
CHEC	Civil Contractor	Mr. Aaron AU	Site Agent	6345 0754	2603 6899
		Mr. Jason TSE	Environmental Offiecr	9320 3608	

Table 1.1Key Project Contacts

Construction Programme and Synopsis of Work

- 1.9 The construction programme is presented in **Appendix A**. The site activities undertaken during the reporting quarter included:
 - Construction of Decanting Chamber, FC11B, FC12B, Chemical & Oil Store;
 - Construction of Aeration Tanks, Primary Sedimentation Tank no.5, Bio-gas Holding Tank Valve Chamber, Cable Draw Pit and Laying Cable Duct;
 - Dismantling works;
 - Diversion works;
 - Drainage and Excavation works;
 - Landscaping works;
 - Mini-piling works;
 - Pre-drilling works;
 - Steelworks for Shelter of Ferric Chloride Dosing System;
 - Proof drilling works;
 - Pipeline works;

4

- Paving works;
- Finishing works at Decanting Chamber and Chemical & Oil Store; and
- Installation of DN1500 Air Main.

Summary of EM&A Requirements

- 1.10 The EM&A programme requires construction phase air quality, noise monitoring and landfill gas monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:
 - All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event / Action Plans;
 - Environmental mitigation measures, as recommended in the project EIA study final report; and
 - Environmental requirements in contract documents.
- 1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of this report.
- 1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality and noise as well as audit works for the Project in the reporting period.

2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 2.1 The EM&A Manual designate locations for the ET to monitor environmental impacts in terms of noise and air quality due to the Project. The Project area and monitoring locations are depicted in Figure 1.2. Appendix B gives details of monitoring requirements.
- 2.2 In accordance with clause 8.8 of the EM&A Manual, the number and location of the monitoring stations and parameters can be referred to Monthly EM&A reports in order to cater for any changes in the surrounding environmental and the nature of works in progress. In the reporting months, there is no alteration made on changing the location of the monitoring stations.
- 2.3 The baseline checking was conducted on 25, 26 and 28 July 2011 for 1-hour TSP and 31 July 2011 for 24-hour TSP respectively when no dusty works activities are in operation. The baseline checking results were reviewed within the range of baseline monitoring results which were presented in Baseline Monitoring Report. Therefore, the current Action and Limit levels for 1-hour TSP and 24-hour TSP monitoring are considered as still representative and valid.

Monitoring Methodology and Calibration Details

2.4 Monitoring works/equipments were conducted/calibrated regularly in compliance with the EM&A Manual's requirements. Monitoring methodologies and calibration details can be referred to Monthly EM&A reports. Valid calibration certificates were attached in the appendices of the relevant Monthly EM&A reports.

Environmental Quality Performance Limits (Action and Limit Levels)

2.5 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in **Appendix C**.

Environmental Mitigation Measures

2.6 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manual for the Contractor to implement. A summary of the Updated Environmental Mitigation Implementation Schedule (EMIS) is given in **Appendix H**.

3. MONITORING RESULTS

Weather Conditions

3.1 The weather during monitoring sessions was mainly sunny or cloudy. The weather conditions for each individual monitoring session were presented in corresponding of Monthly EM&A Reports.

Air Quality

- 3.2 Air quality monitoring was conducted as scheduled in the reporting period.
- 3.3 Graphical presentations of 1-hr TSP and 24-hr TSP monitoring results are shown in **Appendices D** and **E**, respectively.
- 3.4 All measured 1-hr and 24-hr TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.

Construction Noise

- 3.5 All construction noise monitoring was conducted as scheduled in the reporting period.
- 3.6 Graphical representations of the monitoring results are shown in **Appendix F**. No Action Level (public complaint) / Limit Level exceedance was recorded in the reporting period.

Landfill Gas

- 3.7 All Landfill gas measurements were performed by the Safety Officer of the civil works Contractor (CHEC) in the reporting period.
- 3.8 Graphical representations of the monitoring results are shown in **Appendix G**. No Action/Limit Level exceedance was recorded in the reporting period.

4. AUDIT RESULTS

Implementation Status of Environmental Mitigation Measures

4.1 The implementation status of environmental mitigation measures (EMIS) is given in Appendix H.

Site Audit Summary

4.2 During site inspections in the reporting period, no non-conformance was identified. The observations and recommendations made in each site audit session in the reporting period are summarized in **Table 4.1**.

Table 4.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
	8-July-2011	Reminder: - The deposited mud should be cleared at wheel washing facility outside the site office.	The situation was observed rectified in audit session 110714.
	8-July-2011	Reminder: - The stagnant water should be cleared at FC7B.	The situation was observed rectified in audit session 110714.
	14-July-2011	<u>Reminder:</u> - Sand, silt and mud deposited should be cleaned along the channel opposite to Detritor.	The situation was observed rectified in audit session 110721.
	5-August-2011	<u>Reminder:</u> - Sand bag bunding should be provided around the gully at outside the site office.	The situation was observed rectified in audit session 110812.
Water Quality	12-August-2011	Reminder: - The stagnant water at FC7B&8B should be cleared regularly.	The situation was observed rectified in audit session 110818.
	12-August-2011	Reminder: - The deposited mud along the u-channel outside the site office should be kept clearing.	The situation was observed rectified in audit session 110818.
25-August-2011		Reminder: - Stagnant water should be collected and cleaned in the pit at A-tank.	The situation was observed rectified in audit session 110831.
	31-August-2011	Reminder: - To cover the sloped surface with tarpaulin at A-tank.	The situation required follow-up action during the coming audit session.

Parameters	Date	Observations and Recommendations	Follow-up
	9-September-2011	Reminder: - The wheel washing bay should be maintained properly at FC11B&12B.	The situation was observed rectified in audit session 110915.
	22-September-2011	Reminder: - The stagnant water should be cleared regularly at A- Tank and behind A-Tank.	The situation was observed rectified in audit session 110930.
	8-July-2011	Reminder: - The Contractor was reminded to keep watering at A- Tank haul road, to avoid dust generation.	The situation was observed rectified in audit session 110714.
	5-August-2011	Reminder: - The haul road should be watered regularly at A- Tank and FC7B.	The situation was observed rectified in audit session 110812.
18-August-2011		Reminder: - To provide the haul road with sufficient water spraying.	The situation was observed rectified in audit session 110825.
Air Quality	31-August-2011	Reminder: - The haul road should be provided with sufficient water spraying.	The situation required follow-up action during the coming audit session.
	9-September-2011	<u>Reminder:</u> - The haul road at A-Tank should be watered regularly.	The situation was observed rectified in audit session 110915.
	9-September-2011	Reminder: - The exposed slope should be covered with tarpaulin sheet properly at A-Tank.	The situation was observed rectified in audit session 110930.
	14-July-2011	<u>Reminder:</u> - Construction materials should be disposed of or stored properly at FC8B.	The situation was observed rectified in audit session 110721.
	21-July-2011	Observation: - The deposited silt and mud was observed to be disposed along the haul road at FC11B&12B. The Contractor was reminded to clear the deposited silt, to avoid directing to the public during rain.	The situation was observed rectified in audit session 110728.
Waste / Chemical Management	21-July-2011	Reminder: - The general refuse with the rubbish bin should be cleared at FC11B&12B.	The situation was observed rectified in audit session 110728.
	28-July-2011	<u>Reminder:</u> - The worn sand bag should be cleared near the gully at FC11B&12B.	The situation required follow-up action during the coming audit session.
	28-July-2011	<u>Reminder:</u> - The deposited silt should be cleared along the haul road near FC11B&12B.	The situation required follow-up action during the coming audit session.

Parameters	Date	ate Observations and Recommendations			
	5-August-2011	<u>Observation:</u> - Deposited silt was observed to be exposed along the haul road at outside the site office. The Contractor was reminded to clear the silt as soon as possible and block the entrance of haul road, to avoid directing to the public.	The situation was observed rectified in audit session 110812.		
	12-August-2011	Reminder: - C&D waste at FC11B&12B should be cleared regularly and disposed of properly.	The situation was observed rectified in audit session 110818.		
	18-August-2011	Reminder: - C&D materials and general refuse should be disposed of or stored properly at Aeration Tank.	The situation was observed rectified in audit session 110825.		
	18-August-2011	Reminder: - To ensure the plant or equipment to well maintain to avoid chemical/fuel leakage near FC11B & 12B.	The situation was observed rectified in audit session 110825.		
	25-August-2011	<u>Reminder:</u> - Drip tray should be provided to the oil drum or stored properly to prevent leakage.	The situation was observed rectified in audit session 110831.		
	31-August-2011	<u>Observation:</u> - Contaminated soil was observed near the plant and equipment at FC8B. Contractor was reminded to clean them properly and well-maintain the plant.	The situation required follow-up action during the coming audit session.		
	31-August-2011	<u>Observation:</u> - To clean the contaminated ground/oil stain opposite to the detritor.	The situation required follow-up action during the coming audit session.		
	15-September-2011	Observation: - Construction materials at A-Tank should be stored, segregated properly for housekeeping.	The situation was observed rectified in audit session 110922.		
	15-September-2011	<u>Reminder:</u> - Any C&D waste and general refuse should be disposed of properly near FC11B & 12B for general housekeeping.	The situation was observed rectified in audit session 110922.		
	15-September-2011	<u>Reminder:</u> - Oil container should be provided with a drip tray outside site office.	The situation was observed rectified in audit session 110922.		
	22-September-2011	Reminder: - Timber should be cleared as soon as possible at A- Tank, to avoid accumulation of C&D waste.	The situation was observed rectified in audit session 110930.		
	22-September-2011	Reminder: - The deposited silt should be cleared along the haul road near FC11B&12B.	The situation was observed rectified in audit session 110930.		

Status of Environmental Licensing and Permitting

4.3 Environmental licenses and permits including the Environmental Permit (EP), the Construction Noise Permit and Waste Disposal (Chemical Waste) License were in place and valid during the

reporting quarter. A summary of environmental licensing and permit status is given in **Appendix I**.

Advice on Waste Management Status

4.4 6070m³ of inert C&D waste and 68.5m³ of non-inert C&D waste were disposed in the reporting period. Excavated materials, as the main C&D materials generated in the reporting period, were stored inside the Site Area and Stockpiling Area of the Project. Besides, no chemical waste was generated in the reporting period. The amount of wastes generated by the activities of the Project in the reporting period fulfills the requirement of estimated volume of excavated material in EIA Report. The amount of wastes generated by the activities of the Project in the reporting period was attached in the appendices of the Monthly Reports for July 2011 to September 2011. Waste flow table please refer to **Appendix J**.

5. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

- 5.1 Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. A summary of exceedance is attached in **Appendix K**.
- 5.2 All measured 1-hr and 24-hr TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting period.
- 5.3 No Action/Limit Level exceedance for the construction noise was recorded in the reporting period.
- 5.4 No Action/Limit Level exceedance for landfill gas monitoring was recorded in the reporting period.

Review of the Reasons for and the Implications of Non-compliance

5.5 There was no non-compliance from the site audits in the reporting quarter. The observations and recommendations made in each audit session were attached in the Monthly Reports.

6. ENVIRONMENTAL COMPLAINTS AND PROSECUTIONS

6.1 No environmental related complaint, prosecution or notification of summons was received in the reporting quarter.

7. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

7.1 Environmental monitoring and audit works were performed in the reporting quarter. The EM&A program was strictly following the requirement of methodology in EM&A manual. The monitoring work was considered as effective. In addition, site inspections were conducted on a weekly basis. The results were reviewed and checked.

Effectiveness of Mitigation Measures

7.2 The mitigation measures recommended in the EIA report and required by the EP are considered effective in minimizing environmental impacts. The Contractor has implemented the recommended mitigation measures except those mitigation measures not applicable at this stage.

