#### China Harbour Engineering Company Limited

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

#### Monthly Environmental Monitoring and Audit Report for April 2011

(Version 4.0)

Certified By	(Environmental Team Leader)
REMARKS:	

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

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#### TABLE OF CONTENTS

	Pa	age
EX	ECUTIVE SUMMARY	1
Env Env Key	oduction vironmental Monitoring and Audit Works vironmental Licenses and Permits Information in the Reporting Month ure Key Issues INTRODUCTION	1 2 2 2
	kground istruction Programme	
	nmary of EM&A Requirements	
2	AIR QUALITY MONITORING	6
	nitoring Requirements	
	nitoring Locations	
	nitoring Equipment nitoring Parameters, Frequency and Duration	
	nitoring Methodology and QA/QC Procedure	
	ults and Observations	
3	NOISE MONITORING	. 11
Mo	nitoring Requirements	11
	nitoring Locations	
	nitoring Equipment	
	nitoring Parameters, Frequency and Duration nitoring Methodology and QA/QC Procedures	
	ults and Observations	
4	LANDFILL GAS MONITORING	. 14
Mo	nitoring Requirements	.14
Mo	nitoring Parameters and Frequency	14
	nitoring Locations	
	nitoring Equipment ults	
5	ENVIRONMENTAL AUDIT	
Site	Audits	15
	view of Environmental Monitoring Procedures	
	tus of Environmental Licensing and Permitting	
	tus of Waste Management	
-	blementation Status of Environmental Mitigation Measures	
	nmary of Exceedances Ilementation Status of Event Action Plans	
-	nmary of Complaint and Prosecution	
6	FUTURE KEY ISSUES	. 19
Mo	nitoring Schedule for the Next Month	19
Cor	nstruction Program for the Next Month	19

7	CONCLUSIONS AND RECOMMENDATIONS	20
Con	nclusions	
Rec	commendations	

#### LIST OF TABLES

- Table I
   Summary Table for Events Recorded in the Reporting Month
- Table II
   Summary Table for Key Information in the Reporting Month
- Table 1.1Key Project Contacts
- Table 2.1Locations for Air Quality Monitoring
- Table 2.2Air Quality Monitoring Equipment
- Table 2.3Impact Dust Monitoring Parameters, Frequency and Duration
- Table 2.4Summary Table of Air Quality Monitoring Results during the reporting month
- Table 3.1Location of Noise Monitoring Station
- Table 3.2Noise Monitoring Equipment
- Table 3.3Noise Monitoring Parameters, Frequency and Duration
- Table 3.4Summary Table of Noise Monitoring Results during the Reporting Month
- Table 4.1Landfill Gas Monitoring Equipment
- Table 5.1
   Summary of Environmental Licensing and Permit Status
- Table 5.2Observations and Recommendations of Site Audit

#### LIST OF FIGURE

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 Action and Limit Levels
- Appendix B Copies of Calibration Certificates
- Appendix C Environmental Monitoring Schedules
- Appendix D 1-hour TSP Monitoring Results and Graphical Presentations
- Appendix E 24-hour TSP Monitoring Results and Graphical Presentations
- Appendix F Noise Monitoring Results and Graphical Presentations
- Appendix G Records of Landfill Gas Measurement by the Contractor
- Appendix H Summary of Exceedance
- Appendix I Site Audit Summary
- Appendix J Event Action Plans
- Appendix K Updated Environmental Mitigation Implementation Schedule
- Appendix L Waste Generation in the Reporting Month
- Appendix M Complaint Log
- Appendix N Construction Programme

#### **EXECUTIVE SUMMARY**

#### Introduction

- 1. This is the 10<sup>th</sup> monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract no. DC/2009/09 "Construction of Tai Po Sewage Treatment Works – Stage V Phase IIB". This report documents the findings of EM&A Works conducted in April 2011.
- 2. The major site activities undertaken in the reporting month included:
  - Construction of Decanting Chamber, FC11B, FC12B, Chemical & Oil Store;
  - Dismantling works;
  - Diversion works;
  - Drainage and Excavation works;
  - Landscaping works;
  - Piling Test for FC11B & FC12B;
  - Mini-piling works;
  - Pre-drilling works;
  - Steelworks for Shelter of Ferric Chloride Dosing System;
  - Proof drilling works;
  - Pipeline works; and
  - Paving works.

#### **Environmental Monitoring and Audit Works**

- 3. Environmental monitoring and audit works for the Project were performed regularly as stipulated in the Final 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 month is tabulated in **Table I**.

Parameter	No. of Exceedance		No. of Events	Action Taken	
r ar annetter	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	

 Table I
 Summary Table for Events Recorded in the Reporting Month

1

<sup>5.</sup> In the reporting month, 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. All the measured results were complied with the Limit Levels.

#### **Environmental Licenses and Permits**

6. 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.

#### Key Information in the Reporting Month

7. Summary of key information in this reporting month is tabulated in Table II.

**Event Details** Event **Action Taken** Status Remark Number Nature Complaint received 0 N/A N/A \_\_\_\_ Changes to the assumptions and key 0 N/A N/A \_\_\_\_ construction / operation activities recorded Submitted to EPD on  $15^{th}$ Status of submissions Monthly EM&A 1 April 2011 No comment Report (March 11) under EP (EP condition 6.6). Notifications of any 0 N/A N/A summons & prosecutions

 Table II
 Summary Table for Key Information in the Reporting Month

#### Future Key Issues

- 8. Major site activities for the coming two months will include:
  - Construction of FC11B, FC12B, FMC2B, Shelter for Ferric Chloride Dosing System, Aeration Tank No. 5 & 6, Bio-gas Holding Tank Support & Valve Chamber;
  - Demolition Existing Final Settlement Tank No.8 & 9;
  - Drainage and Excavation works;
  - Landscaping works;
  - Mini-piling works at MCL;
  - Pre-drilling works for FC7B & FC10B;
  - Proof-drilling at SDT, Bio-gas Holding Tank Support & Valve Chamber;
  - Roadwork in Portion "A";
  - Finishing works for Decanting Chamber, Bund Wall of Ferric Chloride Dosing System and Chemical & Oil Store; and
  - Pipeline works
- 9. The future environmental concerns are air quality, noise impacts, waste management and surface runoff from construction works.

#### 1 INTRODUCTION

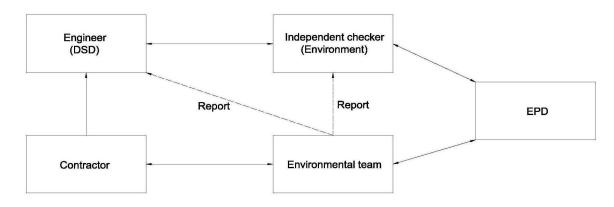
#### Background

- 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 m<sup>3</sup>/day to 130,000 m<sup>3</sup>/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 m<sup>3</sup>/d and 130,000 m<sup>3</sup>/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 m<sup>3</sup>/day. A master construction programme of the Project is provided in Appendix N. 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 10<sup>th</sup> monthly EM&A report summarizing the EM&A works for the Project in April 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
  - 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. TY YEUNG	Project Coordinator and Audit Team Leader	2151 2099	3107 1388	
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087		
Independent Arup Environmenta		Mr. Coleman NG	Independent Environmental Checker	2268 3097	2865 6493	
Arup	Checker	Mr. Lawrence KAN	Assistant to Independent Environmental Checker	2268 3212	2803 0493	
		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**

- 1.9 The site activities undertaken in the reporting month were:
  - Construction of Decanting Chamber, FC11B, FC12B, Chemical & Oil Store;
  - Dismantling works;
  - Diversion works;
  - Drainage and Excavation works;
  - Landscaping works;
  - Piling Test for FC11B & FC12B;
  - Mini-piling works;
  - Pre-drilling works;
  - Steelworks for Shelter of Ferric Chloride Dosing System;
  - Proof drilling works;
  - Pipeline works; and
  - Paving works.

#### Summary of EM&A Requirements

- 1.10 The EM&A programme requires construction phase air quality and noise 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 5 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 month.

#### 2 AIR QUALITY MONITORING

#### **Monitoring Requirements**

- 2.1 Monitoring of 1-hour and 24-hour Total Suspended Particulates (TSP) was conducted to monitor the air quality during construction phase. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.
- 2.2 In accordance with Section 2.30 of the EM&A Manual, a baseline checking of ambient TSP levels shall be carried out every six months at each monitoring station, when no dusty works activities are in operation. The number and location of monitoring stations and parameters shall be reviewed by ET Leader every three months according to section 8.8 of EM&A Manual.
- 2.3 As per our email on 8 February 2011 regarding on baseline checking of ambient air quality condition, the proposed methodology was declined to be considered by IEC. Subsequently, ET kept liaising with the Contractor to discuss the further methodology and arrangement of construction activities. Such purpose is to ensure that the baseline checking was conducted while the dust impact can be minimized, so that the result can be represented more precisely. Consequently, the baseline checking was considered to be deferred until the consensual decision was made with the Contractor in April 2011.
- 2.4 The baseline checking was conducted on 26, 28 and 29 April 2011 for 1-hour TSP 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 monitoring are considered as still representative and valid.
- 2.5 Regarding the 24-hr TSP baseline checking, it was targeted to be conducted in May 2011 due to the restriction of time arrangement.

#### **Monitoring Locations**

2.6 Impact air quality monitoring was conducted at the 3 monitoring stations, as shown in **Figure 1.2**. **Table 2.1** describes the locations of the air quality monitoring stations.

Monitoring Stations	Description	Location of Measurement
CAM1	Government Staff Quarters	Rooftop
CAM2	Hung Hing Printing Centre	On the site boundary just next to the Hung Hing Printing Centre
CAM3	Talcon Industrial Ltd.	On the site boundary just next to Talcon Industrial Ltd.

Table 2.1Locations for Air Quality Monitoring

#### Monitoring Equipment

2.7 **Table 2.2** summarizes the equipment used for the air quality monitoring.

Table 2.2Air Quality Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Graseby GMW 2310 HVS, Model GS-2310105-1, Serial no. 10239 and 0810	2
пүз	Tisch Environmental, Inc.; Model no. TE-5170, Serial no. 1704	1
Calibrator	Thermo Andersen.; Model no. G25A Serial no. 1536	

#### Monitoring Parameters, Frequency and Duration

2.8 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period.

Table 2.3Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Duration	Period	Frequency
CAM1, CAM2 and	1-hour TSP	1 hour	During daytime period	3 times / 6-day
CAM3	24-hour TSP	24 hours	24 hours	Once / 6-day

#### Monitoring Methodology and QA/QC Procedure

#### Instrumentation

2.9 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

#### HVS Installation

- 2.10 The following guidelines were adopted during the installation of HVS:
  - Sufficient support was provided to secure the samplers against gusty wind.
  - No two samplers were placed less than 2 meters apart.
  - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
  - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
  - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
  - No furnaces or incineration flues were nearby.

- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

#### Filters Preparation

- 2.11 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μm diameter. A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.
- 2.12 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.</p>
- 2.13 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

#### **Operating/Analytical Procedures**

- 2.14 Operating/analytical procedures for the TSP monitoring were highlighted as follows:
  - Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4 m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
  - The power supply was checked to ensure the sampler worked properly.
  - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
  - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
  - The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
  - The shelter lid was closed and secured with the aluminum strip.
  - The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
  - The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet after sampling.
  - After sampling, the filter was removed and sent to the Wellab Ltd. for weighing. The elapsed time was also recorded.
  - Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than  $\pm 3^{\circ}$ C; the relative humidity (RH) should be < 50% and not vary by more than  $\pm 5\%$ . A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

#### Maintenance/Calibration

- 2.15 The following maintenance/calibration was required for the HVS:
  - The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
  - Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix B**.
  - The HVS calibration orifice will be calibrated annually.

#### **Results and Observations**

- 2.16 In the reporting month, 1-hr TSP monitoring was carried out as schedule at each designated monitoring station on 13 occasions. 24-hr TSP monitoring was carried out as scheduled at each designated monitoring station on 5 occasions. The monitoring schedule was updated and is shown in **Appendix C**. The weather during the monitoring sessions was mainly sunny, fine and cloudy.
- 2.17 All measured 1-hr and 24-hr TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting month.
- 2.18 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices D** and **E**, respectively.

Parameter	Minimum µg/m <sup>3</sup>	Maximum µg/m <sup>3</sup>	Average µg/m <sup>3</sup>	Action Level, µg/m <sup>3</sup>	Limit Level, µg/m <sup>3</sup>		
1-hr TSP (CAM1)	60	303	131	315	500		
24-hr TSP (CAM1)	39	149	83	171	260		
1-hr TSP (CAM2)	74	284	146	336	500		
24-hr TSP (CAM2)	31	95	68	177	260		
1-hr TSP (CAM3)	97	267	154	344	500		
24-hr TSP (CAM3)	46	102	80	192	260		

## Table 2.4Summary Table of Air Quality Monitoring Results during the<br/>reporting month

2.19 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Station	Major Pollution Source
CAM1 – Government Staff Quarters	Road Traffic Dust
CAM2 – Hung Hing Printing Centre	Road Traffic Dust and Excavation
CAM3 – Talcon Industrial Ltd.	Road Traffic Dust and Excavation

#### **3** NOISE MONITORING

#### **Monitoring Requirements**

- 3.1 Noise monitoring was conducted in accordance with the EM&A Manual. Appendix A shows the established Action and Limit Levels for the environmental monitoring works.
- 3.2 The number and location of monitoring stations and parameters shall be reviewed by ET Leader every three months according to section 8.8 of EM&A Manual.