Conclusion

- 7.3 All measured 1-hr and 24-hr TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.
- 7.4 All measured noise levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.
- 7.5 All landfill gas monitoring levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.
- 7.6 There was no environmental complaint, prosecution or notification of summons received.
- 7.7 The anticipated environmental impacts will be mainly on ponding water and surface runoff after rain as well as the noise nuisance and dust emission from the major construction activities will be undertaken in the coming quarter, including:
 - Construction of MLC and Foam Removal Chamber;
 - Construction of FMC1B & FMC2B, Aeration Tank No.5 & 6, Primary Sedimentation Tank No.5, Valve Chamber for Bio-gas Holding Tank;
 - Demolition Existing Final Settlement Tank No.9, Draw-off Chamber No. 3 & 4 and Control Room;
 - Drainage and Excavation works;
 - Finishing works for Decanting Chamber and Chemical & Oil Store;
 - Landscaping works;
 - Load test on existing tubular piles at FC7B;
 - Modification works at Central Building Complex and Service Tower Building;
 - Piling works at MCL, FC7B, FC8B & FC10B; and
 - Pipeline works.

Recommendations

7.8 According to the environmental audit sessions performed in the reporting period, the following recommendations were made:

Water Impact

- To provide sediment tank for settling runoff prior to disposal.
- To avoid accumulation of stagnant water on site.
- To maintain sand bags placed along the u-channel at good condition and replace the broken bags.

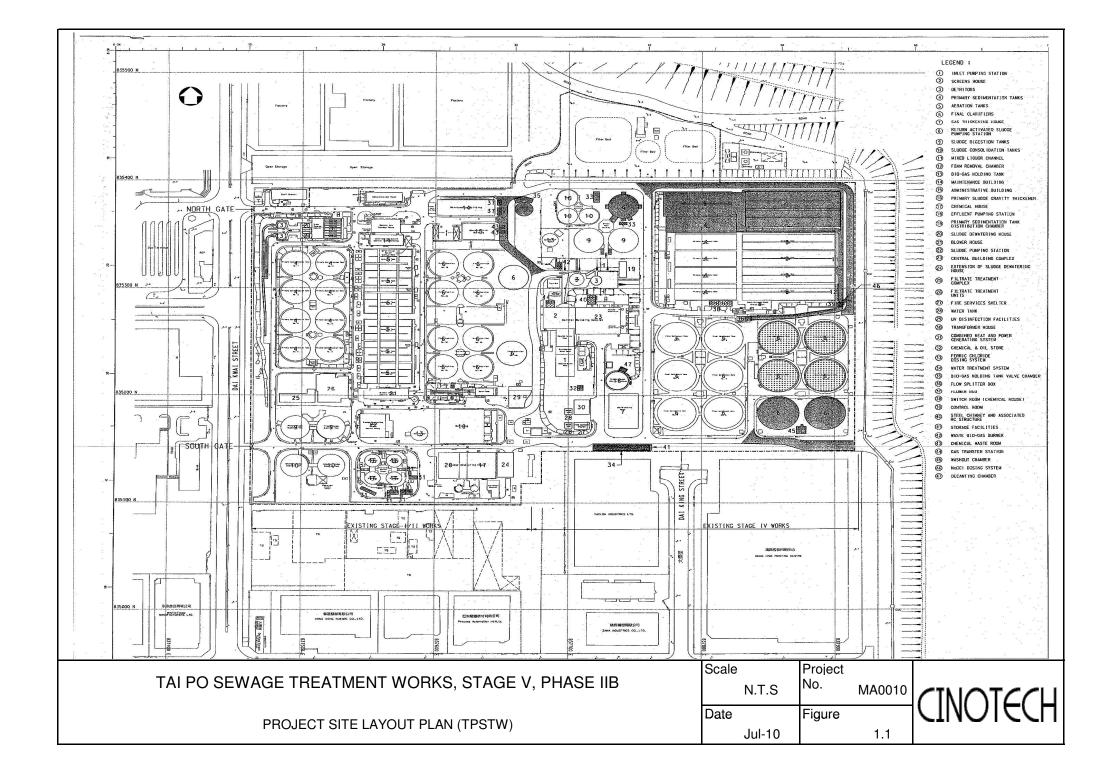
Dust Impact

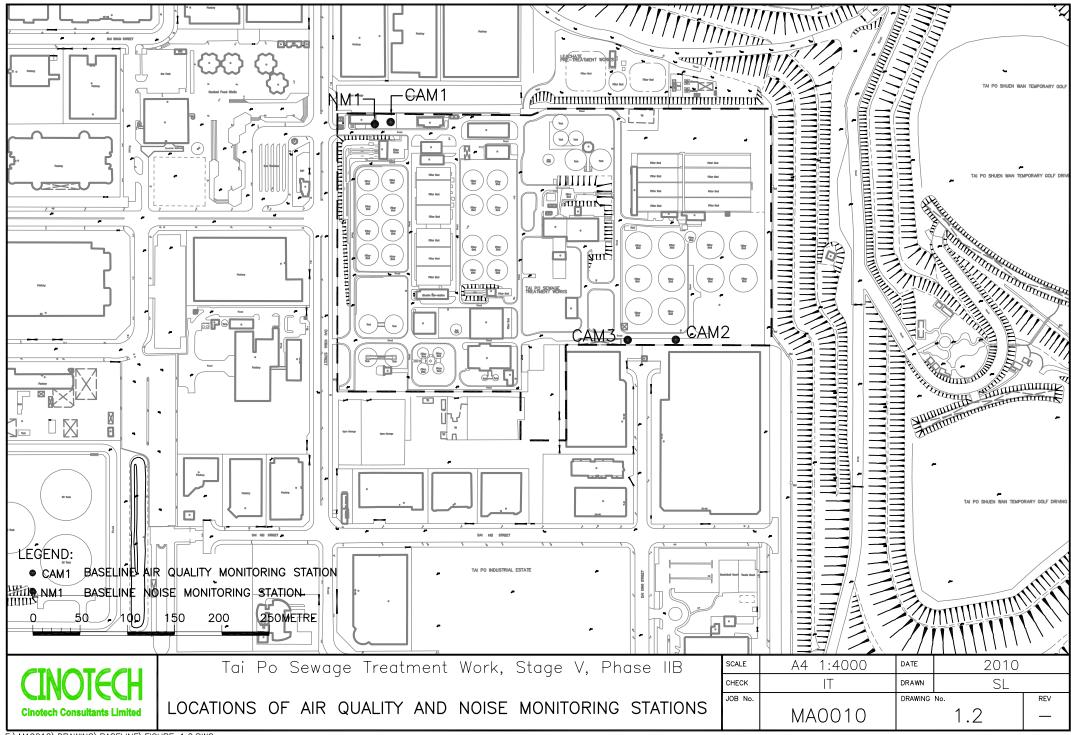
- To spray with water on the surface of concrete breaking and dry dust haul road.
- Excavated dusty materials or stockpile of dusty materials should be covered by impervious sheeting, or sprayed with water so as to maintain entire surface wet.

Waste / Chemical Management

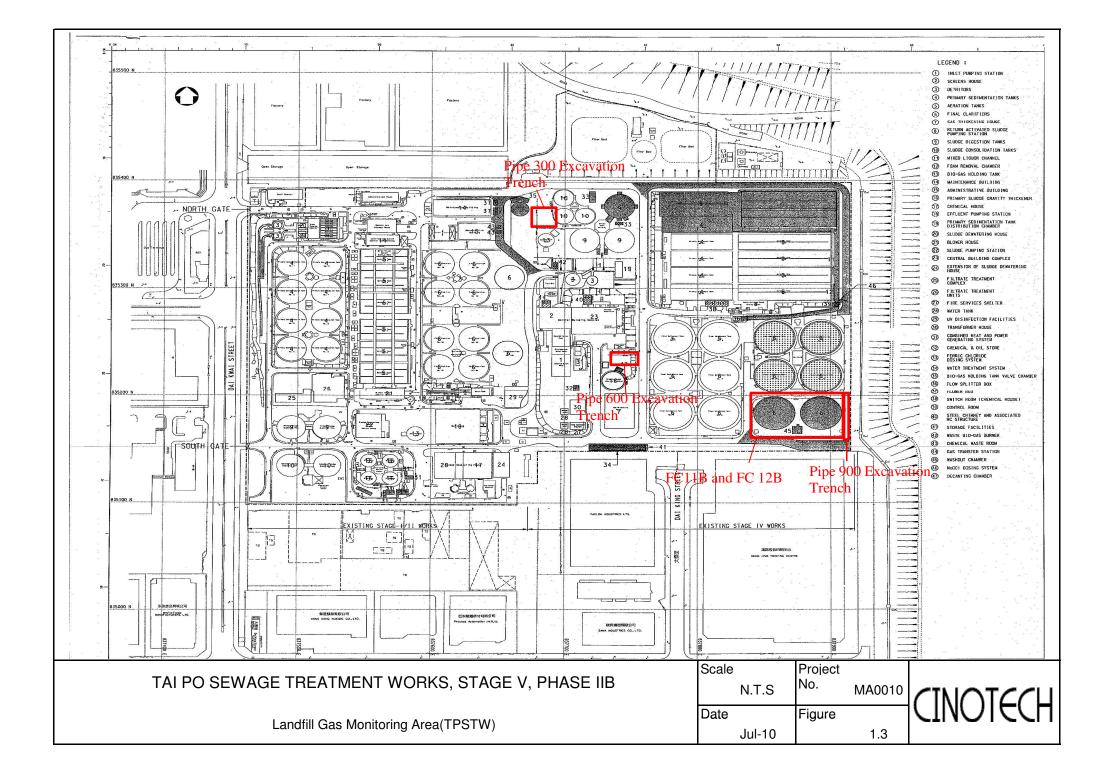
- To provide proper rubbish bins / skips for waste collection.
- To provide proper storage area for oil container on site.
- To avoid and check for any accumulation of waste materials or rubbish on site.
- Provide drip tray with adequate capacity and maintain well for equipment and chemical waste.