#### **Monitoring Locations**

3.3 Noise monitoring was conducted at one designated monitoring station as presented in **Table 3.1**. **Figure 1.2** shows the locations of the monitoring station.

Table 3.1Location of Noise Monitoring Station

Monitoring Station	Description	Location of Measurement
NM1	Government Staff Quarters	The corridor at the first floor.

#### **Monitoring Equipment**

3.4 **Table 3.2** summarizes the noise monitoring equipment model being used.

Table 3.2Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 955 (Serial No. 12553)	2
Integrating Sound Level Meter	SVAN 955 (Serial No. 14303)	2
Calibrator	SV30A (Serial No. 10929)	2
Calibrator	SV30A (Serial No. 10965)	2
Wind Speed Anomometer	Vane Anemometer, Model 451104	1
Wind Speed Anemometer	(Serial no. 9020746)	1

#### Monitoring Parameters, Frequency and Duration

3.5 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring.

Table 3.3Noise Monitoring Parameters, Frequency and Duration

Station	Parameter	Period	Frequency
NM1	$L_{eq}(30 \text{ min.})$ (L <sub>10</sub> and L <sub>90</sub> were also recorded as supplementary information)	0700-1900 hrs. on normal weekdays	Once a week

3.6 If construction works are extended to include works during the hours of 1900 - 0700, additional weekly impact monitoring would be carried out during evening and night-time works. Applicable permits under NCO have been obtained by the Contractor. The details of the Construction Noise Permit can be referred to **Table 5.1**.

#### Monitoring Methodology and QA/QC Procedures

#### Field Monitoring

- 3.7 The monitoring procedures are as follows:
  - The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
  - The battery condition was checked to ensure good functioning of the meter.
  - Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
    - frequency weighting : A
    - time weighting : Fast
    - measurement time : 30 minutes
  - Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
  - The wind speed at the monitoring station was checked with the portable wind meter. Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.
  - Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
  - At the end of the monitoring period, the  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

#### Maintenance and Calibration

- 3.8 Maintenance and Calibration procedures were as follows:
  - The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
  - The sound level meter and calibrator were checked and calibrated at yearly intervals. Copies of calibration certificates are attached in **Appendix B**.

#### **Results and Observations**

- 3.9 In the reporting month, noise monitoring during non-restricted hours was conducted as scheduled at the designated location on 4 occasions. As advised by the Contractor, no construction activities will be undertaken during restricted hours as such noise monitoring during restricted hours was omitted. The noise monitoring schedule is provided in **Appendix C**.
- 3.10 The details of the monitoring results and graphical presentations are shown in AppendixF. The weather during the monitoring sessions was mainly sunny and fine.
- 3.11 No Action/Limit Level exceedance for construction noise monitoring was recorded in the reporting month.

 Table 3.4
 Summary Table of Noise Monitoring Results during the Reporting Month

Parameter	Minimum Leq(30min) dB(A)	Maximum Leq(30min) dB(A)	Average Leq(30min) dB (A)	Action Level	Limit Level
NM1	61.2	63.7	62.7	When one documented complaint is received	75dB(A)

3.12 According to our field observations, the major noise source identified at the designated air quality monitoring stations are as follows:

Station	Major Noise Source
NM1 – Government Staff Quarters	Road Traffic
	Construction of Main Site

#### 4 LANDFILL GAS MONITORING

#### **Monitoring Requirements**

4.1 In accordance with Section 6 of the EM&A Manual, monitoring of landfill gas is required for construction works within the 250m Consultation Zone of Shuen Wan Landfill (the Consultation Zone). This Section reports the results of landfill gas measurements performed by the Safety Officer of the Contractor. Appendix A shows the Limit Levels for the monitoring works.

#### **Monitoring Parameters and Frequency**

- 4.2 The parameters for Landfill gas monitoring include Percentage of Combustible Gas (Methane), Carbon dioxide and Oxygen.
- 4.3 The Landfill gas monitoring is carried out before the entry of concern zone by the Contractor in the morning and afternoon.

#### **Monitoring Locations**

- 4.4 Monitoring of oxygen, methane and carbon dioxide was performed for excavations at 1m depth or more within the Consultation Zone. In this reporting month, the area required to be monitored for landfill gas are shown below and **Figure 1.3** shows the landfill gas monitoring locations.
  - FC11B and FC12B
  - Dewatering House
  - Aeration Tank

#### Remark:

Excavation works of 1m depth or more at Pipe 300, 600 and 900 Excavation Trench has been completed.

#### Monitoring Equipment

4.5 **Table 4.1** summarizes the equipment employed by the Contractor for the landfill gas monitoring.

#### Table 4.1Landfill Gas Monitoring Equipment

Equipment	Model and Make	Quantity
Intrinsically safe, portable gas detector	Crowcon Custodian CDL Portable Gas Detector (Serial No. 24800 37076)	1

#### Results

4.6 In the reporting month, landfill gas monitoring was carried out by the Contractor at the aforesaid locations on total 188 occasions. No Action/Limit Level exceedance for Landfill gas monitoring was recorded in the reporting month. The monitoring results are

provided in Appendix G. Copies of calibration certificates are attached in Appendix B.

#### 5 ENVIRONMENTAL AUDIT

#### **Site Audits**

- 5.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 5.2 Site audits were conducted on 8<sup>th</sup>, 14<sup>th</sup>, 21<sup>st</sup> and 28<sup>th</sup> April 2011 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 8<sup>th</sup> April 2011. No site inspection was conducted by EPD during the reporting month. The details of observations during site audit can refer to **Table 5.2**.

#### **Review of Environmental Monitoring Procedures**

5.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

#### Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

#### Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

#### Landfill Gas Monitoring

• The Contractor has checked the condition of the equipment before monitoring to ensure the reliability.

#### Status of Environmental Licensing and Permitting

5.4 All permits/licenses obtained for the Project are summarized in **Table 5.1**.

Permit / License No.	Valid	Period	Details	
Termit / License No.	From	То	Details	Status
<b>Environmental Permi</b>	it (EP)			
EP-265/2007	22/3/2007	N/A	<ul> <li>Expansion and upgrading of existing <u>Tai Po Sewage Treatment Works from</u> <u>100,000 m³/day to 130,000 m³/day</u>:</li> <li>(a) additional secondary treatment process units(1 primary clarified; 3 bioreactors and 2 final clarifiers);</li> <li>(b) reconstruction of 4 existing final clarified;</li> <li>(c) provision of ultraviolet disinfection facilities;</li> <li>(d) additional sludge treatment facilities; and</li> <li>(e) ancillary works to existing treatment facilities.</li> </ul>	Valid
Consruction Noise Pe	rmit (CNP)			
GW-RN0387-10 GW-RN0036-11	01/02/11	16/05/11 31/07/11	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 Sundays), 0000 – 0700 hours and 1900 – 2400 hours on any day not being a general holiday.	Vaild Vaild
Discharge Licence				
WT00007782-2010	25/10/10	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 (Chen	nical Waste)			
WPN : 5213-727-C2397-16	09/07/10	End of Project	Disposal of Chemical Waste including spent oil, lubricating oil, diesel oil and methanol, surplus paint, thinner	Valid

Table 5.1	Summary of Environmental Licensing and Permit Status
-----------	--

#### **Status of Waste Management**

5.5 The Construction and Demolition (C&D) materials generated in the reporting month were mainly inert C&D waste and C&D waste. The quantities of waste generated in this reporting month are summarized in **Appendix L**. No chemical waste was generated in the reporting month.

#### **Implementation Status of Environmental Mitigation Measures**

- 5.6 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the EMIS is provided in **Appendix K**.
- 5.7 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 5.2**.

Parameters	Date	Observations and Recommendations	Follow-up
8-April-2011		Observation: - The sedimentation tank was observed full of muddy water at FC11B&12B. The Contractor was reminded to clear the deposited mud and ensure it can be functioned properly at all the time.	The situation was observed rectified in audit session 110408.
	21-April-2011	<u>Observation:</u> - The ponding water should be avoided at outside the site office and A-Tank. The Contractor was reminded to pump the ponding water out regularly.	The situation was observed rectified in audit session 110428.
Water Quality	28-April-2011	<u>Reminder:</u> - The water pipe should be repaired, to avoid wastage and seepage of water at FC11B&12B.	The situation required follow-up action during the coming audit session.
	28-April-2011	<u>Reminder:</u> - The ponding water should be cleared regularly, to avoid over-flow during rain at De-Watering House.	The situation required follow-up action during the coming audit session.
	8-April-2011	Reminder: - Keep watering regularly at Tank no.7 along FC11B&12B haul road.	The situation was observed rectified in audit session 110421.
Air Quality 14-April-2011 28-April-2011		<u>Observation:</u> - The haul road should be watered regularly, to avoid dust generation at outside the site office and along FC11B&12B.	The situation was observed rectified in audit session 110421.
		Observation: - Dust-generation activity was observed to be operated without water spraying. The Contractor was reminded to keep spraying water during work, to avoid dust generation at FC11B&12B.	The situation required follow-up action during the coming audit session.

Table 5.2Observations and Recommendations of Site Audit

	8-April-2011	Observation: - The haul road was observed that has oil stain at FC11B&12B. The Contractor was reminded to clear the oil stain properly as soon as possible.	The situation was observed rectified in audit session 110408.
	8-April-2011	<u>Reminder:</u> - The chemical waste storage area should be enclosed with no hole, to avoid water discharging to it during rain.	The situation was observed rectified in audit session 110408.
Waste /	14-April-2011	<u>Reminder:</u> - The discarded cement bag should be cleared at Chemical Storage House.	The situation was observed rectified in audit session 110421.
Chemical Management	21-April-2011	Reminder: - The general refuse at near Tank no.8b should be cleared.	The situation was observed rectified in audit session 110428.
	28-April-2011	<u>Reminder:</u> - The general refuse should be cleared at Tank no.7.	The situation required follow-up action during the coming audit session.
	28-April-2011	<u>Reminder:</u> - The discarded oil drum should be disposed as chemical waste at Tank no.7.	Thesituationrequiredfollow-upactionduringtheauditsession.

#### **Summary of Exceedances**

5.8 No exceedance of monitoring results was recorded in the reporting month. Summary of exceedance is provided in **Appendix H**.

#### **Implementation Status of Event Action Plans**

5.9 The Event Action Plans for air quality, construction noise and landfill gas monitoring are presented in **Appendix J**. No exceedance was recorded and thus no action was required to be implemented.

#### **Summary of Complaint and Prosecution**

- 5.10 No environmental related complaint, prosecution or notification of summons was received in the reporting month.
- 5.11 There was no environmental complaint, prosecution or notification of summons received since the Project commencement. The Complaint Log is attached in Appendix M.

#### 6 FUTURE KEY ISSUES

- 6.1 Key issues to be considered in the coming month include:
  - Effluent discharge generated from surface runoff;
  - Dust generated from excavation works, backfilling works and stockpile of dusty materials;
  - Maintenance of de-silting facilities and drainage system, such as U-channels;
  - Accumulation of stagnant water in the site areas; and
  - Accumulation of C&D waste and general waste on site.

#### Monitoring Schedule for the Next Month

6.2 The tentative environmental monitoring schedule for the next month is shown in **Appendix C**.

#### **Construction Program for the Next Month**

- 6.3 A tentative construction programme is provided in **Appendix N**. The major construction activities in the coming month will include:
  - Construction of FC11B, FC12B, FMC2B, Shelter for Ferric Chloride Dosing System, Aeration Tank No. 5 & 6, Bio-gas Holding Tank Support & Valve Chamber;
  - Demolition Existing Final Settlement Tank No.8 & 9;
  - Drainage and Excavation works;
  - Landscaping works;
  - Mini-piling works at MCL;
  - Pre-drilling works for FC7B & FC10B;
  - Proof-drilling at SDT, Bio-gas Holding Tank Support & Valve Chamber;
  - Roadwork in Portion "A";
  - Finishing works for Decanting Chamber, Bund Wall of Ferric Chloride Dosing System and Chemical & Oil Store; and
  - Pipeline works

#### 7 CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

- 7.1 Environmental monitoring and audit works were conducted in the reporting month. Site inspections were conducted on a weekly basis. The results were reviewed and checked.
- 7.2 No exceedance of monitoring results was recorded in the reporting month.
- 7.3 There was no environmental complaint, prosecution or notification of summons received.

#### Recommendations

7.4 According to the environmental audit performed in the reporting month, the following recommendations were made:

#### Water Impact

- To provide sediment tank for settling runoff prior to disposal.
- To ensure proper use and maintenance of the de-silting facilities.
- 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.
- To avoid blockage of gully inlets and ensure proper protection of the gully from ingress of sandy water.

#### **Dust Impact**

- To remove fugitive dusty material on the haul road periodically.
- 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.

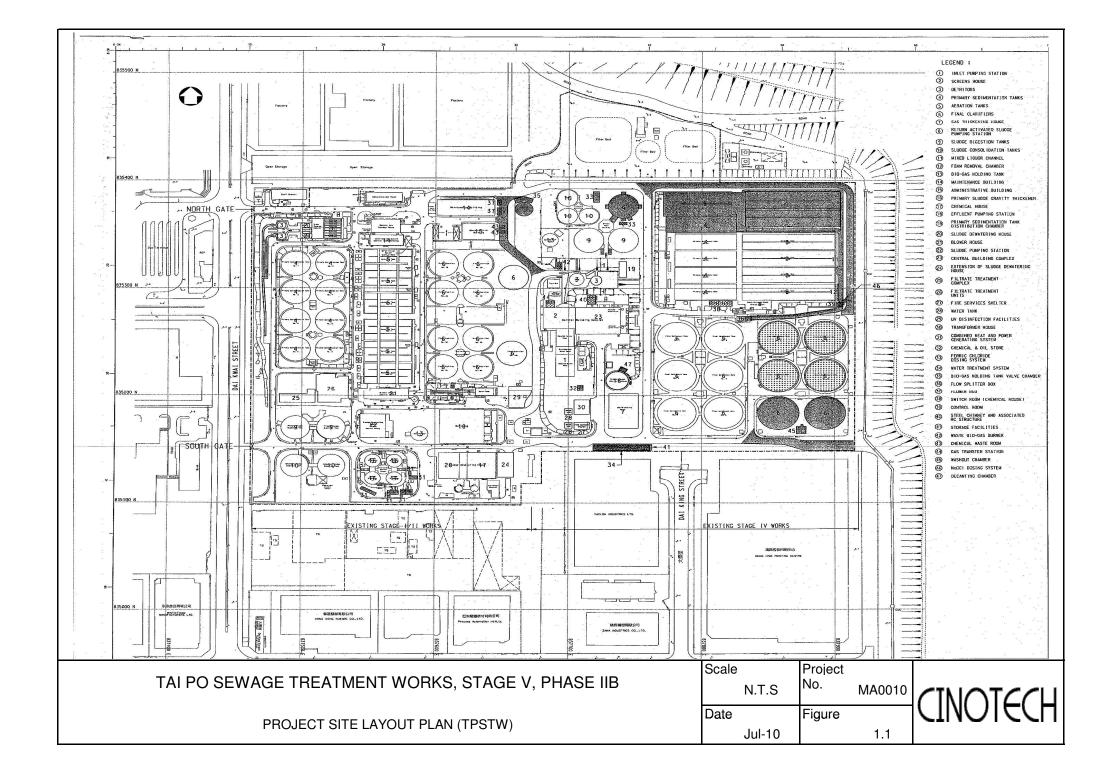
#### Noise Impact

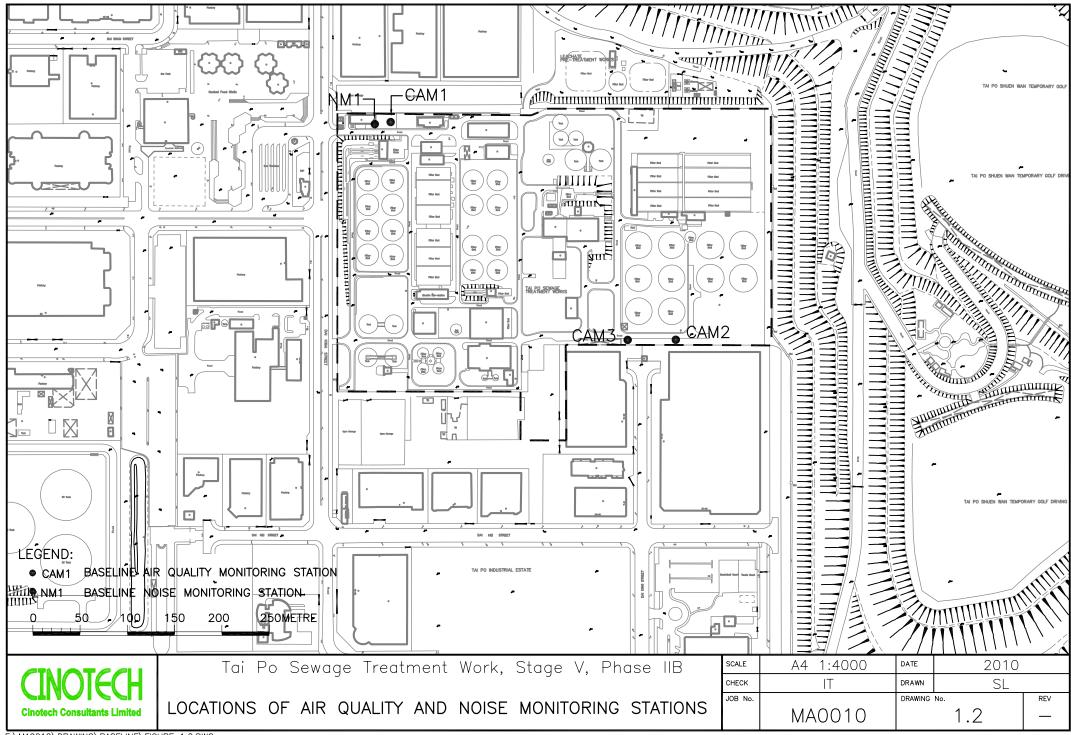
• To space out noisy equipment and position as far away as possible from sensitive receivers.

#### Waste / Chemical Management

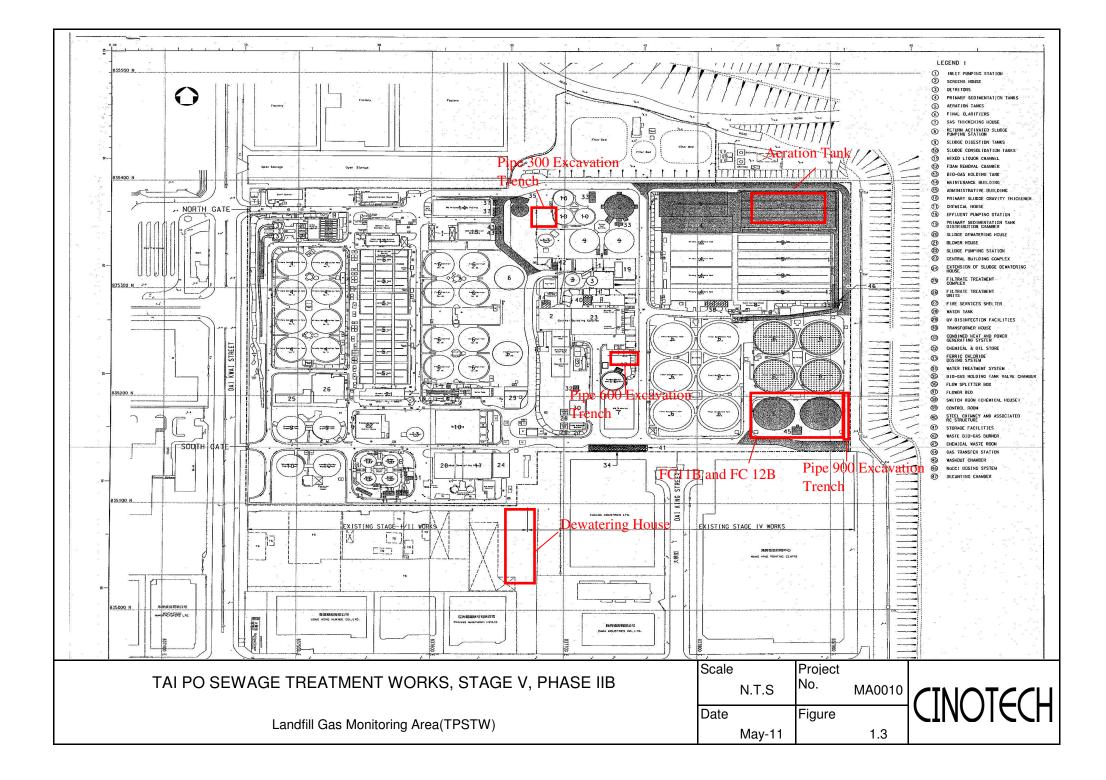
- To provide proper rubbish bins / skips for waste collection.
- To provide proper storage area for oil container on site.
- To avoid and check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment.
- 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 ACTION AND LIMIT LEVELS

#### **APPENDIX A – Action and Limit Levels**

#### **<u>1-Hour TSP</u>**

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

#### 24-Hour TSP

Location	Action Level, μg/m <sup>3</sup>	Limit Level, µg/m <sup>3</sup>
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		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.

#### <u>Landfill Gas</u>

Parameter	Limit Level	Action
	<19%	Ventilate to restore oxygen to >19%
Oxygen	<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%
	>0.5%	Ventilate to restore carbon dioxide to <0.5%
Carbon Dioxide	>1.5%	Stop works Evacuate personnel / prohibit entry Increase ventilation to restore carbon dioxide to <0.5%

APPENDIX B COPIES OF CALIBRATION CERTIFCATES

#### High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

### CINOTECH

File No. MA0010/37/0037

Station	CAM1 - Gover	mment Staff Quart	er	Operator	:WK			
Date:	22-Mar-11		ĩ	Next Due Date:	: 21-May	/-11		
Equipment No.:	A-01-37				1704			
. ,			Ambient	Condition				
Temperatu	ure, Ta (K)	291.9	Pressure, Pa	n (mmHg)		765.7		
			ifice Transfer St	1	1			
Equipm	ent No.:	A-04-01	Slope, mc	0.0462	Intercep		-0.0163	
Last Calibr	ation Date:	11-Oct-10			bc ≒ [∆H x (Pa/76			
Next Calibr	ation Date:	9-Oct-11		Qstd ≕ {[∆H	x (Pa/760) x (298	/Ta)] <sup>1/2</sup> -bc} /	me	
	1		Calibration of	<b>TSP Sampler</b>	1			
Calibration		Orl	ĩce	I .		HVS		
Point	$\Delta H$ (orifice),	[ΔH x (Pa/760	)) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM)		[ΔW x (Pa/70	60) x (298/Ta)] <sup>1/2</sup>	Y-
	in. of water			X - axis	(HVS), in. of oil		axis	
1	11.9		.50	76.08	7.8		2.83	
2	9.7		.16	68.72	6.2		2.53	
3	7.5		.78	60.47	4.9		2.24	
4	5.0		.27	49.44	3.1		1.79	$\square$
5	3.1	1	.79	39.00	1.9		1.40	
								ĺ
By Linear Regr	ession of Y on 2	X						
Slope, mw =			]	Intercept, bw	-0.112	4		
Correlation c	-	0.99						
If Correlation C	Coefficient < 0.9	90, check and reca	librate.					
			Set Point C	alculation				
		Curve, take Qstd =						
From the Regres	sion Equation, th	ne "Y" value accor	ding to					
			std + bw = $[\Delta W]$		00/T-11/2			
		mw x Q	$stu + bw = [\Delta W]$	x (ra//ou) X (2	90/1a)]			
Therefore, Se	et Point: W = ( n	$1 \le 10^{2}$ w x Qstd + bw ) <sup>2</sup>	x (760 / Pa) x (7	(a / 298) =	2.33			
				,				
								J
Remarks:								
·			1,					

Conducted by: WK-TANG Signature: Kwew Date: 22/3/2011 Checked by: A Signature: Date: 22/3/2011 Date: 00 (Arch 0 01)

# High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

### CINOTECH

File No. MA0010/A40/0037

Station	CAM2 - Hung I	Hing Printing Cer	ntre	Operator	:WK	<u> </u>	_
Date:	22-Mar-11		-	– Next Due Date	: 21-Ma	y-11	-
Equipment No.	: <u>A-01-40</u>				10239	)	-
			Ambient	Condition	·		
Temperati	ure, Ta (K)	291.9	Pressure, Pa	a (mmHg)		765.7	
		01	ifice Transfer St	andard Inforn	nation		
	nent No.:	A-04-01	Slope, mc	0.0462	Intercep		-0.0163
	ration Date:	11-Oct-10			bc = [ΔH x (Pa/76	· ·	
Next Calib	ration Date:	9-Oct-11		Qstd = $\{[\Delta H ]$	x (Pa/760) x (298	/Ta)] <sup>1/2</sup> -bc}	/ me
		•					
	·		Calibration of	TSP Sampler			
Calibration		Or	fice	·		HVS	
Point	ΔH (orifice), in. of water	[ΔΗ x (Pa/76)	0) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/7	760) x (298/Ta)] <sup>1/2</sup> Y axis
1	11.9	3	.50	76.08	8.2		2.90
2	9.7	3	.16	68.72	6.7		2.63
3	7.5	2	.78	60.47	5.1		2.29
4	5.1	2	.29	49.93	3.2		1.81
5	3.0	1	.76	38.37	1.9		1.40
Slope , mw = Correlation c If Correlation C		0.99 ), check and reca	93	Intercept, bw : -	-0.176		
			Set Point C	abulation	·····		
From the TSP Fi	ield Calibration C	urve, take Ostd =		aculation			
	sion Equation, the	-					
		mw x Q	std + bw ≈ [∆W x	x (Pa/760) x (2	98/Ta)] <sup>1/2</sup>		
Then 6 - 0		0.11.1.2					
Therefore, Se	et Point; W = ( my	v x Qstd + bw ) <sup>2</sup>	x ( 760 / Pa ) x ( T	(a/298) =	2.39		
					· · · · · · · · · · · · · · · · · · ·		
temarks:							
vindino.							
			)				
onducted by:	Wk. Tana	Signature:	Kwa	in.		Data	22/3/11
Checked by:				· · · · · · · · · · · · · · · · · · ·		Date:	$\frac{221711}{2}$
Checked by:	LAY_	Signature:				Date: <u>c</u>	20 March C