FIGURES





F:\MA0010\DRAWING\BASELINE\FIGURE 1.2.DWG



APPENDIX A CONSTRUCTION PROGRAMME

ૢૢૢૢૢૢ૽૽ૺૡ૽ૺૼ૾ૺ૾	Description	Orig Ea Dur Sta			Total Float	EB MAR APR MAY	201	AUG SEP (2011		OCT NOV	2012 DEC JAN FEB MAR APR MAY JUN JUL
1657	Base Slab of FC11B	22 19OC	F10 09NC	OV10	0				⊷ioona Bas	e Slab	of FC11B	APK MAT		AUG SEP	UCT NUV	DEC JAN FEB MAR APR MAY JUN JUL
12030	Structural Wall for FC11B	35 10NO	/10 14DE	EC10	0						ural Wall	for FC11	в			• • • • • • •
12040	Watertightness Test for FC11B	20 15DE	C10 03JA	N11	0		1		1		tertightne			з		
12050	Concrete Coating for FC11B	10 09JAN	11 18JA	N11	10d						Concrete C					
	Backfilling for FC11B	20 04JAN	11 23JA	N11	0					1	Backfilling					
and the second s	Works								-	<u>F</u>						
	DN700 DI Pipe % FC12B & extg chamber	50 19OC	10 07DE	EC10	52d					DN700	U Pipe %	6 FC12B	& exta c	hamber		
13020	DN700 DI Pipe % FC11B & extg chamber	50 10NO		· · · · ·	30d						700 DI Pip				er	
13030	Sludge Drawoff Chamber (C1B~C4B) & Pipework		0 21JA		7d		1				Sludge Dra					work
13040	Sludge Drawoff Chamber C5B & Pipework	15 14JAN			0						-Sludge D					
13050	Cable Ducting at Sludge Dewatering House	150 30MA			155d			i I Cable	Ducting					000 0.1 1	bonon	
Section II	of Works		do ance de						2000.19		90 001140	5/11g /100				
Drilling V	Works						1									
20001	Notification from Engineer	90 29JAN	11 28AF	PR11	0		1						ication fr	om Engin		
	Section II of Works	460 28FEE	· · · · · · · · · · · · · · · · · · ·		90d					1		NO(III		oni Engin		
	Removal of extg Final Clarifier FC9 & FC10	25 28FEE			000							omoural		nal Clarif		Section 1
	Pre-drilling Works for FC9B & FC10B (18 nos)	45 25MA						1			1		-			
	Removal of extg Final Clarifier FC7 & FC8	25 25MA			20d					2						FC10B (18 nos)
	Pre-drilling Works for FC7B & FC8B (18 nos)		11 22JU		200	· · · · · · · · · · · · · · · ·	-	54 - 5 - 5 - 5 - 5 5 { 5 - 6 - 6 - 6 - 7 - 7 - 7 - 7 - 7 - 7 - 7			• • •					C7 & FC8
	Socketted H-piling (80 nos)	120 23JUN						}	• • •	-		-		-		C7B & FC8B (18 nos)
	Proof Drilling for Socketted H-pile (4 nos)	28 21001						1		-		ŀ				etted H-piling (80 nos)
	Load Test for extg Steel Pile (4 nos)	28 2100						1								roof Drilling for Socketted H-pile (4
	Load Test for Socketted H-pile (1 no)	14 18NO			183d		1					-				bad Test for extg Steel Pile (4 nos)
	Pre-drilling Works for Washout Chamber (4 nos)	14 18NO											· · · <u>· · · ·</u> · · ·			Load Test for Socketted H-pile (1 r
	Mini-piling for Washout Chamber (10 nos)	90 07JUL			7d							L				Washout Chamber (4 nos)
	Load Test for Mini-pile (1 no)				7d											ng for Washout Chamber (10 nos)
the state of the s	htter No. FC7B to FC10B	14 05001	11 1800		7d									اح با	⊠ Load 1	Test for Mini-pile (1 no)
Contraction of the second	Excavation for FC10B	45 4000				C.										
	Pile Head Construction for FC10B	15 18NO\			0											Excavation for FC10B
	Base Slab for FC10B	20 03DEC			0											Pile Head Construction for FC10
	Structural Wall for FC10B	22 23DEC			30d										-	Base Slab for FC10B
		35 14JAN			30d		1									Structural Wall for FC10
	Watertightness Test for FC10B	20 18FEB			45d					Set an air a						Watertightness Test
	Concrete Coating for FC10B	10 09MAF			45d		1. .		-							Concrete Coating for
	Excavation for FC9B	15 03DEC			5d											國 Excavation for FC9B
21110	Pile Head Construction for FC9B	20 23DEC			0	· · · · · · · ·		n an an Angelan	e de la companya de l La companya de la comp	• 2 • • 2 • • 2 • • 2 • • • • • •			1.12		` L I	Pile Head Construction for FC
	Base Slab for FC9B	22 12JAN			5d				i an e da en		·					Base Slab for FC9B
	Structural Wall for FC9B	35 03FEB			5d		1 .			a te te te te	: :	· · · ·				Structural Wall for FC
	Watertightness Test for FC9B	20 09MAR			35d		i ki si si si s	lesses starts								Watertightness Te
	Concrete Coating for FC9B	10 29MAR	12 07API	R12	35d					na en en An en anteres An en anteres	an a			*.		Concrete Coating
21170 E	Excavation for FC8B	15 18DEC	11 01JAN	V12	10d					an dan dan di					4	Excavation for FC8B
	Pile Head construction for FC8B	20 12JAN	2 31JAN	V12	. 0		i · · ·			.a						Pile Head construction for
	Base Slab for FC8B	22 01FEB	2 22FE	312	25d	. 1	· · · ·	1		-						Base Slab for FC8B
	Structural Wall for FC8B	35 23FEB	2 28MA	R12	25d			1 . I				· · · · · · · · ·		•••		Structural Wall for
	Watertightness for FC8B	20 29MAR	12 17API	R12	25d) . 1									Watertightness
	Concrete Coating for FC8B	10 18APR			25d	1	1	E 1 1						1		
	Excavation for FC7B	15 02JAN1			15d			general estimations I I	••••••,••••,••••• •• ••		·					Excavation for FC7B
21240 F	Pile Head Construction for FC7B	20 01FEB1			0	11										Pile Head Construction
21250 E	Base Slab for FC7B	22 21FEB1			0						• •	····		•••••		Base Slab for FC7B
21260 S	Structural Wall for FC7B	35 14MAR			0			1								Structural Wall
21270 V	Watertightness Test for FC7B	20 18APR														Watertightne
	Concrete Coating for FC7B	10 08MAY			15d	B B L	1 1	F								
ipeline W								1 †							_	
And a second model with the second	Excavation for Washout Chamber	15 19OCT	1 0210	/11	2A			1							-	
	Pile Cap of Washout Chamber	30 03NOV			7d	l l	1 1 4	1								avation for Washout Chamber
	Structural Wall of Washout Chamber	30 03DEC1			7d		1) 1 1								Pile Cap of Washout Chamber
	DN200 DI Pipework	30 03DEC 30 02JAN1			7d 7d		ł									Structural Wall of Washout Cha
2040 10																

Start date29JAN10Finish date27APR13Data date29JAN10Run date06APR10Page number2Ac Primavera Systems, Inc.Image StartStartStartStartFini

<u>ن</u>ي:

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

China Harbour Engineering Co. Ltd. TPSTW Stage 5 Phase 2B

, 1.4 	1. Sec. 1 (1)		· · · ·	
12		201	3	
JUL AUG SEP OCT NOV D	EC JAN FEB MAR	APR MAY JUN	JUL AUG SEP	OCT NOV DEC
·		· ·		
	-			
on II of Works				
a sha a bi sha		e. Na second		
يري ومرومية والمتنا المريد المراجعة المالية. الم		en bereden die die soort		
	-			
(4 nos)				
is)				
(1 no)				
s)	•		1.1	
,				
			····· \	
C10B				
C10B				
est for FC10B				
g for FC10B				
r FC9B				
a se	• • • • • • • • • • • • • •	-		
s Test for FC9B				
ating for FC9B				
				. *.
for FC8B	: . ·			
for FC8B				
ess for FC8B				
Coating for FC8B	*			
ion for FC7B				
7B			*********	
/all for FC7B				
ntness Test for FC7B				
e Coating for FC7B				
Chamber				
·				
Date 05FEB10	Rev	ision	Checked	Approved
07APR10	1		AA	TKC TKC
			- <u>~ ~</u>	
			†	
			· · · ·	1

Description	Orig Dur	Early Start	Early Finish	Total Float	2010 FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN J
neral			4220-51-5-55	No. of Concession, Name	A STATE OF AN A STATE OF AN A STATE OF AN A STATE OF AN OF AN A STATE OF
roject Key Date					
000 Possession of Site 0000 Completion of Section I of Works (365d)	0		28JAN10		Possession of Site
0000 Completion of Section II of Works (360d)	0		28JAN11	790d	Completion of Section 1 of Works (365d)
0000 Completion of Section III of Works (4000)			01JUN12		-≻e Com
0000 Completion of Section IV of Works (365d)	- 0		28DEC11	486d	Completion of Section III of Continue IV (COM) (2007)
0000 Completion of Section V of Works (3850)	0		28JAN11 27APR13	820d	Completion of Section IV of Works (365d)
eliminary			2/45813		
010 Site Clearance	30	29JAN10	27FEB10	<u> </u>	Site Clearance
020 Contractor Site Office Set-up		28FEB10	28APR10		
030 Engineer's Accommodation	1	28FEB10	28APR10		Engineer's Accommodation
040 Initial Survey		29JAN10	29MAR10	· [· ·	
050 Condition Survey	· [· · · · · ·	29JAN10	29MAR10		
060 Environmental Baseline Monitoring		30MAR10	<u> </u>		Environmental Baseline Monitoring
Lomission for Approval		s a serie a serie a			
010 Engineer's Green Roof	60	29APR10	27.IUN10	10354	Engineer's Green Roof
020 Excavation and Lateral Support (ELS)		29APR10	28MAY10		Excavation and Lateral Support (ELS)
030 Project Signboard		29APR10			Project Signboard
D40 Pile Load Test Set-up		30MAR10		2d	► Pile Load Test Set-up
050 Falsewk & Fwk for Pile Cap		29MAY10		90d	File Load Test Setup
060 Falsewk & Fwk for Wall Structure		28JUN10	27JUL10	90d	Falsewk & Fwk for Wall Structure
070 Falsewk & Fwk for Top Slab		28JUL10	26AUG10		Falsewk & Fwk for Tcp Slab
080 Multi-part Cover		27AUG10			Multi-part Cover
090 FRP Handrail, Stair & Floor		110CT10			FRP Handrail, Stair & Floor
100 FRP Cover			09NOV10		FRP Cover
110 Aluminium Flooring		25NOV10		840d	Aluminium Flooring
120 Green Roof System at Sludge Dewatering House		29APR10			Free Roof System at Sludge Dewatering House
30 Green Roof System at Transformer House		29APR10			Green Roof System at Transformer House
alenal Fabrication & Delivery				10000	
010 Casing for Mini-pile	55	29APR10	22.JUN10	173d	Casing for Mini-pile
020 Casing for Socketted H-pile		28FEB10		0	Casing for Socketted H-pile
030 Steel Member for Socketted H-pile			23APR10	0	Terminal Steel Member for Socketted H-pile
040 DI Water Pipe Puddle & Tee	,		27JUL10	90d	
050 DI Water Pipeline		29JAN10		1005d	Steel Member for Shelter
060 Steel Member for Shelter		29JAN10		11254	Steel Member for Shelter
tion of Works					
Illing Works		<u> </u>			이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이
0010 Section I of Work	365 *	29JAN10	28JAN11	0	Section I of Work
0100 Pre-drilling Works (18 nos)		10MAR10		0	Pre-drilling Works (18 nos)
0110 Preliminary Socketted H-pile		24APR10		n 1	Preliminary Socketted H-pile
0120 Load Test for Preliminary Pile		01MAY10		- n	- Summary Statistics replie
0130 Socketted H-piling (56 nos)	· ·		06AUG10	- n	Socketted H-piling (56 nos)
0140 Proof Drilling (4 nos)		07AUG10	1	0	Proof Drilling (4 nos)
1150 Load Test for Main Pile (1 no)	+ +	07AUG10	<u> </u>	0	Load Test for Main Pile (1 no)
160 Removal of DN525 & DN900 conc. pipe		04JUL10	17AUG10	164d	Removal of DN525 & DN900 conc. pipe
akčiaritier Nov F.Cl.11B & FC12B				1040	
010 Excavation for FC12B	21	21AUG10	10SEP10	0	Excavation for FC12B
020 Pile Head Construction for FC12B			27SEP10	0 4d	Pies Pile Head Construction for FC12B
025 Base Slab of FC12B		180CT10	180CT10	40 7d	Base Slab of FC12B
030 Structural Wall for FC12B		190CT10	22NOV10	<u> </u>	Structural Wall for FC12B
040 Watertightness Test for FC12B		23NOV10	12DEC10	7d	
050 Concrete Coating for FC12B		18DEC10	27DEC10	7d	Watertightness Test for FC12B
060 Backfilling for FC12B				32d	Concrete Coating for FC12B
010 Excavation for 11B			01JAN11	7d	Backfilling for FC12B
2020 Pile Head Construction for FC11B			010CT10	0	Excavation for 11B
	1/	0200110	18OCT10	0	Pile Head Construction for FC11B
date 29JAN10 Early bar					
h date 27APR13 date 29JAN10 Progress bar Critical har		ant Roman Ant			
data 06APP10		1.55			China Harbour Engineering Co. Ltd.
Summary Dar					TPSTW Stage 5 Phase 2B
rimavera Systems, Inc. Start micstone point					

f Section II of W 670d)	/orks (460d)		
	⊗ Completi	on of Section	V of Works
	v complex.		
· · · · · · · · · · · · · · · · · · ·			
an an an an Arran. An an Arran		- 	
	•		
· · · · · · · · · · · · · · · · · · ·			
	•		*******
	an a		
, e e, e 			
· · · · · · ·	y ana katang mgagangan sa sa sa Sa sa	т	
•	· · ·		

	a a sa a sa ay ay a ya ya ya sa a		
		···· · ·· ··-	
		-	
		÷	
Date	Revision	Checked	Approved
EB10	0	WML	Approved TKC
PR10	1	AA	TKC

Description	Orig Early Dur Start	Early Finish	Total Float	FEB MAR APR MAY	2010 JUN JUL /	AUG SEP OCT NOV DEC JAN	2011 FEB MAR APR MAY JUN JUL AUG SEP OCT.	2012 NOV DEC JAN FEB MAR APR MAY JUN JUL AUG
22045 DN300 DI Pipeline	60 01FEB12	31MAR12	7d		1			DN300 DI Pipeline
22050 Connection of DN300 DI Pipe to FC7B~FC12B 22060 Backfilling	30 01APR12	30APR12	7d		5			- Connection of D
22000 Backhing 22070 Construction of FMC1B & FMC2B	25 08MAY12		0		+ +			Backfilling
22075 Modification of RAS Pumping Station	45 03DEC11 30 17JAN12	16JAN12 15FEB12	0					Construction of FMC1B & FMC
22080 DN1000 DI Sludge Pipe	60 16FEB12	15APR12						Modification of RAS Pumpi
22090 Removal of DN600 & DN800 Sludge Pipe	30 16APR12	15/11/12 15/14/12						DN1000 DI Sludge
22100 Backfilling for Sludge Pipe	17 16MAY12		0	1 1 1				Backfilling
ection III of Works								
Difling Works			11 99 P.4.					
30001 Notification from Engineer	30 29JAN10,		64d	Notification fro	om Engin	eer		
30005 Section III of Works 30110 Site Clearance	670 03MAY10	02MAR12	0					Section III of Works
30110 Site Clearance 30120 Pre-drilling for PST5, AT5~AT7 (41 nos)	10 03MAY10	12MAY10	0	i ►⊠ Site	e Clearar	1Ce		
30130 Pre-drilling for Mixed Liquor Channel (8 nos)	. 106 13MAY10	26AUG10	0			Pre-drilling for PST5,	AT5~AT7 (41 nos)	
30140 Prelimiary Socketted H-pilling	20 27AUG10 7 16SEP10	15SEP10 22SEP10	0			te <u>neral actual</u> er is a serie a serie a s a actuale a serie a	ed Liquor Channel (8 nos)	
30150 Load Test for Preliminary Socketted H-pile	14 23SEP10	060CT10	0			Prelimiary Socket	· · · · · · · · · · · · · · · · · · ·	
30160 Socketted H-piling for PST5, AT5~AT7 (174 nos)	263 07OCT10	26JUN11	0				eliminary Socketted H-pile	for PST5, AT5~AT7 (174 nos)
30170 Proof Drilling for PST5 & AT5~AT7 (4 nos)	14 27JUN11	10JUL11	- 0					PST5 & AT5~AT7 (4 nos)
30180 Load Test for Socketted H-pile (2 nos)	14 27JUN11	10JUL11						ocketted H-pile (2 nos)
30190 Pre-drilling for Sludge Digestion Tank (6 nos)	15 16SEP10	30SEP10	225d	• • • • • • • • • • • • • • • • • • •			udge Digestion Tank (6 nos)	
30200 Socketted H-piling for SD Tank (29 nos)	90 01OCT10	29DEC10	225d			Soc	ketted H-piling for SD Tank (29 nos)	
30210 Proof Drilling for Sludge Digestion Tank (1 no)	7 30DEC10	05JAN11	232d			Pro Pro	oof Drilling for Sludge Digestion Tank (1	no)
30215 Load Test for Sludge Digestion Tank (1 no)	14 30DEC10	12JAN11	225d			; ^l i ≻ Lu	pad Test for Sludge Digestion Tank (1 nd)
30220 Preliminary Mini-pile for Mixed Liquor Channel	7 16SEP10	22SEP10	88d			Preliminary Mini-p	ile for Mixed Liquor Channel	
30230 Load Test for Mini-pile (1 no) 30240 Mini-piling for Mixed Liquor Channel (79 pos)	14 23SEP10	06OCT10	88d			Load Test for M	ini-pile (1 no)	
30240 Mini-piling for Mixed Liquor Channel (79 nos) 30250 Proof Drilling for Mixed Liquor Channel (1 no)	200 07OCT10	24APR11	88d				Mini-piling for Mixed Liquor	
30260 Load Test for Mixed Liquor Channel (1 no)	[·····	01MAY11	111d				Proof Drilling for Miixed Li	
30270 Pre-drilling for Bio-gas Holding Tank (3+1 nos)	14 25APR11 10 16SEP10	08MAY11 25SEP10	104d 250d		1	■ Des deillise for Die	Load Test for Mixed Liqu	r Channel (2 nos)
30280 Mini-piling for Bio-gas Holding Tank (12+8 nos)	52 25APR11	15JUN11	250d 145d	· · · · · · · · · · · · · · · · · · ·			-gas Holding Tank (3+1 nos)	
30290 Proof Drilling for Bio-gas Holding Tank (1 no)		22JUN11	145d				Proof Drilling for Bi	io-gas Holding Tank (1 no)
Primary Sedimentation Tank & Aeration Tank					<u> </u>			
31010 Excavation for AT5 & AT6	30 11JUL11	09AUG11	0				Excavation	for AT5 & AT6
31020 Pile Head for AT5 & AT6 (22 nos)	14 10AUG11	23AUG11	0	and a second				for AT5 & AT6 (22 nos)
31025 Pile Head for AT5 & AT6 (86 nos remained)	53 03SEP11		0					Pile Head for AT5 & AT6 (86 nos remained
31030 Pile Cap for AT5 & AT6	30 26OCT11	24NOV11	32d					Pile Cap for AT5 & AT6
31040 Structural Wall for AT5 & AT6	50 25NOV11	13JAN12	32d	e se transfer and the transfer and the second se	19690			Structural Wall for AT5 & AT6
31050 Watertness Test for AT5 & AT6	17 14JAN12		32d					₩ Watertness Test for AT5 &
31060 Excavation for Effluent Chamber	10 10AUG11		4d		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			for Effluent Chamber
31070 Pile Head for Effluent Chamber (15 nos)	10 24AUG11		0					d for Effluent Chamber (15 nos)
31080 Pile Cap for Effluent Chamber 31090 Structural Wall for Effluent Chamber		22SEP11	65d	1 I 1 I 1 I				ap for Effluent Chamber
31090 Structural Wall for Effluent Chamber 31100 Top Slab & Upstand Wall of Effluent Chamber		01NOV11	73d			· · · · · · · · · · · · · · · · · · ·		Structural Wall for Effluent Chamber
31110 Watertightness for Effluent Chamber		01DEC11	73d		1			Top Slab & Upstand Wall of Effluent
31120 Excavation for PST5 & AT7	15 02DEC11 20 20AUG11		77d		12.5.50			Watertightness for Effluent Chamb
31130 Pile Head for PST5 & AT7 (51 nos)		08SEP11 26NOV11	47d				Excava	tion for PST5 & AT7
31140 Pile Cap for PST5 & AT7		26DEC11	- 0					
31150 Structural Wall for PST5 & AT7		14FEB12	0					Pile Cap for PST5 & AT7
31160 Watertightness Test for PST5 & AT7		02MAR12	0					Watertightness Test for
31165 Diversion of DN80 Fire Fighting Main	60 01JUL10 *		242d		2002/2010	Diversion of DN80 Fire	e Fighting Main	
31170 Excavation for Sludge Digestion Tank No.3 (SDT3)		01FEB11	225d				Excavation for Sludge Digestion Tank N	10.3 (SDT3)
31180 Pile Head Construction for SDT3 (29 nos)	· · · · · · · · · · · · · · · · · · ·	21FEB11	225d		1		Pile Head Construction for SDT3 (29	
31190 Base Slab for SDT3	30 22FEB11	23MAR11	225d	· · • • • • • • • • • • • • • • • • • •			► Base Slab for SDT3	
31200 Structural Wall for SDT3		22APR11	225d		í 1		Structural Wall for SDT3	
31210 Inclined Top Slab for SDT3	45 23APR11	06JUN11	225d		:		Inclined Top Slab for	SDT3
rt date 29JAN10 Early bar sh date 27APR13 Program har								
ta date 2JAPR13 Critical bar						orhour [
				Gn		arbour Enginee		(
n date 06APR10 Summary bar					10	SINU STORA & DH	1960 JR	
ge number 3A Start milesters solet					16	STW Stage 5 Ph		
n date 06APR10 Summary bar					16	STW Stage 5 FT		

I SEP OCT NOV DEC N300 DI Pipe to FC		21 APR MAY JUN)13 JUL AUG SEP	OCT NOV DEC	
2B ng Station Pipe N600 & DN800 Sluc or Sludge Pipe	lge Pipe				
			•		
	· · · · ·				
				۰ ۵۰۰۰ ۱۹۹۵ - ۱۹۹۵ - ۱۹۹۹ ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹	an an Arris an An Stain Arris an An
· · · · · · · · · · · · · · · · · · ·					
		· · · · · · · · · ·			
76		· · · · · ·	· · · · · ·		
hamber r			•	· · · · · ·	n - Starten and
AT7 PST5 & AT7					
					-
					-

Act Description	Orig Early Early	Total	tang ang ang ang ang ang ang ang ang ang	2010 2011
31220 Watertightness Test for SDT3	Dur Start Finish	Float	FEB MAR APR MA	JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG S
31220 Watertightness Test for SDT3 31230 Air Tightness Test for SDT3	20 07JUN11 26JUN11	248d		Watertightness Test for SDT3
31240 Excavation for Mixed Liquor Channel (MLC)	2 27JUN11 28JUN11	248d		Air Tightness Test for SDT3
31250 Pile Cap for MLC	30 25MAY11 23JUN11 60 24JUN11 22AUG11	88d		Excavation for Mixed Liquor Channel (MLC)
31260 Structural Wall for MLC	60 23AUG11 210CT11			
31265 Watertightness Test for MLC			ł ;	Structural Wall for MLC
31270 Excavation for Bio-gas Holding Tank Support				Watertightness Test for MLC
31280 Pile Cap for Tank Support & Valve Chamber		144d		Excavation for Bio-gas Holding Tank Support
31290 Structural Wall for Valve Chamber	30 04JUL11 02AUG11 40 03AUG11 11SEP11			→ Image Pile Cap for Tank Support & Valve Chamber
31300 Watertightness Test for Valve Chamber	15 12SEP11 26SEP11			Exercise Structural Wall for Valve Chamber
Pipeline Works	13 123EF11 203EF11	158d		→ ■ Watertightness Test for Valve Chamber
32005 Pipework for PST5, AT5 ~ AT7	120 13JAN11 12MAY11	P000		→ III
32010 Pipework Connection to AT5 & AT6	10 14JAN12 23JAN12	280d		
32020 Pipework for Effluent Chamber	19 02DEC11 20DEC11			Pipework Connection to AT5 & A
32030 Pipework Connection to PST5 & AT7	15 15FEB12 29FEB12		·	► Effluent Chamber
32040 Pipework for SDT3	45 07JUN11 21JUL11	2d 225d		Pipework Connection to PS
32060 Pipework for MLC	45 220CT11 05DEC11	2250 88d		► Pipework for SDT3
32070 Pipework for Valve Chamber	29 12SEP11 100CT11			► Pipework for MLC
Modification / Removal Works		1440		Pipework for Valve Chamber
33010 Removal of extg Control Room	30 25APR11 24MAY11	88d		
33020 Modification of extg Chemical House for SwitchRM	30 25APR11 24MAY11		· •	Removal of extg Control Room
33030 Modification of extg Flow Splitter Box	30 25MAY11 23JUN11	253d		Modification of extg Flow Splitter Box
33040 Modification of extg Aeration Tanks	60 25NOV11 23JAN12	235d 39d		
33050 Modification of extg Effluent Launder	60 25NOV11 23JAN12	390 39d		→ ■ Modification of extg Aeration Tar → ■ ■ Modification of extg Effluent Laur
33060 Shelter for NaOCI Dosing System	60 09MAY11 07JUL11	224d		Shelter for NaOCI Dosing System
33070 Watertightness Test for NaOCI Dosing Shelter	15 08JUL11 22JUL11	224d		→ Shetter for NaOCI Dosing System
33080 Modification of Primin. Sludge Gravity Thickener	30 15JUN10 * 14JUL10	113d		Modification of Primin. Sludge Gravity Thickener
Section IV of Works				
Drilling Works				
40010 Section IV of Works	365 29JAN10 28JAN11	0	-	Section IV of Works
40015 Diversion of DN600 Concrete Pipe	45 01JUN10 * 15JUL10	49d		Diversion of DN600 Concrete Pipe
40110 Pre-drilling for Decanting Chamber (1 no)	7 16JUL10 22JUL10	49d	. 1	Pre-drilling for Decanting Chamber (1 no)
40120 Mini-piling for Decanting Chamber (4 nos)	28 23JUL10 19AUG10		and an an an	Mini-piling for Decanting Chamber (4 nos)
40130 Proof Drilling (4 nos)	28 20AUG10 16SEP10	49d		Proof Drilling (4 nos)
40140 Load Test for Mini-pile (1 no) Structural Works	14 20AUG10 02SEP10		a da a serie da a serie da anti- a da a da anti- da a serie da serie da anti-	Load Test for Mini-pile (1 no)
Structural Works			an en factor actor	
41010 Excavation for Decanting Chamber	10 17SEP10 26SEP10	49d	na na mangana na na na mangana na mangana na mangana na mangana na mangana na	► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ►
41020 Pile Cap for Decanting Chamber	20 27SEP10 16OCT10	54d		Pile Cap for Decanting Chamber
41030 Structural Wall for Decanting Chamber	30 17OCT10 15NOV10	54d		Structural Wall for Decanting Chamber
41040 Top Slab for Decanting Chamber	20 16NOV10 05DEC10	54d		Top Slab for Decanting Chamber
41050 Excavation for Chemical & Oil Store	10 27SEP10 06OCT10	49d		Excavation for Chemical & Oil Store
41060 Base Slab for Chemical & Oil Store	15 070CT10 210CT10	49d		Base Slab for Chemical & Oil Store
41070 Structural Wall for Chemical & Oil Store	30 22OCT10 20NOV10	49d		Structural Wall for Chemical & Oil Store
41080 Top Slab for Chemical & Oil Store	20 21NOV10 10DEC10	49d		Top Slab for Chemical & Oil Store
41090 Valve Chamber & Conc. Plinth at PSGT Stage I/II	120 03SEP10 31DEC10	28d		Valve Chamber & Conc. Plinth at PSGT Stage I/II
Modification // Removal-Works				
43010 Removal of Chemical Waste Room	30 01JUN10 * 30JUN10	362d		Removal of Chemical Waste Room
43020 Removal of Flower Bed	20 01JUL10 20JUL10	362d		Removal of Flower Bed
43025 Removal of Waste Bio-gas Burner	30 02JUL10 * 31JUL10	121d		Removal of Waste Bio-gas Burner
43030 Removal of Chimney & Associated RC Structure	60 01AUG10 29SEP10	121d		Removal of Chimney & Associated RC Structure
43040 Removal of Storage Facilities	30 28JUN10 27JUL10	65d	.	→ Semoval of Storage Facilities
43050 Shelter for Water Treatment System	120 28JUL10 24NOV10	65d		Shelter for Water Treatment System
43070 Shelter for FeCI3 Dosing System	60 01JUN10 * 30JUL10	76d	L.	Shelter for FeCl3 Dosing System
43080 Watertightness Test for FeCl3 Dosing Shelter	16 31JUL10 15AUG10	76d		Watertightness Test for FeCI3 Dosing Shelter
43090 Steelwork for FeCl3 Dosing Shelter	30 16AUG10 14SEP10	76d		Steelwork for FeCl3 Dosing Shelter
43100 Removal of FeCI3 Dosing System	60 15SEP10 13NOV10	76d		Removal of FeCl3 Dosing System
Start data 20 IANI40				
Start date 29JAN10 Early bar				