#### High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

### CINOTECH

File No. MA0010/35/0037

Station	CAM3 - Talcon	Industrial Ltd	_	Operator	WK		_
Date:	22-Mar-11		-		21-May	y-11	_
Equipment No.:	A-01-35		-		0810		
<b>I</b>							
			1	Condition	<u> </u>		
Temperatu	ure, Ta (K)	291.9	Pressure, Pa	a (mmHg)		765.7	
		0	rifice Transfer St	andord Inform	nation		]
Equipm	ent No.:	A-04-01	Slope, mc	0.0462	Intercep	t he	-0.0163
Last Calibr		11-Oct-10			be = $[\Delta H \times (Pa/7)]$		
Next Calib		9-Oct-11			x (Pa/760) x (298		
	<b>k</b>	,	1				· · ·
			Calibration of	TSP Sampler			
Calibration		Or	fice	1		HVS	
Point	<ul> <li>ΔH (orifice),</li> <li>in. of water</li> </ul>	[ <b>Δ</b> Н x (Ра/76	0) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	∆W (HVS), in. of oil	[ΔW x (Pa/	760) x (298/Ta)] <sup>1/2</sup> Y- axis
1	11.9		3.50	76.08	8.0		2.87
2	9.8	3	3.17	69.07	6.7		2.63
3	7.4	2	2.76	60.07	5.0		2.27
4	5.1	2	2.29	49.93	3.1		1.79
5	3.3	1	.84	40.23	2.1		1.47
• –	ression of Y on X						
Slope, mw =		-		Intercept, bw :	-0.165	6	
Correlation c			984	-			
*If Correlation (	Coefficient < 0.99	0, check and reca	llibrate.				
	•		Set Point C	alculation			
From the TSP Fi	ield Calibration C	urve, take Qstd =	= 43 CFM				
From the Regres	sion Equation, th	e "Y" value accor	rding to				
		mw x (	$\Delta t = \Delta W$	r (Pa/760) v (2	98/Ta\I <sup>1/2</sup>		
		mn x (	Lord OIL LEAT	x (x 10 / 00 / X (&	20,10/]		
Therefore, Se	et Point; W = ( m	w x Qstd + bw ) <sup>2</sup>	x ( 760 / Pa ) x ( 1	fa / 298 ) =	2.36		
Domostro							
Remarks:							

Conducted by: WK. Tang Signature: KWan Date: 2/3/1 Checked by: UA- Signature: Date: Date:

.



WELLAB LIMITED Rms 816, 1516 & 1701, Technology Park, 18 On Lai Street, Shatin, N.T, Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

#### **TEST REPORT**

APPLICANT:	<b>Cinotech Consultants Limited</b>	Test Report No.:	C/A/100504
	Room 1710, Technology Park,	Date of Issue:	2010-05-04
	18 On Lai Street,	Date Received:	2010-04-30
	Shatin, NT, Hong Kong	Date Tested:	2010-04-30
		Date Completed:	2010-04-30
		Next Due Date:	2011-05-03

ATTN:

#### Mr. Henry Leung

1 of 1

#### **Certificate of Calibration**

Page:

#### Item for calibration:

	Description	: RS232 Integral Vane Digital Anemometer
	Manufacturer	: AZ Instrument
	Model No.	: 451104
	Serial No.	: 9020746
	Equipment No.	: A-03-01
nd	litions:	
	Doom Tommerstern	

#### Test cor

Room Temperature : 22 degree Celsius Relative Humidity : 68% Pressure : 101.3 kPa

#### Methodology:

The anemometer has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

#### **Results:**

	Reference Set Point	Instrument Readings
Measuring Air Velocity, m/s	2.00	2.00
Temperature, °C	21.0	21.0

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

atthe le

PATRICK TSE Laboratory Manager

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WELLAB LIMITED Rms 816, 1516 & 1701, Technology Park, 18 On Lai Street, Shatin, N.T, Hong Kong. Tel: 2898 7388 Fax: 2898 7076 Website: www.wellab.com.hk

#### **TEST REPORT**

DescriptionCalibration OrificeSerial No.1536Model No.G25ADate11 October 2010

Manufacturer Temperature,Ta (K) Pressure, Pa (mmHg) Thermo Andersen 295 751.5

Plate	Diff.Vol (m <sup>3</sup> )	Diff.Time (min)	Diff.Hg (mm)	Diff.H <sub>2</sub> O (in.)
1	1.00	1.3050	3.8	1.50
2	1.00	0.9250	7.6	3.00
3	1.00	0.8540	8.9	3.50
4	1.00	0.7530	11.4	4.50
5	1.00	0.6210	16.5	6.50

Va

0.9949

0.9899

0.9882

0.9848

0.9780

(X axis)

Qa

0.7624

1.0701

1.1571

1.3079

1.5749

Qa Slope (m) = 1.02211

Intercept (b) = -0.01022

Coefficient (r) = 0.99998

axis= SQRT[H2O(Ta/Pa)]

(Y axis)

0.7674

1.0852

1.1722

1.3291 1.5974

#### DATA TABULATION

std 615 1.2240 689 1.7311	
689 1.7311	
558 1.8698	
064 2.1201	
732 2.5481	
;	064 2.1201

Y axis= SQRT[ $H_2O(Pa/760)(298/Ta)$ ] Qstd Slope ( m ) = <u>1.63228</u> Intercept ( b ) = <u>-0.01631</u> Coefficient ( r ) = <u>0.99998</u>

### CALCULATIONS

Vstd=Diff. Vol[(Pa-Diff.Hg)/760](298/Ta) Qstd=Vstd/Time Va=Diff.Vol[(Pa-Diff.Hg)/Pa] Qa=Va/Time

For subsequent flow rate calculations: Qstd=l/m{[SQRT(H<sub>2</sub>O(Pa/760)(298/Ta))]-b} Qa=l/m{[SQRT H<sub>2</sub>O(Ta/Pa)]-b}

> PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

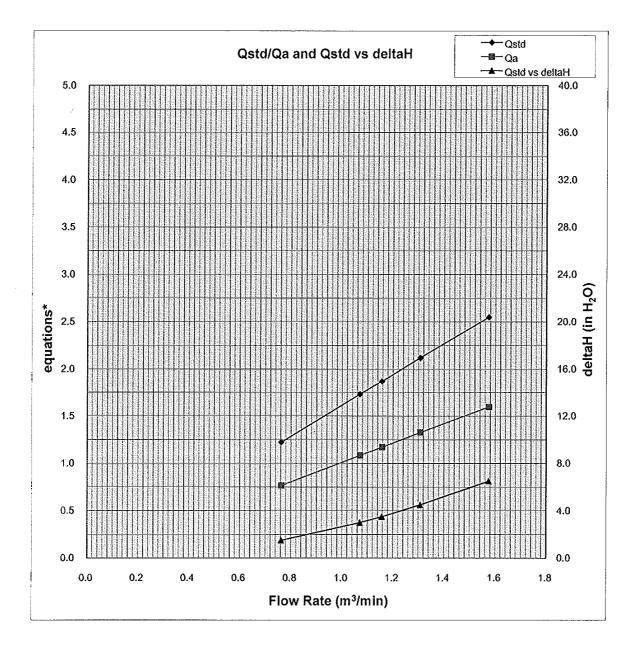
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PATRICK TSE Laboratory Manager

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# **TEST REPORT**



Y-axis equations:

Qstd series: SQRT[ $\Delta$ H(Pa/Pstd)(Tstd/Ta)]

Qa series: SQRT[ $\Delta$ H(Ta/Pa)]

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#### **TEST REPORT APPLICANT: Cinotech Consultants Limited** Test Report No.: C/N/100924/4 Date of Issue: Room 1710, Technology Park, 2009-09-24 18 On Lai Street, Date Received: 2010-09-22 Shatin, NT, Hong Kong Date Tested: 2010-09-22 Date Completed: 2010-09-24 2011-09-23 Next Due Date: ATTN: Mr. Henry Leung Page: 1 of 1 **Certificate of Calibration** Item for calibration: Description : 'SVANTEK' Integrating Sound Level Meter Manufacturer : SVANTEK Model No. : SVAN 955 Serial No. : 12553 Microphone No. : 35222 Equipment No. : N-08-02 **Test conditions:** Room Temperatre : 22 degree Celsius **Relative Humidity** : 59% **Test Specifications:** Performance checking at 94 and 114 dB

### Methodology:

In-house method, according to manufacturer instruction manual

#### **Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PÁTRICK TSE Laboratory Manager



#### **TEST REPORT Cinotech Consultants Limited** Test Report No.: C/N/110124/1 **APPLICANT:** Room 1710, Technology Park, Date of Issue: 2011-01-24 Date Received: 2011-01-21 18 On Lai Street, Date Tested: Shatin, NT, Hong Kong 2011-01-21 Date Completed: 2011-01-24 Next Due Date: 2012-01-23 ATTN: Mr. Henry Leung 1 of 1 Page: **Certificate of Calibration** Item for calibration: Description : 'SVANTEK' Integrating Sound Level Meter Manufacturer : SVANTEK Model No. : SVAN 955 Serial No. : 14303 Microphone No. : 17204 Equipment No. : N-08-05 **Test conditions:** : 23 degree Celsius Room Temperatre **Relative Humidity** : 55%. **Test Specifications:** Performance checking at 94 and 114 dB Methodology: In-house method, according to manufacturer instruction manual

### **Results:**

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

**PATRICK TSE** Laboratory Manager

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1 of 1

# **TEST REPORT**

#### **APPLICANT: Cinotech Consultants Limited** Test Report No .: C/N/100924/2 Date of Issue: Room 1710, Technology Park, 2010-09-24 Date Received: 18 On Lai Street, 2010-09-22 Date Tested: Shatin, NT, Hong Kong 2010-09-22 Date Completed: 2010-09-24 Next Due Date: 2011-09-23

### ATTN:

### Mr. Henry Leung

Item for calibration:

Description Manufacturer Model No. Serial No. Equipment No. : Acoustical Calibrator : SVANTEK : SV30A : 10929 : N-09-01

Page:

### **Test conditions:**

Room Temperatre Relative Humidity : 22 degree Celsius : 59%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### **Results:**

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	$114.0 \pm 0.1 \text{ dB}$

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

**PATRICK TSE** *Laboratory Manager* 

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#### **TEST REPORT APPLICANT: Cinotech Consultants Limited** Test Report No.: C/N/101110/1 Room 1710, Technology Park, Date of Issue: 2010-11-10 Date Received: 18 On Lai Street, 2010-11-08 Shatin, NT, Hong Kong Date Tested: 2010-11-08 Date Completed: 2010-11-10 Next Due Date: 2011-11-09 ATTN: Mr. Henry Leung Page: 1 of 1 Item for calibration: Description : Acoustical Calibrator Manufacturer : SVANTEK Model No. : SV30A Serial No. : 10965 Equipment No. : N-09-02 **Test conditions:**

Room Temperatre Relative Humidity : 22 degree Celsius : 57%

### Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

### **Results:**

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY: For and On Behalf of WELLAB Ltd.

PATRICK TSE

Laboratory Manager

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APPENDIX C ENVIRONMENTAL MONITORING SCHEDULE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Apr	2-Apr
					1 hr TSP	
3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr
			1 hr TSP	1 hr TSP Noise	1 hr TSP	
	24 hr TSP			Troise		24 hr TSP
10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr
	1 hr TSP	1 hr TSP Noise	1 hr TSP		24 hr TSP	
17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr
	1 hr TSP		1 hr TSP	1 hr TSP Noise 24 hr TSP		
24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr
		1 hr TSP Noise	24 hr TSP	1 hr TSP	1 hr TSP	

# Contract No. DC/2009/09 - Construction of Tai Po Sewage Treatment Works - Stage 5 Phase 2B Impact Air Quality and Noise Monitoring Schedule for April 2011

# Contract No. DC/2009/09 - Construction of Tai Po Sewage Treatment Works - Stage 5 Phase 2B Tentative Impact Air Quality and Noise Monitoring Schedule for May 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-May	2-May	3-May	4-May	5-May	6-May	7-May
		1 hr TSP 24 hr TSP	1 hr TSP		1 hr TSP Noise	
8-May	9-May	10-May	11-May	12-May	13-May	14-May
			1 hr TSP	1 hr TSP Noise	1 hr TSP	
	24 hr TSP					24 hr TSP
15-May	16-May	17-May	18-May	19-May	20-May	21-May
		1 hr TSP Noise	1 hr TSP	1 hr TSP		
		1 (0100			24 hr TSP	
22-May	23-May	24-May	25-May	26-May	27-May	28-May
	1 hr TSP	1 hr TSP Noise		1 hr TSP		
				24 hr TSP		
29-May	30-May	31-May				
		1 hr TSP Noise				