29JAN10 27APR13 29JAN10 06APR10 Start date Finish date Early bar Data date Critical bar Run date Page number 4A c Primavera Systems, Inc.

ίi.

- Summary bar Start milestone point
 Finish milestone point

China Harbour Engineering Co. Ltd. TPSTW Stage 5 Phase 2B

Date 05FEB10 07APR10	Revision 0 1	Checked WML AA	Approved TKC TKC	
· · · · · · · · · · · · · · · · · · ·				
-			Constant of the second second	ుశ్రాథ్యార్
		 · · · · · ·		 -
	ana yang sana Kabupatèn Sana Kabupatèn Sana Sana Sana Sana Sana Sana Sana Sa	 		 3- / *
· · · · · · · · · · · · · · · · · · ·	·	 	· · · · · · · · · · · · · · · · · · ·	
n Tanks t Launder		 · ····· · · · · · · · · · · · · · · ·		
		. • •		
		 a an		· · · ·
to PST5 & AT7				
5 & AT6	•			

Ac Single Ac	Description	Orig Early Dur Start	Early Finish	Total Float		2011 UG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB M	2012
4311	0 Modification of Central Blg Complex	150 01JUN10	* 280CT10	92d		Modification of Central Blg Complex	AN AFR MAT JOIL JOE AUG JI
4312	0 Modification of SAS Thickening House	120 15JUN10		48d		Modification of SAS Thickening House	
4313	0 Modification of Primary Sludge Thickener	60 13OCT10	11DEC10	48d		Modification of Primary Sludge Thickener	
4314	0 Modification of Filtrate Treatment Plant	120 01JUL10 *		92d		Modification of Filtrate Treatment Plant	
4315	0 Modification of Chlorination House	150 15JUL10 *	11DEC10	48d	539233	Modification of Chlorination House	
4316	0 Floor Opening at Service Tower Building (16 nos)	30 01JUN10	* 30JUN10	92d	Floor	Opening at Service Tower Building (16 nos)	·····
4316	5 S S Louvre at Inlet Works at Stage IV	60 01JUL10	29AUG10	92d		S S Louvre at Inlet Works at Stage IV	
4317	0 Covered Walkway at Sludge Dewatering House	60 30AUG10	280CT10	92d		Second Walkway at Sludge Dewatering House	
Road	& Draginage Works						
4201		120 21JUL10	17NOV10	362d		Road & Drainage Works in Portion A	
4202		135 16SEP10	28JAN11	0		Road & Drainage Works along MLC	
1. C. W. M. B. B. C. M. B. B. C. D.	V of Works						
S 882	caping Works				-	· · ·	· · · ·
5001		1185 29JAN10	27APR13	0			
5011		60 29JAN10	29MAR10	20d	Tree Survey		
5012		90 30MAR10	27JUN10	20d	Tree Tree	Fransplanting & Felling Tree	
5013		365 28JUN10	27JUN11	670d		Establishment Works to Transplante	d Tree
5014	300000	650 28JUN10	07APR12	20d			Landscaping Softwork
5015		650 28JUN11,	07APR13	20d			
5016		120 28JUN10	25OCT10	310d		Irrigation System for Green Roof at TPSTW	-
5017		120 26OCT10	22FEB11	310d		Green Roof at Sludge Dewatering System	
5018		120 23FEB11	22JUN11	310d		Green Roof at Transformer House	
5019		365 23JUN11	21JUN12	310d			Establishm
15.51							
5101		60 05JUL10 *	02SEP10	28d		moval of Waste Bio-burner at PSGT Stage I/II	
5102		120 26OCT11	22FEB12	430d		Contraction of the second s	oad & Drainage Works
5103	Cable Ducting and Drawpits	350 01APR12	16MAR13	42d			
1							

والمتهادية والمراجعة والمراجع والمتحولة وأحرارك والمراجع والمراجع

n nan han an hana a a a a ara (a) And the Alice and the Ali Alice and the Alice and t

a por estas de la companya de la com A companya de la comp

المراجع **محمد محمد المحمد المحمد المحمد المحمد المحمد الم**اري المحمد الم

a service a service of the service o

and a strange and a second strange of the

(1) The second secon

a a da anti-construction de la construcción de la construcción de la construcción de la construcción de la cons La construcción de la construcción d La construcción de la construcción d

والمتعقرة مرامي والمراجع والمراجع

29JAN10 Early bar 27APR13 Progress bar : 29JAN10 Critical bar 06APR10 - Summary bar Page number 5A Start milestone point c Primavera Systems, Inc. ۲ Finish milestone point

Start date

Finish date

Data date

Run date

China Harbour Engineering Co. Ltd. **TPSTW Stage 5 Phase 2B**

05
07

2013 EP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DE Section V of Works orks Establishment Works to Softworks ment Works to Green Roof Cable Ducting and Drawpits and a start of the start of ng gulun grunn erröffarfafarar i di Santa Santa Santa Santa Santa Santa م مرجوع جرج محروم الديني وروم الدين Date Revision Checked Approved FEB10 WML TKC 0 APR10 AA TKC 1

APPENDIX B MONITORING REQUIREMENTS

APPENDIX B – MONITORING REQUIREMENTS

Type of Monitoring	Parameter	Frequency	Duration	Location of Measurement
Noise ⁽¹⁾	L _{eq} (30 min.) (0700-1900 hrs. on normal weekdays)	Once per week	30 mins	• NM1 (Outside the corridor of 1/F of Government Staff Quarter)
	1-hour TSP	3 times every six days	1 hour	CAM1 (on flat roof of Government Staff Quarters)
Air	24-hour TSP	Once every six days	24 hours	 CAM2 (on ground within TPSTW and just next to the Printing Centre of Hung Hing Printing Centre) CAM3 (on ground within TPSTW and just next to Talcon Industrial Ltd.)
Landfill Gas	Methane (v/v) Carbon Dioxide (v/v) Oxygen (v/v)	2 times per day	N/A	 <u>The Locations where the excavation is 1m depth or more and within the 250m</u> <u>Consultation Zone of Shuen Wan Landfill</u> FC11B and FC12B (Conducted in April and May 2011 only) Aeration Tank Dewatering House (Conducted in April and May 2011 only) FC7B (Conducted in June 2011 only) FC8B (Conducted in June 2011 only)

(1) If construction works are extended to include works during the hours of 1900 – 0700, additional weekly impact monitoring shall be carried out during evening and night-time works.

APPENDIX C ACTION AND LIMIT LEVELS

APPENDIX C – Action and Limit Levels

1-Hour TSP

Location	Action Level, μg/m ³	Limit Level, µg/m ³
CAM1	315	
CAM2	336	500
CAM3	344	

24-Hour TSP

Location	Action Level, μg/m ³	Limit Level, µg/m ³
CAM1	171	
CAM2	177	260
CAM3	192	

Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays		75 dB(A)
0700-2300 hrs on holidays; and 1900- 2300 hrs on all other days	When one documented complaint is received	70* dB(A)
2300-0700 hrs of next day	r i i i i i i i i i i i i i i i i i i i	55* dB(A)

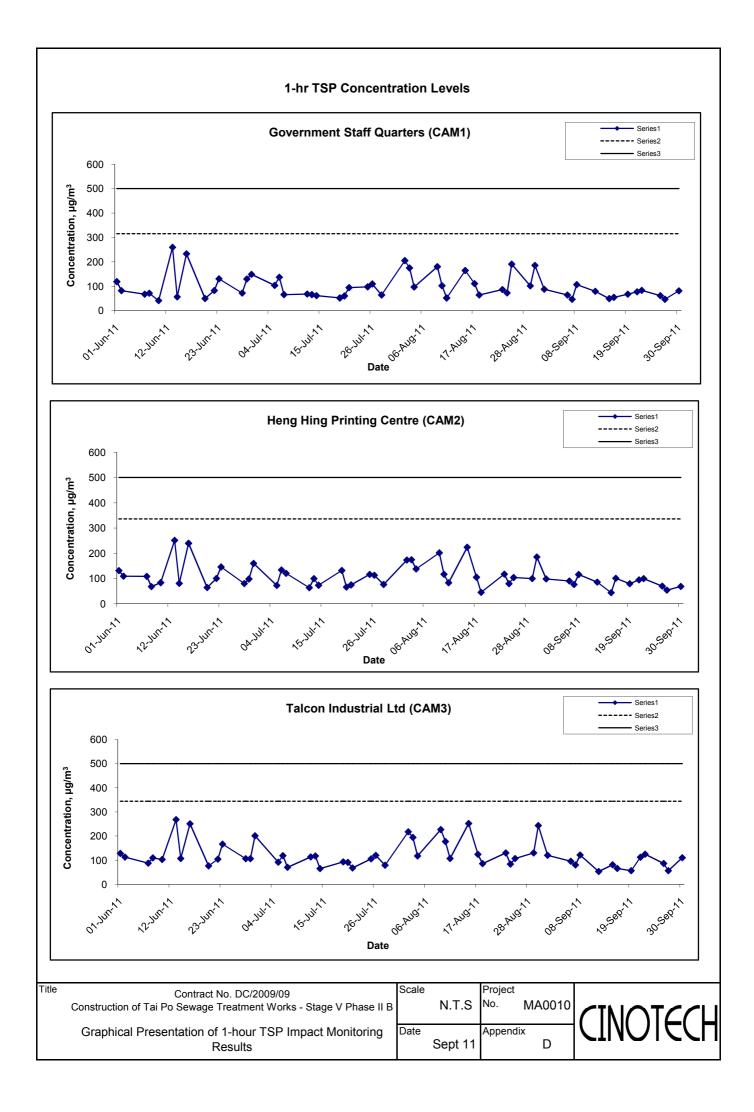
Notes:

* The Area Sensitivity Rating for Station NM1 is taken as C, due to the nearby industrial area, according to Table 1 of EPD's Technical Memorandum on Noise from Construction Work other than Percussive Piling.

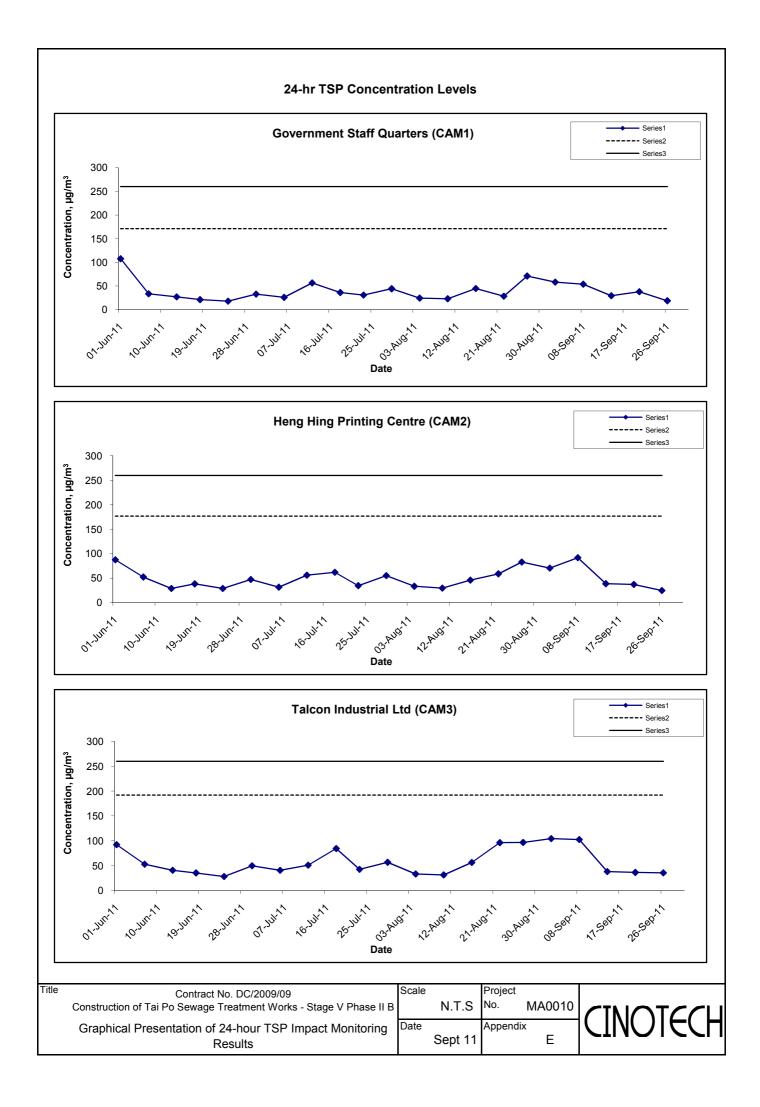
Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	Ventilate to restore oxygen to >19%
	<18%	Stop works Evacuate personnel / prohibit entry Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. >0.5% by volume)	Post "No Smoking" signs Prohibit hot works Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. >1% by volume)	Stop works Evacuate personnel / prohibit entry Increase ventilation to restore methane to <10%
Carbon Dioxide	>0.5%	Ventilate to restore carbon dioxide to <0.5%
	>1.5%	Stop works Evacuate personnel / prohibit entry Increase ventilation to restore carbon dioxide to <0.5%