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

APPENDIX D 1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

## Appendix D - 1-hour TSP Monitoring Results

Station CAM1 Government Staff Quarters

Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Date	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m³)
1-Apr-11	9:00	Sunny	294.3	766.7	3.4016	3.4115	0.0099	15611.1	15612.1	1.0	1.21	1.21	1.21	72.4	137
6-Apr-11	11:30	Sunny	291.1	768.1	3.4013	3.4093	0.0080	15636.1	15637.1	1.0	1.21	1.21	1.21	72.8	110
7-Apr-11	9:00	Sunny	293.0	766.9	3.4143	3.4209	0.0066	15637.1	15638.1	1.0	1.21	1.21	1.21	72.5	91
8-Apr-11	9:00	Sunny	295.1	767.2	3.3883	3.3941	0.0058	15638.1	15639.1	1.0	1.21	1.20	1.20	72.3	80
11-Apr-11	9:30	Sunny	293.7	767.8	3.3962	3.4008	0.0046	15663.1	15664.1	1.0	1.21	1.21	1.21	72.5	63
12-Apr-11	14:25	Sunny	295.9	765.7	3.4169	3.4259	0.0090	15664.1	15665.1	1.0	1.20	1.20	1.20	72.1	125
13-Apr-11	13:00	Sunny	299.1	765.4	3.4120	3.4163	0.0043	15665.1	15666.1	1.0	1.20	1.20	1.20	71.8	60
18-Apr-11	15:00	Sunny	298.9	759.4	3.3885	3.3954	0.0069	15690.1	15691.1	1.0	1.19	1.19	1.19	71.5	96
20-Apr-11	9:00	Cloudy	293.9	766.7	3.4179	3.4335	0.0156	15691.1	15692.1	1.0	1.21	1.21	1.21	72.4	215
21-Apr-11	9:00	Sunny	294.5	757.5	3.3915	3.4034	0.0119	15692.1	15693.1	1.0	1.20	1.20	1.20	71.9	165
26-Apr-11	13:15	Sunny	300.7	769.5	3.4025	3.4127	0.0102	15718.1	15719.1	1.0	1.20	1.20	1.20	71.8	142
28-Apr-11	13:15	Sunny	297.2	760.3	3.3972	3.4053	0.0081	15744.1	15745.1	1.0	1.20	1.20	1.20	71.8	113
29-Apr-11	9:00	Cloudy	295.9	762.2	3.3879	3.4097	0.0218	15745.1	15746.1	1.0	1.20	1.20	1.20	72.0	303
														Min	60
															000

Max 303 Average 131

Average

#### Station CAM2

### Heng Hing Printing Centre

Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Date	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m <sup>3</sup> )
1-Apr-11	9:00	Sunny	294.3	766.7	3.3316	3.3419	0.0103	24788.2	24789.2	1.0	1.21	1.21	1.21	72.8	141
6-Apr-11	11:35	Sunny	291.1	768.1	3.4026	3.4119	0.0093	24813.2	24814.2	1.0	1.22	1.22	1.22	73.3	127
7-Apr-11	9:00	Sunny	293.0	766.9	3.3824	3.3906	0.0082	24814.2	24815.2	1.0	1.22	1.22	1.22	73.0	112
8-Apr-11	9:00	Sunny	295.1	767.2	3.3688	3.3752	0.0064	24815.2	24816.2	1.0	1.21	1.21	1.21	72.8	88
11-Apr-11	10:00	Sunny	293.7	767.8	3.4030	3.4084	0.0054	24840.2	24841.2	1.0	1.22	1.22	1.22	73.0	74
12-Apr-11	14:35	Sunny	295.9	765.7	3.3654	3.3739	0.0085	24841.2	24842.2	1.0	1.21	1.21	1.21	72.6	117
13-Apr-11	13:00	Sunny	299.1	765.4	3.3844	3.3913	0.0069	24842.2	24843.2	1.0	1.20	1.20	1.20	72.3	95
18-Apr-11	15:00	Sunny	298.9	759.4	3.4045	3.4100	0.0055	24867.2	24868.2	1.0	1.20	1.20	1.20	72.0	76
20-Apr-11	9:00	Cloudy	293.9	766.7	3.3845	3.4037	0.0192	24868.2	24869.2	1.0	1.22	1.21	1.21	72.9	263
21-Apr-11	9:00	Sunny	294.5	757.5	3.4331	3.4481	0.0150	24869.2	24870.2	1.0	1.21	1.21	1.21	72.4	207
26-Apr-11	13:03	Sunny	300.7	769.5	3.4096	3.4215	0.0119	24895.2	24896.2	1.0	1.20	1.20	1.20	72.3	165
28-Apr-11	13:06	Sunny	297.2	760.3	3.3765	3.3875	0.0110	24921.2	24922.2	1.0	1.20	1.20	1.20	72.3	152
29-Apr-11	9:00	Cloudy	295.9	762.2	3.3983	3.4189	0.0206	24922.2	24923.2	1.0	1.21	1.21	1.21	72.5	284
														Min	74
														Max	284

146

# Appendix D - 1-hour TSP Monitoring Results

#### Station CAM3

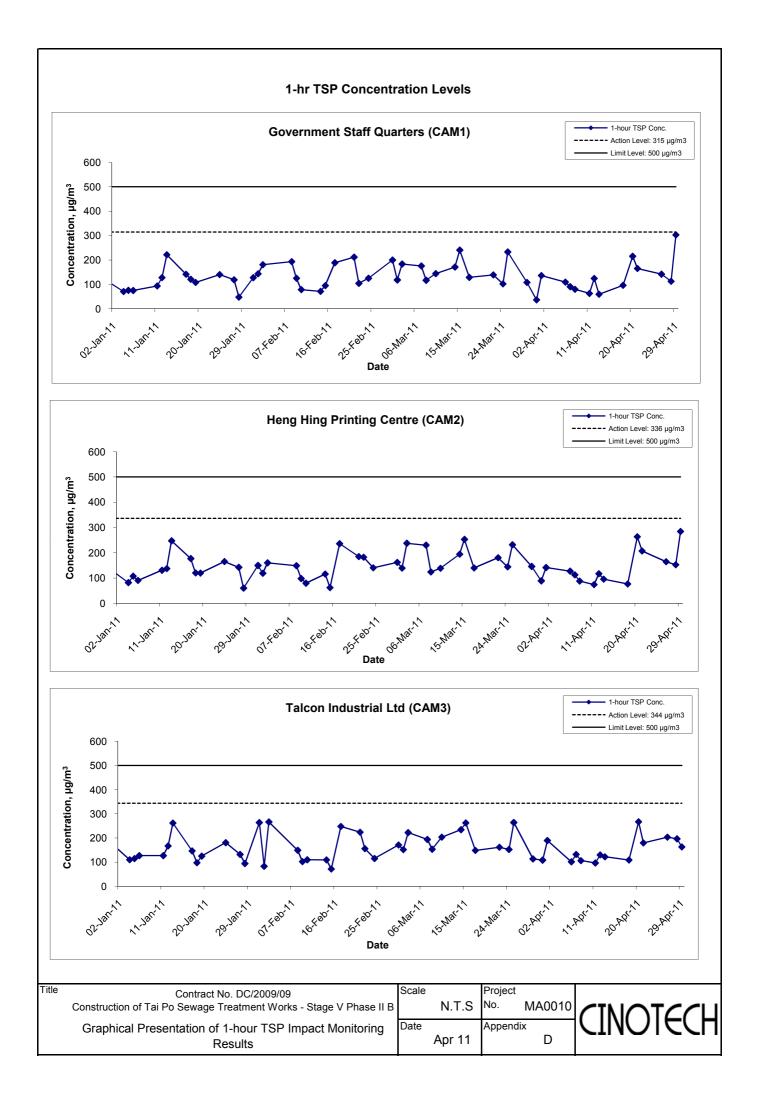
Talcon Industrial Ltd

Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Dale	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m <sup>3</sup> )
1-Apr-11	9:00	Sunny	294.3	766.7	3.3463	3.3602	0.0139	18051.9	18052.9	1.0	1.22	1.22	1.22	73.3	190
6-Apr-11	11:35	Sunny	291.1	768.1	3.4023	3.4098	0.0075	18076.9	18077.9	1.0	1.23	1.23	1.23	73.7	102
7-Apr-11	9:00	Sunny	293.0	766.9	3.3770	3.3867	0.0097	18077.9	18078.9	1.0	1.22	1.22	1.22	73.5	132
8-Apr-11	9:00	Sunny	295.1	767.2	3.3972	3.4050	0.0078	18078.9	18079.9	1.0	1.22	1.22	1.22	73.2	106
11-Apr-11	10:10	Sunny	293.7	767.8	3.4179	3.4250	0.0071	18103.9	18104.9	1.0	1.22	1.22	1.22	73.4	97
12-Apr-11	14:30	Sunny	295.9	765.7	3.3795	3.3890	0.0095	18104.9	18105.9	1.0	1.22	1.22	1.22	73.1	130
13-Apr-11	13:00	Sunny	299.1	765.4	3.3990	3.4079	0.0089	18105.9	18106.9	1.0	1.21	1.21	1.21	72.7	122
18-Apr-11	15:00	Sunny	298.9	759.4	3.4221	3.4300	0.0079	18130.9	18131.9	1.0	1.21	1.21	1.21	72.5	109
20-Apr-11	9:00	Cloudy	293.9	766.7	3.3902	3.4098	0.0196	18131.9	18132.9	1.0	1.22	1.22	1.22	73.4	267
21-Apr-11	9:00	Sunny	294.5	757.5	3.4551	3.4682	0.0131	18132.9	18133.9	1.0	1.22	1.21	1.21	72.9	180
26-Apr-11	13:00	Sunny	300.7	769.5	3.3853	3.4001	0.0148	18158.9	18159.9	1.0	1.21	1.21	1.21	72.7	204
28-Apr-11	13:02	Sunny	297.2	760.3	3.4515	3.4658	0.0143	18184.9	18185.9	1.0	1.21	1.21	1.21	72.7	197
29-Apr-11	9:00	Cloudy	295.9	762.2	3.3836	3.3955	0.0119	18185.9	18186.9	1.0	1.22	1.22	1.22	72.9	163
														Min	97

 Min
 97

 Max
 267

 Average
 154



APPENDIX E 24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

# Appendix E - 24-hour TSP Monitoring Results

#### Station CAM1 Government Staff Quarters

Start Date	Weather	Air	Atmospheric	Filter W	Filter Weight (g)		Elaps	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m <sup>3</sup> )
4-Apr-11	Sunny	290.9	766.6	3.3911	3.5058	0.1147	15612.1	15636.1	24.0	1.21	1.21	1.21	1746.2	66
9-Apr-11	Sunny	292.8	769.1	3.3883	3.5519	0.1636	15639.1	15663.1	24.0	1.21	1.21	1.21	1743.5	94
15-Apr-11	Sunny	297.9	761.8	3.4073	3.5209	0.1136	15666.1	15690.1	24.0	1.20	1.20	1.20	1722.0	66
21-Apr-11	Sunny	296.9	763.3	3.4021	3.4686	0.0665	15693.1	15717.1	24.0	1.20	1.20	1.20	1726.2	39
27-Apr-11	Sunny	299.0	760.1	3.4026	3.6581	0.2555	15719.1	15743.1	24.0	1.19	1.19	1.19	1717.2	149
													Min	39
													Max	149
													Average	83

#### Station CAM2 Hen

### Heng Hing Printing Centre

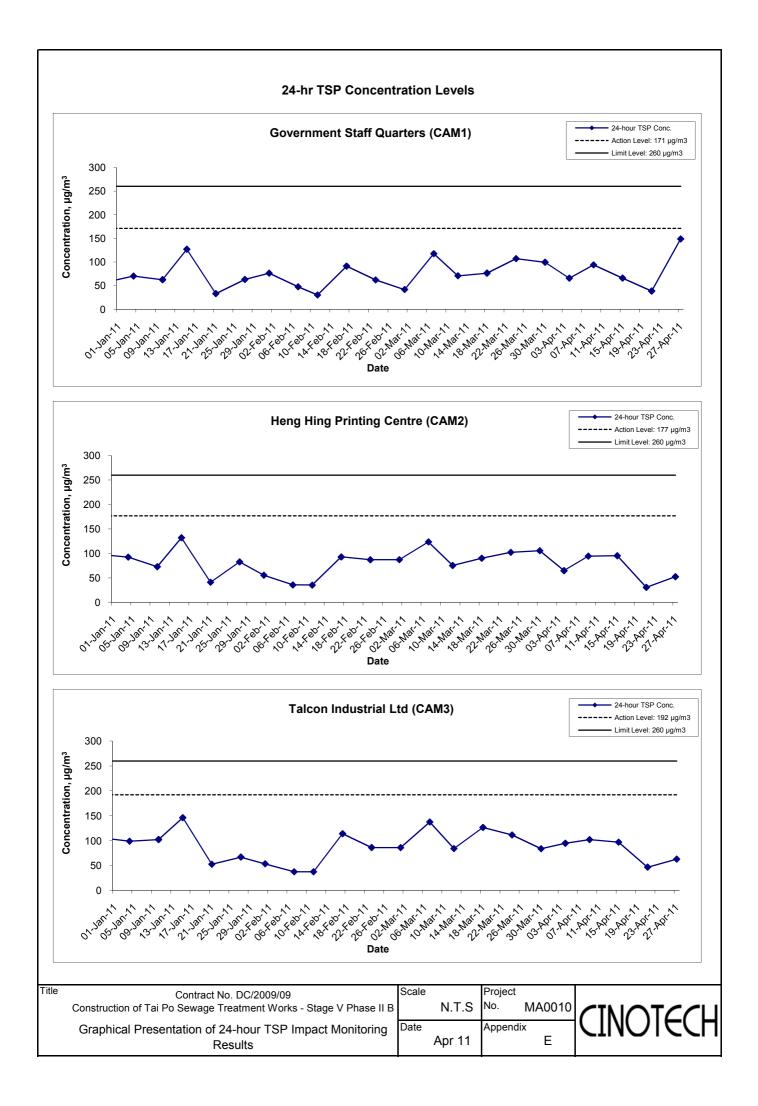
Start Date	Weather	Air	Atmospheric	Filter W	Filter Weight (g)		Elaps	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m <sup>3</sup> )
4-Apr-11	Sunny	290.9	766.6	3.3914	3.5055	0.1141	24789.2	24813.2	24.0	1.22	1.22	1.22	1757.4	65
9-Apr-11	Sunny	292.8	769.1	3.3806	3.5464	0.1658	24816.2	24840.2	24.0	1.22	1.22	1.22	1754.8	94
15-Apr-11	Sunny	297.9	761.8	3.3832	3.5485	0.1653	24843.2	24867.2	24.0	1.20	1.20	1.20	1733.9	95
21-Apr-11	Sunny	296.9	763.3	3.3952	3.4488	0.0536	24870.2	24894.2	24.0	1.21	1.21	1.21	1738.0	31
27-Apr-11	Sunny	299.0	760.1	3.3790	3.4699	0.0909	24896.2	24920.2	24.0	1.20	1.20	1.20	1729.3	53
													Min	31
													Max	95
													Average	68

### Station CAM3

### Talcon Industrial Ltd

Start Date	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m <sup>3</sup> /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m <sup>3</sup> /min)	(m <sup>3</sup> )	(µg/m <sup>3</sup> )
4-Apr-11	Sunny	290.9	766.6	3.3801	3.5472	0.1671	18052.9	18076.9	24.0	1.23	1.23	1.23	1768.6	94
9-Apr-11	Sunny	292.8	769.1	3.3810	3.5610	0.1800	18079.9	18103.9	24.0	1.23	1.23	1.23	1766.0	102
15-Apr-11	Sunny	297.9	761.8	3.3745	3.5435	0.1690	18106.9	18130.9	24.0	1.21	1.21	1.21	1744.8	97
21-Apr-11	Sunny	296.9	763.3	3.3858	3.4670	0.0812	18133.9	18157.9	24.0	1.21	1.21	1.21	1749.0	46
27-Apr-11	Sunny	299.0	760.1	3.3981	3.5071	0.1090	18159.9	18183.9	24.0	1.21	1.21	1.21	1740.1	63
						-						-	Min	46
													Max	102

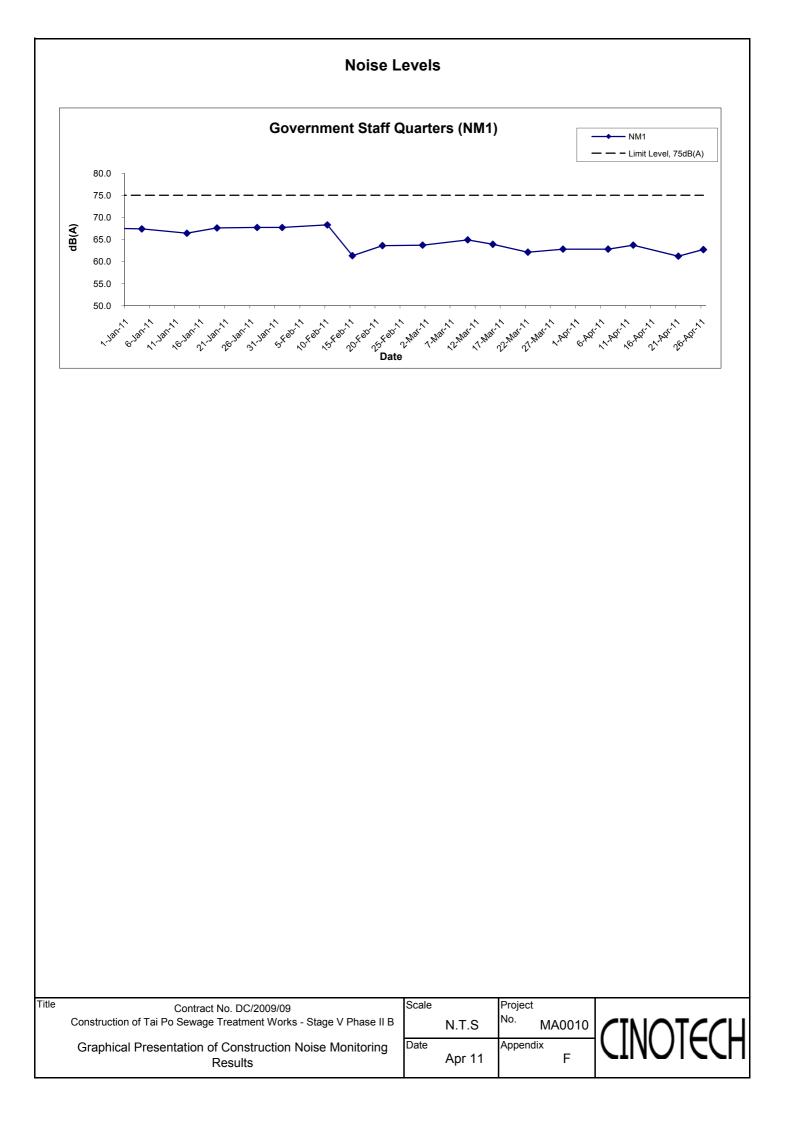
Average 80



APPENDIX F NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

# Appendix F - Noise Monitoring Results

Location NM1 - Government Staff Quarters					
Dete	Time	\A/a atla an	dB (A) (30-min)		
Date	Time	Weather	L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
7-Apr-11	11:00	Sunny	62.8	64.2	58.2
12-Apr-11	14:25	Sunny	63.7	65.8	60.2
21-Apr-11	13:00	Sunny	61.2	63.3	56.2
26-Apr-11	13:15	Sunny	62.7	64.1	58.3
		Average	62.7	64.4	58.2
		Minimum	61.2	63.3	56.2
		Maximum	63.7	65.8	60.2