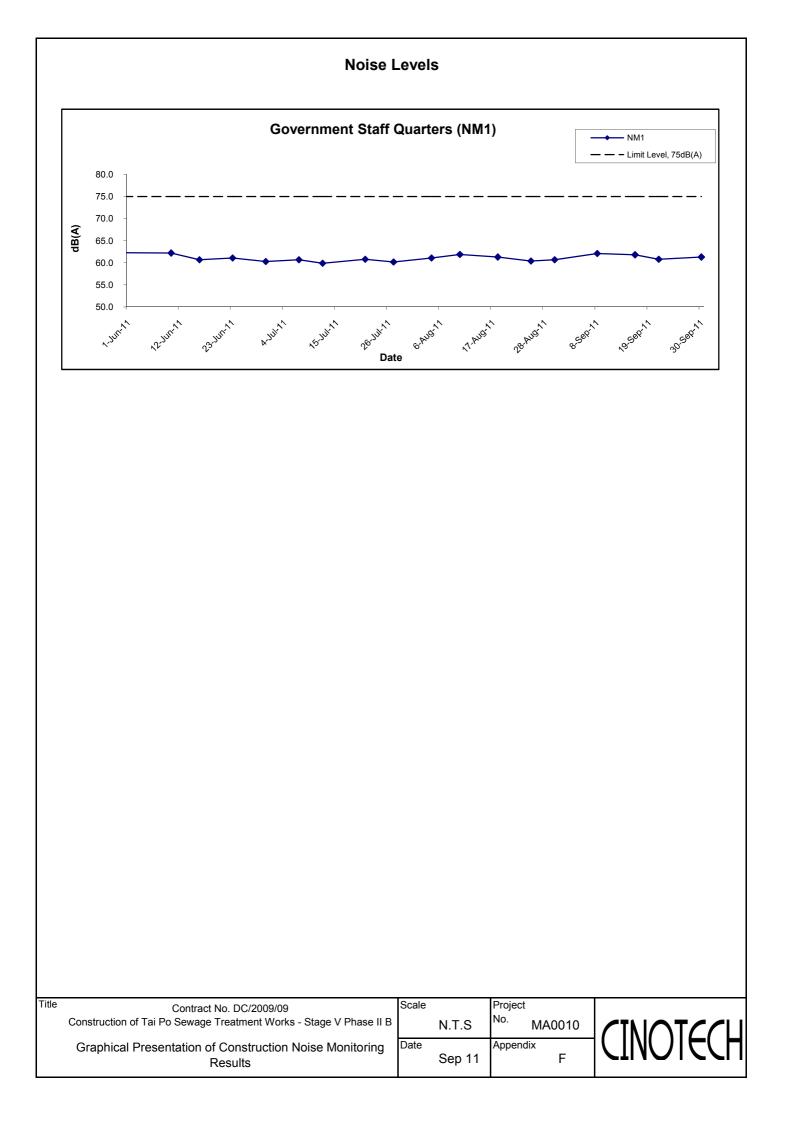
APPENDIX D GRAPHICAL PRESENTATION OF 1-HOUR TSP MONITORING RESULTS



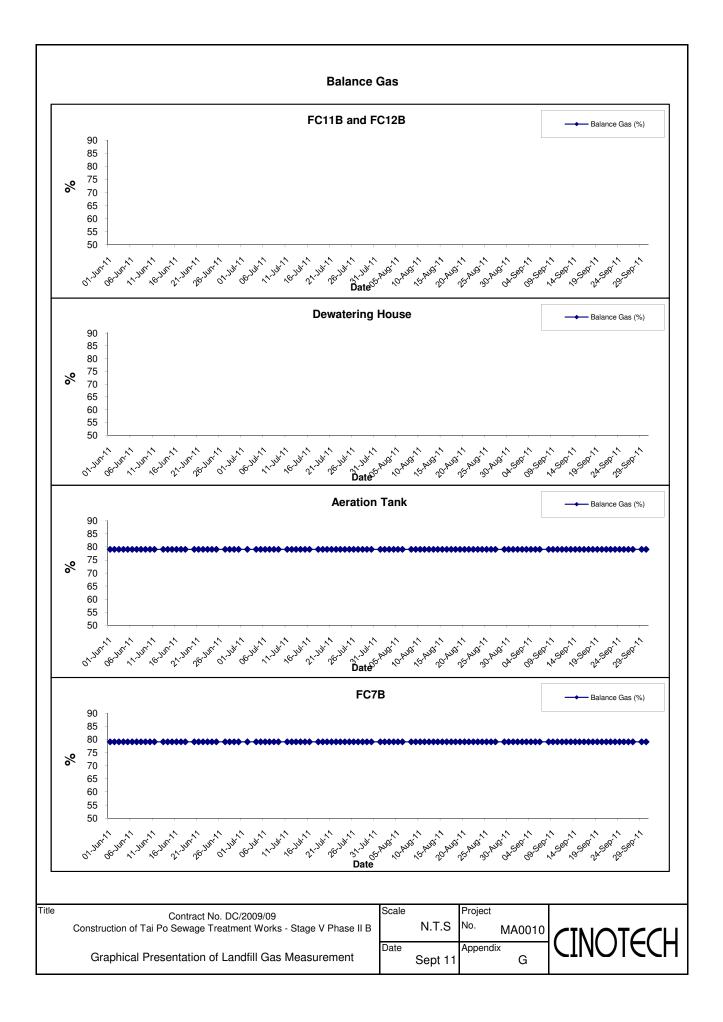
APPENDIX E GRAPHICAL PRESENTATION OF 24-HOUR TSP MONITORING RESULTS

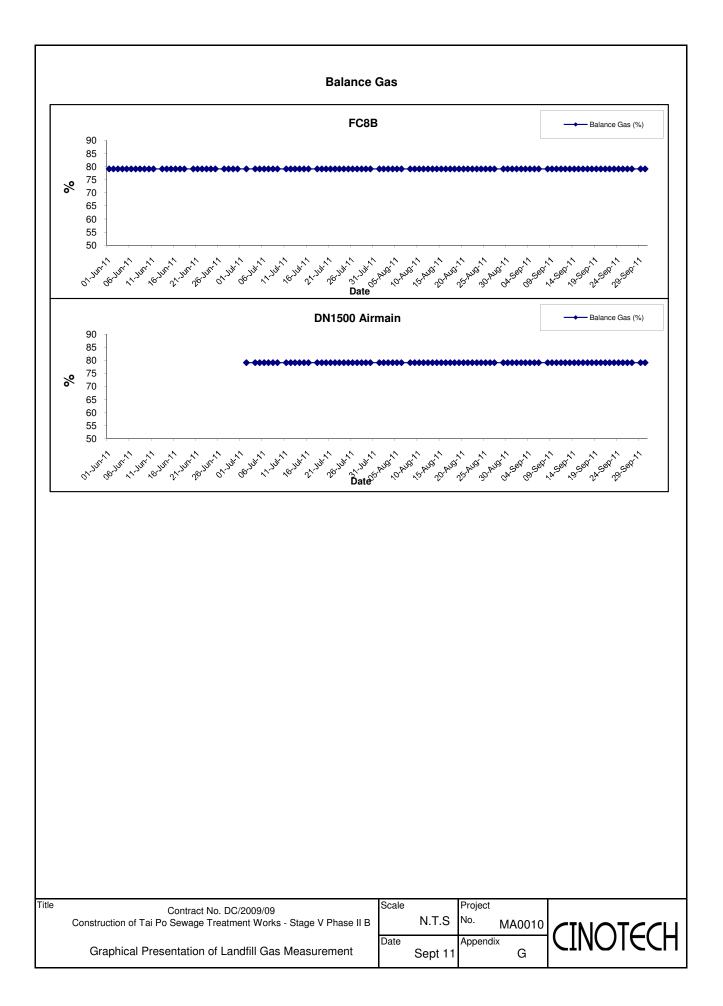


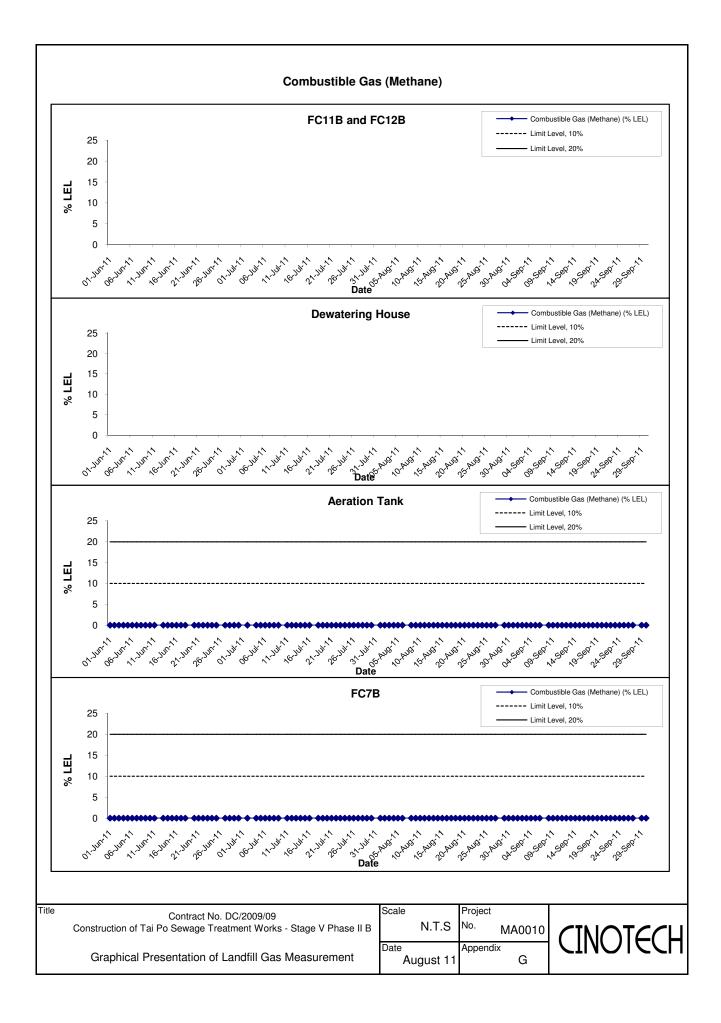
APPENDIX F GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS