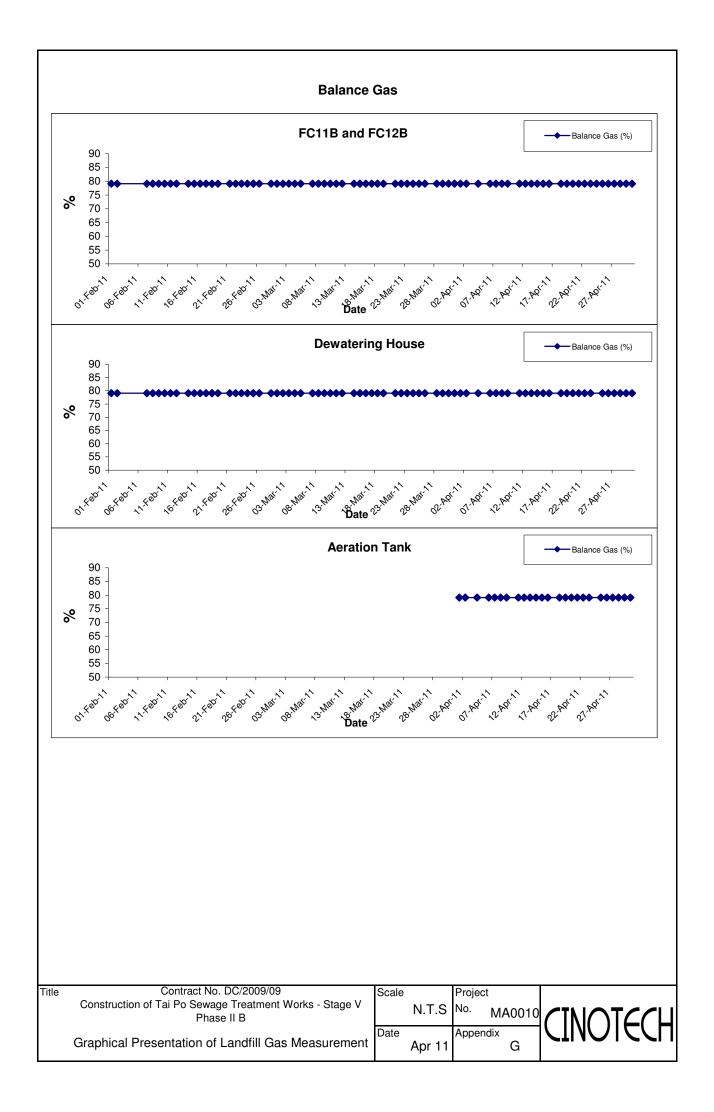


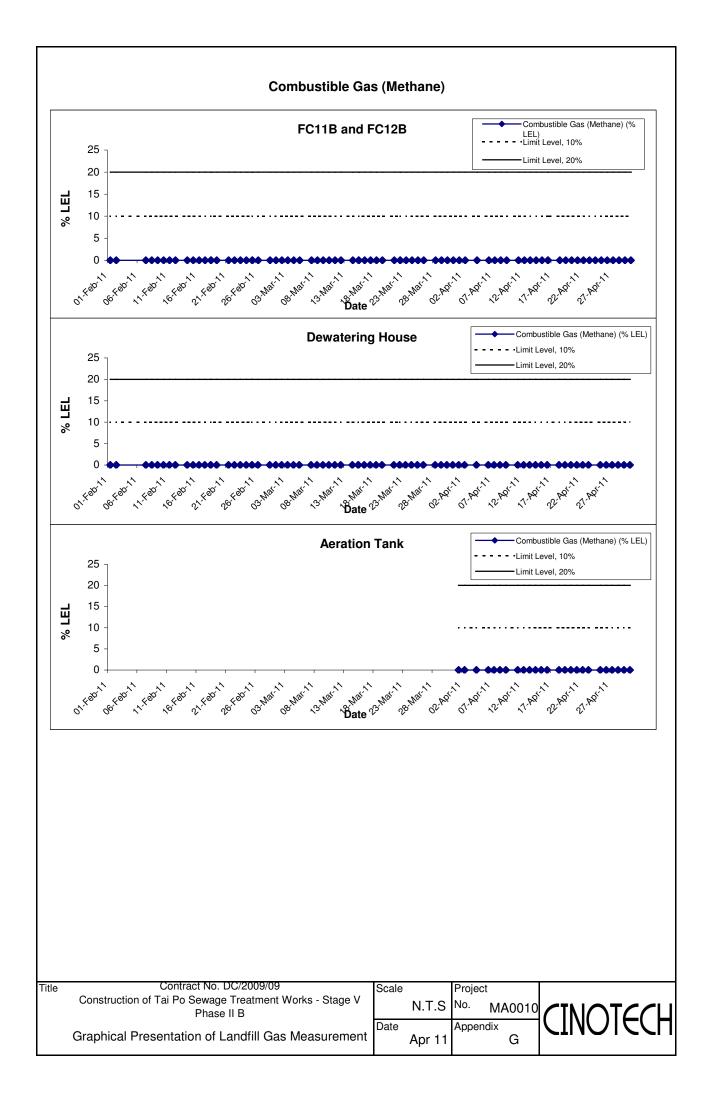
APPENDIX G RECORDS OF LANDFILL GAS MEASUREMENT BY THE CONTRACTOR

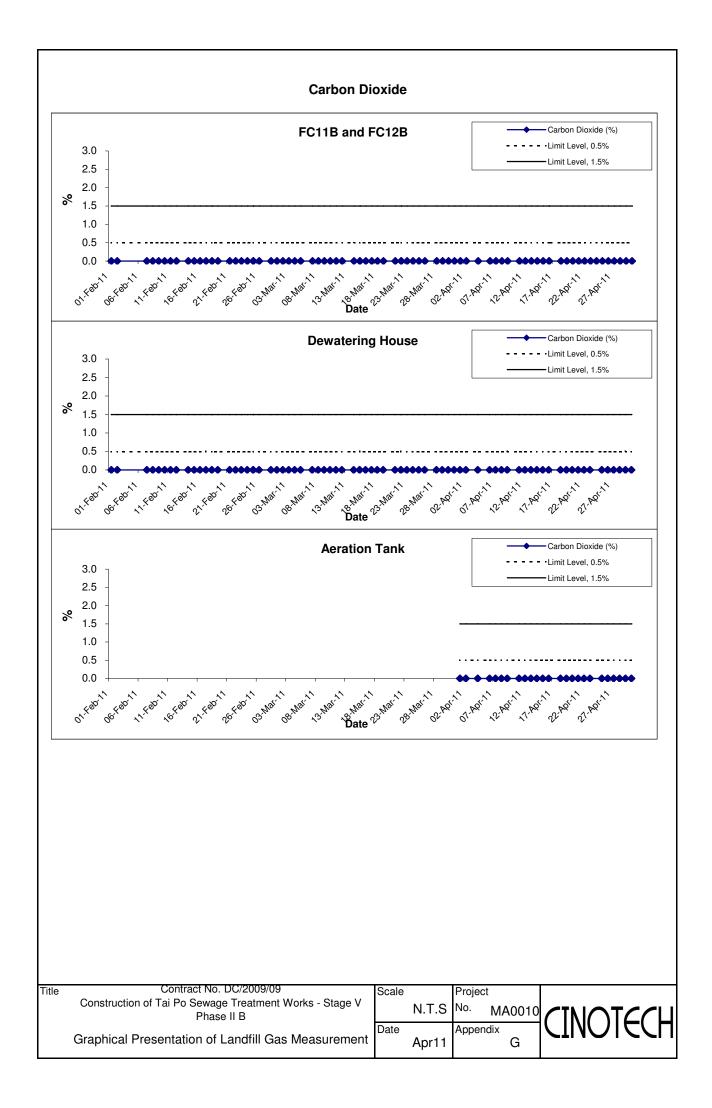
PCHB and PC128-1-Ape:11-850 AM79.1000.020.9-2-Ape:11-13.0 YM79.100.020.9-4-Ape:11-13.0 YM79.100.020.9-4-Ape:11-13.0 YM79.100.020.9-4-Ape:11-13.0 YM79.100.020.9-6-Ape:11-13.0 YM79.100.020.9-7-Ape:11-13.0 YM79.100.020.9-7-Ape:11-13.0 YM79.100.020.9-7-Ape:11-13.0 YM79.100.020.9-7-Ape:11-13.0 YM79.100.020.9-7-Ape:11-13.0 YM79.100.020.9-9-Ape:11-13.0 YM79.100.020.9-9-Ape:11-13.0 YM79.100.020.9-9-Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-11.4 Ape:11-13.0 YM79.100.020.9-13.4 Ape:11-13.0 YM79.100.020.9-13.4 Ape:11-13.0 YM79.1 </th <th>Location</th> <th>Date of Measurement</th> <th>Sampling time</th> <th>Balance gas (%)</th> <th>Combustible Gas (Methane) (% LEL)</th> <th>Carbon dioxide (%)</th> <th>Oxygen (%)</th>	Location	Date of Measurement	Sampling time	Balance gas (%)	Combustible Gas (Methane) (% LEL)	Carbon dioxide (%)	Oxygen (%)
Image: border of the standard s	EC11D and EC12D	1-Apr-11	8:30 AM	79.1	0	0	20.9
Partial<	FC11B and FC12B	1-Apr-11	1:30 PM	79.1	0	0	20.9
4 + Apr. 11 $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $4 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $6 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $7 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $7 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $8 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $8 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $9 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $9 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30  AM$ $79.1$ $0.0$ $0.0$ $20.9$ $1 + Apr. 11$ $8.30$		2-Apr-11	8:30 AM	79.1	0	0	20.9
$4-A_{0}r-11$ $130 PM$ $79.1$ $0$ $0$ $20.9$ $6-A_{0}r-11$ $130 PM$ $79.1$ $0$ $0$ $20.9$ $7-A_{0}r-11$ $830 AM$ $79.1$ $0$ $0$ $20.9$ $7-A_{0}r-11$ $830 AM$ $79.1$ $0$ $0$ $20.9$ $8-A_{0}r-11$ $130 PM$ $79.1$ $0$ $0$ $20.9$ $8-A_{0}r-11$ $130 PM$ $79.1$ $0$ $0$ $20.9$ $8-A_{0}r-11$ $130 PM$ $79.1$ $0$ $0$ $20.9$ $9-A_{0}r-11$ $150 PM$ $79.1$ $0$ $0$ $20.9$ $9-A_{0}r-11$ $150 PM$ $79.1$ $0$ $0$ $20.9$ $11-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $12-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $12-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $12-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $13-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $14-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$ $20.9$ $15-A_{0}r-11$ $8.30 AM$ $79.1$ $0$ $0$		2-Apr-11	1:30 PM	79.1	0	0	20.9
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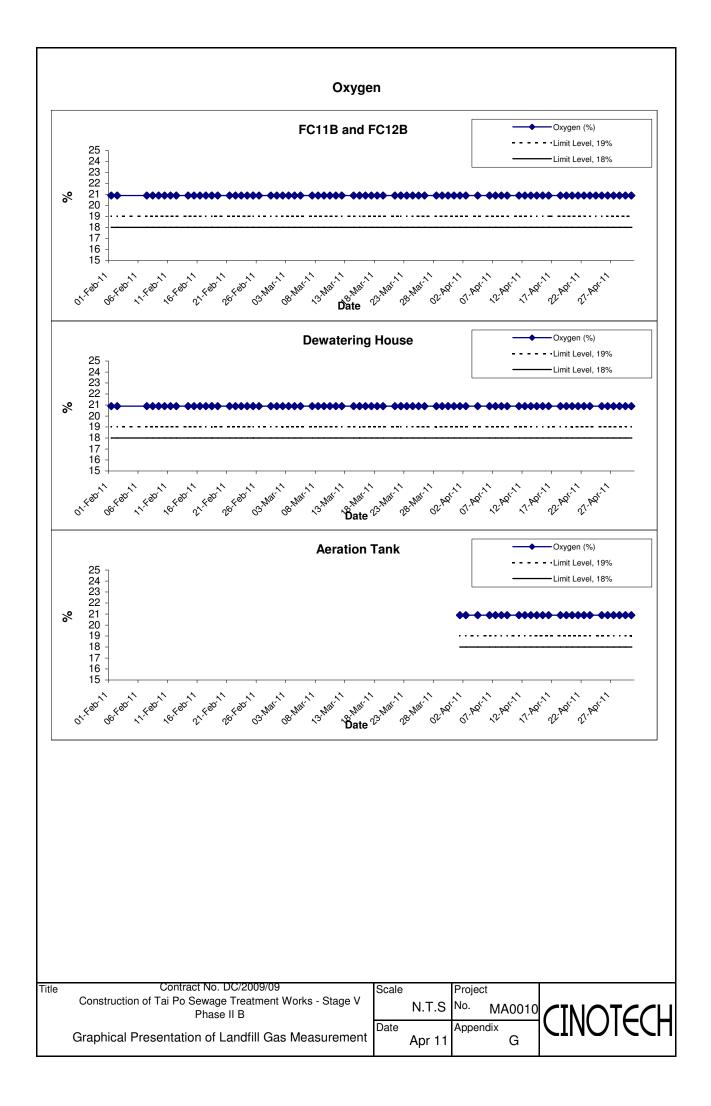
Location	Date of Measurement	Sampling time	Balance gas (%)	Combustible Gas (Methane) (% LEL)	Carbon dioxide (%)	Oxygen (%)
Dewatering House	1-Apr-11	8:15 AM	79.1	0	0	20.9
Dewatering House	1-Apr-11	1:15 PM	79.1	0	0	20.9
	2-Apr-11	8:15 AM	79.1	0	0	20.9
	2-Apr-11	1:15 PM	79.1	0	0	20.9
	4-Apr-11	8:15 AM	79.1	0	0	20.9
	4-Apr-11	1:15 PM	79.1	0	0	20.9
	6-Apr-11	8:15 AM	79.1	0	0	20.9
	6-Apr-11	1:15 PM	79.1	0	0	20.9
	7-Apr-11	8:15 AM	79.1	0	0	20.9
	7-Apr-11	1:15 PM	79.1	0	0	20.9
	8-Apr-11	8:15 AM	79.1	0	0	20.9
	8-Apr-11	1:15 PM	79.1	0	0	20.9
	9-Apr-11	8:15 AM	79.1	0	0	20.9
	9-Apr-11	1:15 PM	79.1	0	0	20.9
	11-Apr-11	8:15 AM	79.1	0	0	20.9
	11-Apr-11	1:15 PM	79.1	0	0	20.9
	12-Apr-11	8:15 AM	79.1	0	0	20.9
	12-Apr-11	1:15 PM	79.1	0	0	20.9
	13-Apr-11	8:15 AM	79.1	0	0	20.9
	13-Apr-11	1:15 PM	79.1	0	0	20.9
	14-Apr-11	8:15 AM	79.1	0	0	20.9
	14-Apr-11	1:15 PM	79.1	0	0	20.9
	15-Apr-11	8:15 AM	79.1	0	0	20.9
	15-Apr-11	1:15 PM	79.1	0	0	20.9
	16-Apr-11	8:15 AM	79.1	0	0	20.9
	16-Apr-11	1:15 PM	79.1	0	0	20.9
	18-Apr-11	8:15 AM	79.1	0	0	20.9
	18-Apr-11	1:15 PM	79.1	0	0	20.9
	19-Apr-11	8:15 AM	79.1	0	0	20.9
	19-Apr-11	1:15 PM	79.1	0	0	20.9
	20-Apr-11	8:15 AM	79.1	0	0	20.9
		1:15 PM	79.1	0	0	20.9
	20-Apr-11		79.1	0	0	20.9
	21-Apr-11	8:15 AM 1:15 PM	79.1			
	21-Apr-11		79.1	0	0	20.9
	22-Apr-11	8:15 AM				
	22-Apr-11	1:15 PM	79.1	0	0	20.9
	23-Apr-11	8:15 AM	79.1	0	0	20.9
	23-Apr-11	1:15 PM	79.1	0	0	20.9
	25-Apr-11	8:15 AM	79.1	0	0	20.9
	25-Apr-11	1:15 PM	79.1	0	0	20.9
L	26-Apr-11	8:15 AM	79.1	0	0	20.9
	26-Apr-11	1:15 PM	79.1	0	0	20.9
	27-Apr-11	8:15 AM	79.1	0	0	20.9
	27-Apr-11	1:15 PM	79.1	0	0	20.9
	28-Apr-11	8:15 AM	79.1	0	0	20.9
L	28-Apr-11	1:15 PM	79.1	0	0	20.9
L	29-Apr-11	8:15 AM	79.1	0	0	20.9
	29-Apr-11	1:15 PM	79.1	0	0	20.9
	30-Apr-11	8:15 AM	79.1	0	0	20.9
L	30-Apr-11	1:15 PM	79.1	0	0	20.9

Location	Date of Measurement	Sampling time	Balance gas (%)	Combustible Gas (Methane) (% LEL)	Carbon dioxide (%)	Oxygen (%)
Aeration Tank	1-Apr-11	8:00 AM	79.1	0	0	20.9
Aeration Talk	1-Apr-11	1:00 PM	79.1	0	0	20.9
	2-Apr-11	8:00 AM	79.1	0	0	20.9
	2-Apr-11	1:00 PM	79.1	0	0	20.9
	4-Apr-11	8:00 AM	79.1	0	0	20.9
	4-Apr-11	1:00 PM	79.1	0	0	20.9
	6-Apr-11	8:00 AM	79.1	0	0	20.9
	6-Apr-11	1:00 PM	79.1	0	0	20.9
	7-Apr-11	8:00 AM	79.1	0	0	20.9
	7-Apr-11	1:00 PM	79.1	0	0	20.9
	8-Apr-11	8:00 AM	79.1	0	0	20.9
	8-Apr-11	1:00 PM	79.1	0	0	20.9
	9-Apr-11	8:00 AM	79.1	0	0	20.9
	9-Apr-11	1:00 PM	79.1	0	0	20.9
	11-Apr-11	8:00 AM	79.1	0	0	20.9
	11-Apr-11	1:00 PM	79.1	0	0	20.9
	12-Apr-11	8:00 AM	79.1	0	0	20.9
	12-Apr-11	1:00 PM	79.1	0	0	20.9
	13-Apr-11	8:00 AM	79.1	0	0	20.9
	13-Apr-11	1:00 PM	79.1	0	0	20.9
	14-Apr-11	8:00 AM	79.1	0	0	20.9
	14-Apr-11	1:00 PM	79.1	0	0	20.9
	15-Apr-11	8:00 AM	79.1	0	0	20.9
	15-Apr-11	1:00 PM	79.1	0	0	20.9
	16-Apr-11	8:00 AM	79.1	0	0	20.9
	16-Apr-11	1:00 PM	79.1	0	0	20.9
	18-Apr-11	8:00 AM	79.1	0	0	20.9
	18-Apr-11	1:00 PM	79.1	0	0	20.9
	19-Apr-11	8:00 AM	79.1	0	0	20.9
	19-Apr-11	1:00 PM	79.1	0	0	20.9
	20-Apr-11	8:00 AM	79.1	0	0	20.9
	20-Apr-11	1:00 PM	79.1	0	0	20.9
	21-Apr-11	8:00 AM	79.1	0	0	20.9
	21-Apr-11	1:00 PM	79.1	0	0	20.9
	22-Apr-11	8:00 AM	79.1	0	0	20.9
	22-Apr-11	1:00 PM	79.1	0	0	20.9
	23-Apr-11	8:00 AM	79.1	0	0	20.9
	23-Apr-11	1:00 PM	79.1	0	0	20.9
	25-Apr-11	8:00 AM	79.1	0	0	20.9
	25-Apr-11	1:00 PM	79.1	0	0	20.9
	26-Apr-11	8:00 AM	79.1	0	0	20.9
	26-Apr-11	1:00 PM	79.1	0	0	20.9
	20-Apr-11 27-Apr-11	8:00 AM	79.1	0	0	20.9
	27-Apr-11	1:00 PM	79.1	0	0	20.9
	28-Apr-11	8:00 AM	79.1	0	0	20.9
	28-Apr-11	1:00 PM	79.1	0	0	20.9
	20-Apr-11 29-Apr-11	8:00 AM	79.1	0	0	20.9
	29-Apr-11	1:00 PM	79.1	0	0	20.9
	30-Apr-11	8:00 AM	79.1	0	0	20.9
	30-Apr-11	1:00 PM	79.1	0	0	20.9
	30-Apr-11	1:00 PM	/9.1	U	U	20.9









APPENDIX H SUMMARY OF EXCEEDANCE

# **APPENIDX H – SUMMARY OF EXCEEDANCE**

**Reporting Month:** April 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 I SITE AUDIT SUMMARY

Checklist Reference Number	110408	
Date	8 <sup>th</sup> April 2011 (Friday)	· · · · · · · · · · · · · · · · · · ·
Time	15:00-15:35	THE OWNER AND A CONTRACT OF

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
110408-001	• The sedimentation tank was observed full of muddy water at FC11B&12B. The Contractor was reminded to clear the deposited mud and ensure it can be functioned properly at all the time.	B5iv.
	Part C - Air Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Noise	
	• No environmental deficiency was identified during the site inspection.	
110408-002	<ul> <li>Part E - Waste / Chemical Management</li> <li>The haul road was observed that has oil stain at FC11B&amp;12B. The Contractor was reminded to clear the oil stain properly as soon as possible.</li> </ul>	E6
	Part F - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Reminder	
110408-R03	• Keep watering regularly at Tank no.7 along FC11B&12B haul road.	C5
110408-R04	• The chemical waste storage area should be enclosed with no hole, to avoid water discharging to it during rain.	E3i.
	Others	
	• No environmental deficiency was identified during the site inspection.	
	• Follow-up on the previous audit sessions (Ref. No.110331), all	
	environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	TY Yeung	for.	8 April 2011
Checked by	Dr. Priscilla Choy	T	8 April 2011

Checklist Reference Number	110414	
Date	14 <sup>th</sup> April 2011 (Thursday)	
Time	10:00-11:00	

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No
	Part B - Water Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part C - Air Quality	
110414-001	• The haul road should be watered regularly, to avoid dust generation at outside the site office and along FC11B&12B.	C5
	Part D – Noise	
	• No environmental deficiency was identified during the site inspection.	
	Part E - Waste / Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	Part F - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Reminder	
110414-R02	• The discarded cement bag should be cleared at Chemical Storage House.	E1iii.
	Others	
	• Follow-up on the previous audit sessions (Ref. No.110408), all environmental deficiencies were improved/ rectified by the Contractor except item 110408-R03. Follow-up action is needed and remarked as 110414-O01.	