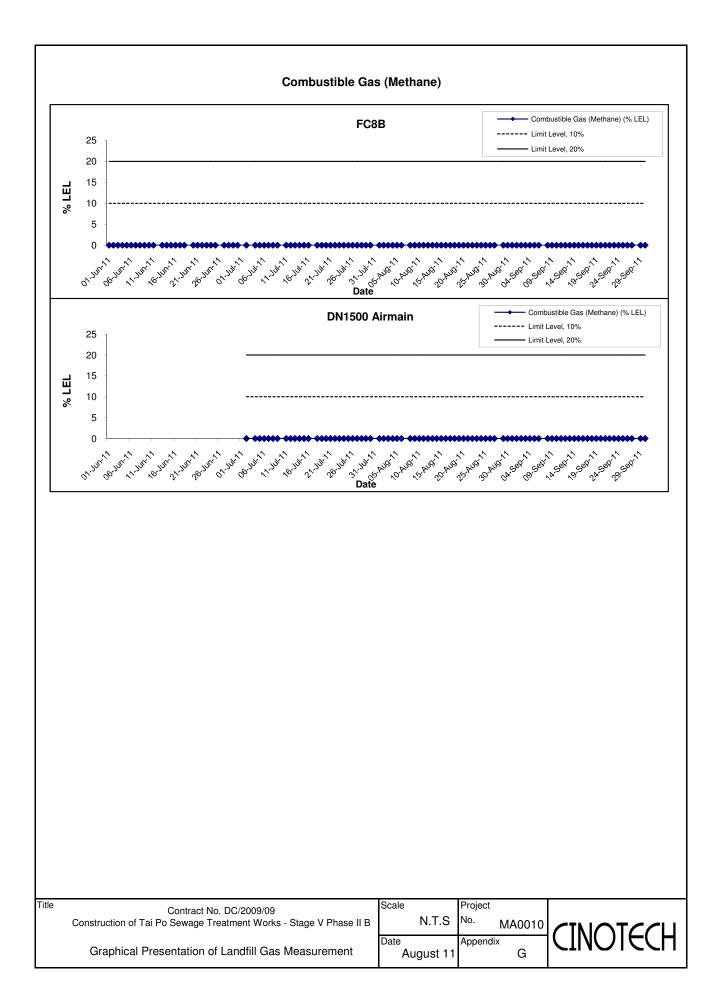


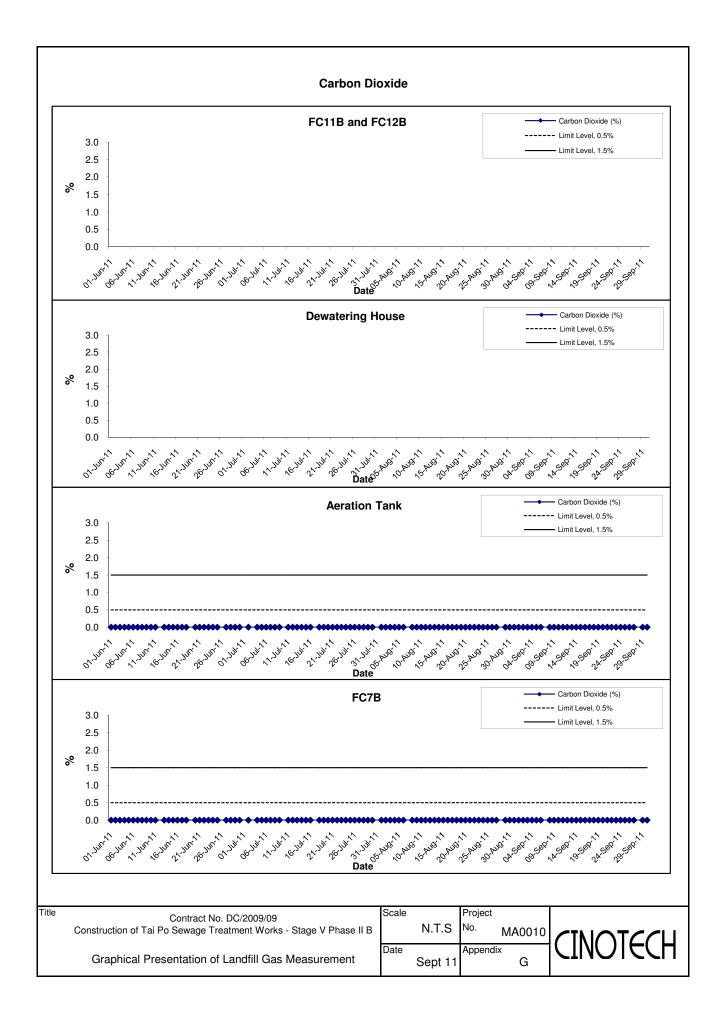
APPENDIX G GRAPHICAL PRESENTATION OF LANDFILL GAS MEASUREMENT BY THE CONTRACTOR

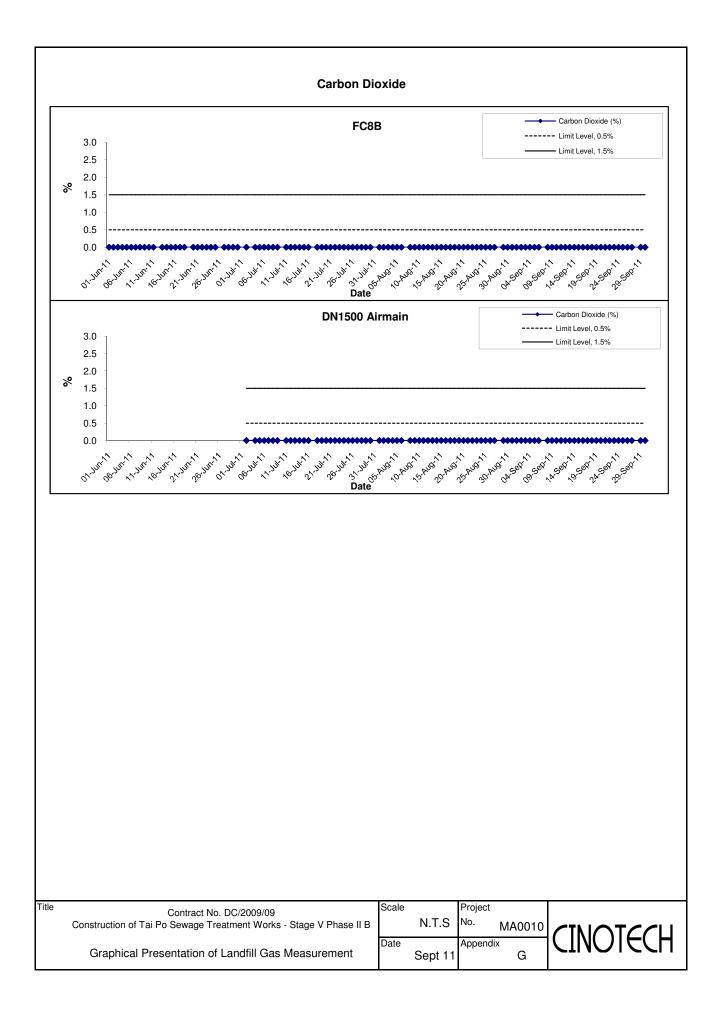


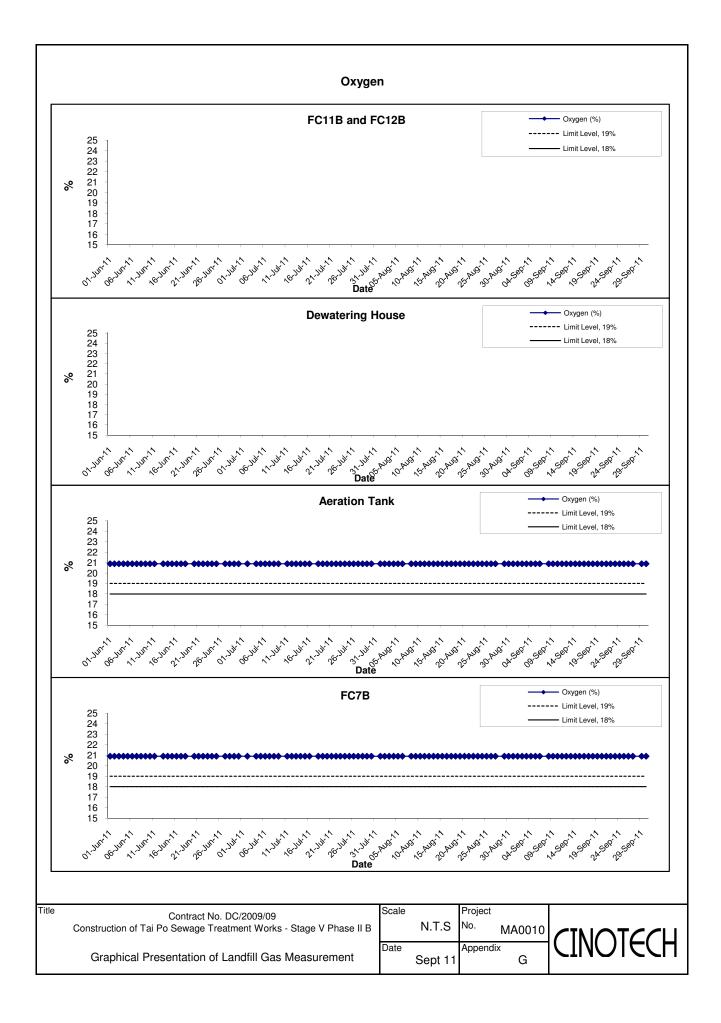


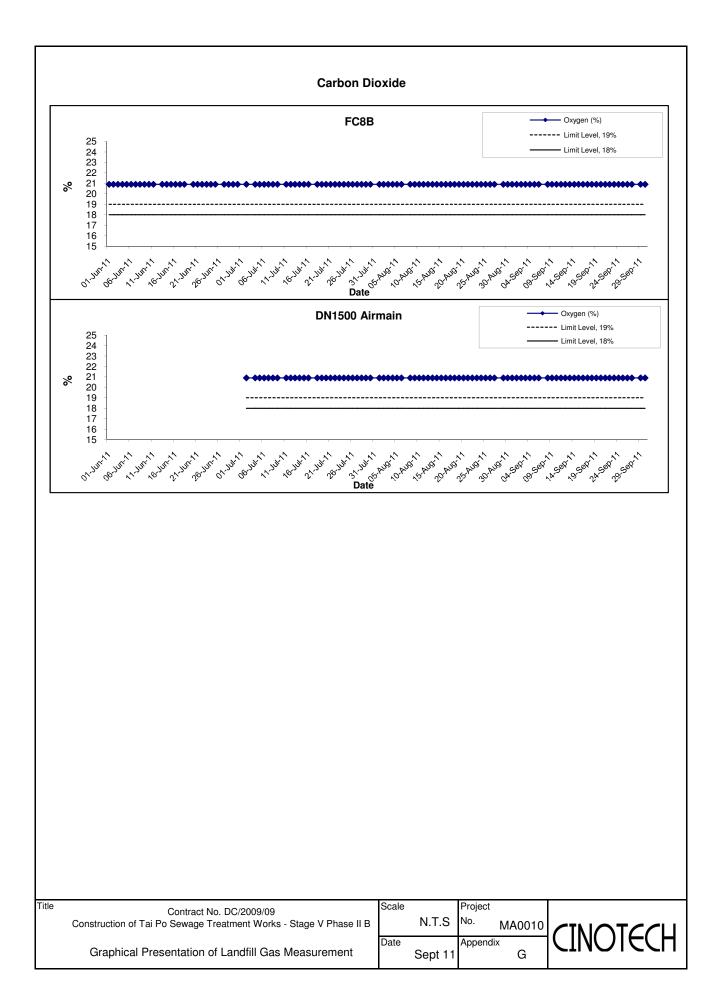












APPENDIX H UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

Type of Impact	Recommended Mitigation Measures	Status
Air Quality	Dust mitigation measures stipulated in <i>the Air Pollution Control (Construction Dust) Regulation</i> shall be incorporated to control dust emission. Notice shall be given to authority prior to commencing of work	\checkmark
Noise	Use of quiet PME	N/A
	 Good Site Practice Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; Mobile plant, if any, should be sited as far from NSRs as possible; Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	~
Water Quality	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted to minimize the potential water quality impacts from construction site runoff and various construction activities. The recommendation to install perimeter drains to collect site runoff and to properly treat the runoff by settlement tank/treatment system shall apply to all sites including those for mainlaying works. Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the existing WSD saltwater intake at Tai Po.	V
	A discharge licence needs to be applied from EPD for discharging effluent from the construction site. The discharge quality is required to meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works areas should be treated so that it satisfies with all the standards listed in the TM. Reuse and recycling of the treated effluent can minimize water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. Monitoring of the discharge quality of treated effluent should be part of the Environmental Monitoring and Audit (EM&A) programme. Detailed effluent sampling programme for water quality control during construction phase should be submitted to EPD, AFCD and WSD for approval prior to commencement of the construction works.	V
	The construction programme should be properly planned to minimize soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimize dust emission. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all time. The stockpiles of materials should be placed in the locations away from any stream courses so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work. It is suggested that haul roads should be paved with concrete and the temporary access roads are protected using crushed stone or gravel, wherever practicable. Wheel washing facilities should be provided at all site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles.	V
	Good site practices should be adopted to clean the rubbish and litter on the construction sites so as to prevent the rubbish and litter from dropping into the nearby environment. It is recommended to clean the construction sites on a regular basis.	N

APPENDIX H – Updated Environmental Mitigation Implementation Schedule (During Construction Phase)

Type of Impact	Recommended Mitigation Measures	Status					
	It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should not be less than 30 m from any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis. The construction workers can also make use of the existing toilet facilities within the TPSTW as necessary.						
	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Implementation of environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site.	V					
	It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	\checkmark					
	Any service shop and minor maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken with the areas appropriately equipped to control these discharges.	V					
	 Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport Chemical waste containers should be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents. Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 	V					
	Marine water quality monitoring should be carried out under emergency condition or during maintenance of the THEES tunnel to verify the findings of the water quality modelling. It is recommended that the maintenance of the THEES tunnel, if unavoidable, should be conducted during winter season or low flow periods and to avoid the "blooming" season of algae (normally from April to June) if practicable. Details of the monitoring requirements are specified in the EM&A Manual.	N/A					

Type of Impact	Recommended Mitigation Measures							
Waste Management	 Good site practices during the construction activities include: Nomination of approved personnel, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. Training of site personnel in proper waste management and chemical waste handling procedures. Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. A Waste Management Plan shall be prepared and this WMP shall be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 15/2003 for details. In order to monitor the disposal of C&D materials at landfills and public filling areas, and to control fly tipping, a trip-ticket system shall be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. One may make reference to WBTC No. 21/2002 for details. A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed. 	1						
	 Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. To encourage collection of aluminum cans by individual collectors, separate labelled bins shall be provided to segregate this waste from other general refuse generated by the work force. Any unused chemicals or those with remaining functional capacity shall be recycled. Maximize the use of reusable steel formwork to reduce the amount of C&D material. Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimize the quantity of waste to be disposed of to landfill. Proper storage and site practices to minimize the potential for damage or contamination of construction materials. Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering 	√						
	<i>General Refuse</i> General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.	V						
	Construction & Demolition (C&D) Material C&D material generated from the site formation and demolition works shall be sorted on-site into inert C&D material (i.e. public fill) and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material comprising fill material shall be reused on-site as backfilling material as far as practicable. C&D waste, such as wood, plastic, steel and other metals shall be reused or recycled and, as a last resort, disposed of to landfill. A suitable area shall be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process.	V						

Type of Impact	Recommended Mitigation Measures	Status				
	<i>Bentonite Slurry</i> Bentonite slurries used in construction works should be reconditioned and reused wherever practicable. Residual used bentonite slurry should be disposed of from the site as soon as possible. The Contractor should explore alternative disposal outlets for the residual used bentonite slurry and disposal at landfill should be the last resort.					
Landfill Gas Hazard	All personnel who work on the site and all visitors to the site should be aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices should be displayed at prominent position around the site. Adequate fire extinguisher equipment and fire resistant clothing should be made available on site.	V				
	Service runs within the consultation zone should be designated as "special routes" and utilities companies should be informed of this and should implement precautionary measures.	\checkmark				
	 Precautionary measures to minimize landfill gas hazard during excavation: No smoking or burning shall be allowed No worker shall work alone at any time in the confined space or any excavation trenches Construction equipment shall be equipped with a vertical exhaust at least 0.6 m above ground level and /or with a park arrestors Electrical motors and electrical extension cords shall be explosive-proof or intrinsically safe Permit to Work procedures to be adopted for welding, flame cutting or other hot works in trenches or confined spaces Forced ventilation if working in a trench deeper than 1 m Close all valves immediately after piping assembly or conduiting construction. For the large diameter pipes, pipe end shall be capped on one side. Forced ventilation shall also be provided before commissioning of the pipeline and staff entering and working in it Routine monitoring shall be conducted in all excavations to ensure the works area to be free of landfill gas precautionary measures involved with excavation and piping works shall be included in the Safety Plan Monitoring shall be conducted at the cracks on the ground floor during ground-works construction 	V				
	 Where there are any temporary site offices, or any other buildings which have enclosed spaces with the capacity to accumulate landfill gas, then they should either: be located on an area which has been proven to be free of landfill gas (by survey with portable gas detectors) and monitored manually by the Safety Officer or an approved wand appropriately qualified person to ensure that hazardous concentration of landfill gas does not occur; or be raised clear of the ground. If buildings are raised clear of the ground, a minimum, clear separation (as measured from the highest point on the ground surface to the underside of lowest floor joist) should be 500mm 	V				

Note: $\sqrt{-}$ Compliance of mitigation measures X - Non-compliance of mitigation measures N/A - Not applicable

APPENDIX I SUMMARY OF ENVIRONMENTAL LICENSING AND PERMIT STATUS

APPENDIX I – Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid	Period	Details	Status
	From	То		Status
Environmental Permi				
EP-265/2007	22/3/2007	N/A	 Expansion and upgrading of existing <u>Tai Po Sewage Treatment Works from</u> <u>100,000 m³/day to 130,000 m³/day</u>: (a) additional secondary treatment process units(1 primary clarified; 3 bioreactors and 2 final clarifiers); (b) reconstruction of 4 existing final clarified; (c) provision of ultraviolet disinfection facilities; (d) additional sludge treatment facilities; and (e) ancillary works to existing treatment facilities. 	Valid
Consruction Noise Pe	rmit (CNP)			
GW-RN0137-10	17/5/2010	16/11/2010		Expired
GW-RN0387-10	17/11/10	16/05/11	Use of powered mechanical equipment for carrying out construction work at 7 Dai Kwai Street, Tai Po Industrial Estate, Tai Po, N.T. during 0000 – 2400 hours on general holidays (including Sundawa) 0000 – 0700	Vaild
GW-RN0036-11	01/02/11	31/07/11	(including Sundays), 0000 – 0700 hours and 1900 – 2400 hours on any day not being a general holiday.	Vaild

Permit / License No.	Valid	Period	= Details	Status					
Termit/License No.	From	То	Details						
Discharge Licence	Discharge Licence								
WT00007782-2010 25/10/10 31/10,		31/10/15	Discharge of industrial trade effluent: Water Control Zone: Tolo Harbour and Channel Discharge Points: Communal drain for the carriage of surface drainage water	Valid					
Waste Disposal (Cher	nical Waste)								
WPN : 5213-727-C2397-16	09/7/10	End of Project	Disposal of Chemical Waste including spent oil, lubricating oil, diesel oil and methanol, surplus paint, thinner	Valid					

APPENDIX J WASTE GENERATION IN THE REPORTING QUARTER

APPENDIX J – WASTE GENERATION IN THE REPORTING MONTH

Quarterly Summary Waste Flow Table July to September 2011 (Year)

		Actual Quantities	of Inert C&D Mat	erials Generated	Monthly			Actual Quantities of	f C&D Wastes Gen	erated Monthly	
Month	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastic (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
Jan	5.1	0	0	0	5.1	0	1.4	0	0	0	0.01
Feb	2.87	0	0	0.17	2.7	0	1.3	0	0	0	0.01
Mar	6.2	0	0	3.5	2.7	0	1.5	0	0	0	0.01
Apr	3.16	0	0	2.91	0.25	0	1.4	0	0	0	0.01
May	4.56	0	0	3.85	0.71	0	1.4	0	0	0.06	0.01
June	1.50	0	0	1.25	0.25	0	1.2	0	0	0	0.01
Sub-total	23.39	0	0	11.68	11.71	0	8.2	0	0	0.06	0.06
July	1.60	0	0	1.60	0	0	0	0	0	0	0.001
Aug	3.50	0	0	3.50	0	0	0	0	0	0	0.007
Sept	0.97	0	0	0.83	0.14	0	0	0	0	0	0.0605
Oct											
Nov											
Dec											
Total											

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

APPENDIX J – WASTE GENERATION IN THE REPORTING QUARTER

Monthly Summary Waste Flow Table October to December 2010 (Year)

		Actual Quantities	of Inert C&D Mat	erials Generated	Monthly		packaging (see Note 2) Waste general refuse				
Month	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals				
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July	3.11	0	0	0	3.11	0	0	0	0	0	0.01
Aug	0.04	0	0	0	0.04	0	0	0	0	0	0
Sept	0.07	0	0	0	0.07	0	0	0	0	0	0.01
Oct	0.17	0	0	0	0.17	0	1.2	0	0	0	0.01
Nov	1.25	0	0	0	1.25	0	1.4	0	0	0	0.01
Dec	3.71	0	0	2.23	3.71	0	1.4	0	0	0	0.01
Total	8.35	0	0	2.23	8.35	0	4.00	0	0	0	0.05

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(3) Broken concrete for recycling into aggregates.

APPENDIX K SUMMARY OF EXCEEDANCE

APPENIDX K – SUMMARY OF EXCEEDANCE

Reporting Period: July to September 2011
a) Exceedance Report for 1-hr TSP (NIL)
b) Exceedance Report for 24-hr TSP (NIL)
c) Exceedance Report for Construction Noise (NIL)
d) Exceedance Report for Landfill Gas (NIL)

APPENDIX L COMPLAINT LOG

APPENDIX L – COMPLAINT LOG

Reporting Period: July to September 2011

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status	
N/A	N/A	N/A	N/A	N/A	N/A	

Remarks: No environmental complaint was received in the reporting period.