	Name	Signature	Date
Recorded by	TY Yeung	Ant.	14 April 2011
Checked by	Dr. Priscilla Choy	WJ.	14 April 2011

Checklist Reference Number	110421
Date	21 <sup>st</sup> April 2011 (Thursday)
Time	10:00-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
110421-001	• The ponding water should be avoided at outside the site office and A-Tank. The Contractor was reminded to pump the ponding water out regularly.	B12
	Part C - Air Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Noise	
	• No environmental deficiency was identified during the site inspection.	
	<ul> <li>Part E - Waste / Chemical Management</li> <li>No environmental deficiency was identified during the site inspection.</li> </ul>	
	Part F - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Reminder	
110421-R02	• The general refuse at near Tank no.8b should be cleared.	Eli. & Eliii.
	Others	
	• Follow-up on the previous audit sessions (Ref. No.110414), all environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	TY Yeung	for	21 April 2011
Checked by	Dr. Priscilla Choy	WZ	21 April 2011

Checklist Reference Number	110428	
Date	28 <sup>th</sup> April 2011 (Thursday)	
Time	10:00-11:00	······

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part C - Air Quality	
110428-001	• Dust-generation activity was observed to be operated without water spraying. The Contractor was reminded to keep spraying water during work, to avoid dust generation at FC11B&12B.	C12
	Part D – Noise	
	• No environmental deficiency was identified during the site inspection.	
	<ul> <li>Part E - Waste / Chemical Management</li> <li>No environmental deficiency was identified during the site inspection.</li> </ul>	
	Part F - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Reminder	
110428-R02	• The water pipe should be repaired, to avoid wastage and seepage of water at FC11B&12B.	B7
110428-R03	• The general refuse should be cleared at Tank no.7.	Eli,&Eliii.
11 <b>0428-R04</b>	• The discarded oil drum should be disposed as chemical waste at Tank no.7.	E2ii.
110428-R05	• The ponding water should be cleared regularly, to avoid over-flow during rain at De-Watering House.	B12
	Others	
	• Follow-up on the previous audit sessions (Ref. No.110421), all environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	TY Yeung	then .	28 April 2011
Checked by	Dr. Priscilla Choy	WIL	28 April 2011

APPENDIX J EVENT ACTION PLANS

# **APPENDIX J** (1) – Event Action Plan for Air Quality Monitoring (Construction Phase)

EVENT		ACTIO	N						
EVENI	ET	IEC	ER	CONTRACTOR					
ACTION LEVEL									
1. Exceedance for one sample	<ol> <li>Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>Inform IEC and ER;</li> <li>Repeat measurement to confirm finding;</li> <li>Increase monitoring frequency to daily.</li> </ol>	<ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method.</li> </ol>	1. Notify Contractor.	<ol> <li>Rectify any unacceptable practice;</li> <li>Amend working methods if appropriate.</li> </ol>					
2. Exceedance for two or more consecutive samples	<ol> <li>Identify source;</li> <li>Inform IC(E) and ER;</li> <li>Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>Repeat measurements to confirm findings;</li> <li>Increase monitoring frequency to daily;</li> <li>Discuss with IEC and Contractor on remedial actions required;</li> <li>If exceedance continues, arrange meeting with IEC and ER;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol>	<ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise the ET on the effectiveness of the proposed remedial measures;</li> <li>Supervise Implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Ensure remedial measures properly implemented.</li> </ol>	<ol> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>					
LIMIT LEVEL									
1. Exceedance for one sample	<ol> <li>Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>Inform Contractor, IEC, ER, and EPD;</li> <li>Repeat measurement to confirm finding;</li> <li>Increase monitoring frequency to daily;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>Supervise implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>Ensure remedial measures properly implemented.</li> </ol>	<ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals; 4. Amend proposal if appropriate.</li> </ol>					
2. Exceedance for two or more consecutive samples	<ol> <li>Notify IEC, ER, Contractor and EPD;</li> <li>Identify source;</li> <li>Repeat measurement to confirm findings;</li> <li>Increase monitoring frequency to daily;</li> <li>Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol>	<ol> <li>Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Ensure remedial measures properly implemented;</li> <li>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>					

# **APPENDIX J (2) – Event Action Plan for Construction Noise Monitoring (Construction Phase)**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL	<ol> <li>Notify IEC and Contractor;</li> <li>Carry out investigation;</li> <li>Report the results of investigation to the IEC, ER and Contractor;</li> <li>Discuss with the Contractor and formulate remedial measures;</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol> <li>Review the analyzed results submitted by the ET;</li> <li>Review the propose d remedial measures by the Contractor and advise the ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of failure in writing;</li> <li>Notify Contractor;</li> <li>Require Contractor to propose remedial measures for the analyzed noise problem;</li> <li>Ensure remedial measures are properly implemented.</li> </ol>	<ol> <li>Submit noise mitigation proposals to IEC;</li> <li>Implement noise mitigation proposals.</li> </ol>
LIMIT LEVEL	<ol> <li>Identify source;</li> <li>Inform IEC, ER, EPD and Contractor;</li> <li>Repeat measurements to confirm findings;</li> <li>Increase monitoring frequency;</li> <li>Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol>	<ol> <li>Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of failure in writing;</li> <li>Notify Contractor;</li> <li>Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>Ensure remedial measures properly implemented;</li> <li>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

# APPENDIX J (3) – Event Action Plan for Landfill Gas Monitoring (Construction Phase)

Parameter	Limit Level	Action Required
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% LEL
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 K UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

<b>Type of Impact</b>	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								
Noise	Use of quiet PME	N/A							
	<ul> <li>Good Site Practice</li> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program;</li> <li>Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program;</li> <li>Mobile plant, if any, should be sited as far from NSRs as possible;</li> <li>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;</li> <li>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</li> <li>Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	V							
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.	V							

### APPENDIX K – 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.	V
	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.	V
	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
	<ul> <li>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:</li> <li>Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport</li> <li>Chemical waste containers should be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents.</li> <li>Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</li> </ul>	1
	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	Status
Type of Impact Waste Management	Recommended Mitigation Measures           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	<u>Status</u> √
	<ul> <li>disposal sites) shall be proposed.</li> <li>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:</li> <li>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.</li> <li>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.</li> <li>Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>Maximize the use of reusable steel formwork to reduce the amount of C&amp;D material.</li> <li>Prior to disposal of C&amp;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.</li> <li>Proper storage and site practices to minimize the potential for damage or contamination of construction materials.</li> <li>Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> <li>Minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering</li> </ul>	√
	<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.	$\checkmark$
	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									
	Bentonite Slurry         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.	N/A								
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.									
	<ul> <li>Precautionary measures to minimize landfill gas hazard during excavation:</li> <li>No smoking or burning shall be allowed</li> <li>No worker shall work alone at any time in the confined space or any excavation trenches</li> <li>Construction equipment shall be equipped with a vertical exhaust at least 0.6 m above ground level and /or with a park arrestors</li> <li>Electrical motors and electrical extension cords shall be explosive-proof or intrinsically safe</li> <li>Permit to Work procedures to be adopted for welding, flame cutting or other hot works in trenches or confined spaces</li> <li>Forced ventilation if working in a trench deeper than 1 m</li> <li>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</li> <li>Routine monitoring shall be conducted in all excavations to ensure the works shall be included in the Safety Plan</li> <li>Monitoring shall be conducted at the cracks on the ground floor during ground-works construction</li> </ul>	1								
	<ul> <li>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:</li> <li>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</li> <li>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</li> </ul>	~								

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

APPENDIX L WASTE GENERATION IN THE REPORTING MONTH

# APPENDIX L – WASTE GENERATION IN THE REPORTING MONTH

		Actual Quantities	of Inert C&D Mat	erials Generated	Monthly	Actual Quantities of C&D Wastes Generated Monthly								
Month	Total Quantity Generated	Broken Concrete (see Note 3)		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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(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														
June														
Sub-total	17.33	0	0	6.58	10.75	0	5.6	0	0	0	0.04			
July														
Aug														
Sept														
Oct														
Nov														
Dec														
Total														

# Monthly Summary Waste Flow Table April 2011 (Year)

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 M COMPLAINT LOG

# **APPENDIX M – COMPLAINT LOG**

## **Reporting Month**: April 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 month.

APPENDIX N CONSTRUCTION PROGRAMME

ૺૼઌૻૺ૾ૺ	Description	Orig Early Dur Start	Early Finish	Total Float	2010 FEB MAR APR MAY JUN JUI	2011 AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	2012
	Base Slab of FC11B	22 19OCT10	0 09NOV10	0		Base Slab of FC11B	
	Structural Wall for FC11B	35 10NOV10	D 14DEC10	0		Structural Wall for FC11B	• • • • • • •
	Watertightness Test for FC11B	20 15DEC10	03JAN11	0		Watertightness Test for FC11B	
	Concrete Coating for FC11B	10 09JAN11	18JAN11	10d		Concrete Coating for FC11B	
	Backfilling for FC11B	20 04JAN11	23JAN11	0		Backfilling for FC11B	
A CONTRACTOR OF THE PARTY OF THE	Works						
	DN700 DI Pipe % FC12B & extg chamber	50 19OCT10	07DEC10	52d		► DN700 DI Pipe % FC12B & extg chamber	
13020	DN700 DI Pipe % FC11B & extg chamber	50 10NOV10		30d		► Manual DN700 DI Pipe % FC11B & extg chamber	
	Sludge Drawoff Chamber (C1B~C4B) & Pipework	30 23DEC10		7d		► Sludge Drawoff Chamber (C1B~C4B) & Pipework	
13040	Sludge Drawoff Chamber C5B & Pipework	15 14JAN11	28JAN11	0		Sludge Drawoff Chamber C5B & Pipework	
13050	Cable Ducting at Sludge Dewatering House	150 30MAR10	26AUG10	155d		Cable Ducting at Sludge Dewatering House	
ection II o							
Drilling W	/orks						
20001	Notification from Engineer	90 29JAN11	28APR11	0		► Notification from Engineer	
20010	Section II of Works	460 28FEB11		90d			Section
20110	Removal of extg Final Clarifier FC9 & FC10	25 28FEB11		0		Removal of extg Final Clarifier FC9 & FC	
	Pre-drilling Works for FC9B & FC10B (18 nos)	45 25MAR11		0		Pre-drilling Works for FC9B & FC1	
	Removal of extg Final Clarifier FC7 & FC8	25 25MAR11		20d		► ■ Removal of extg Final Clarifier FC7 &	
	Pre-drilling Works for FC7B & FC8B (18 nos)	45 09MAY11		0	الم التي التي التي التي التي التي التي التي	Reinoval of exig Final Clamer FC7 &	A state of the second stat
	Socketted H-piling (80 nos)	120 23JUN11		0			• •
	Proof Drilling for Socketted H-pile (4 nos)	28 210CT11		0			H-piling (80 nos) Drilling for Socketted H-pile (4
	Load Test for extg Steel Pile (4 nos)	28 210CT11					
	Load Test for Socketted H-pile (1 no)	14 18NOV11		183d			Fest for extg Steel Pile (4 nos
	Pre-drilling Works for Washout Chamber (4 nos)	14 18NOV11		7d			d Test for Socketted H-pile (1
0190 N	Mini-piling for Washout Chamber (10 nos)	90 07JUL11	040CT11	70 70		Pre-drilling Works for Was	• •
0200 L	Load Test for Mini-pile (1 no)	14 050CT11				Mini-piling fo	
	ffer No. FC7B to FC10B			7d		Load Test	for Mini-pile (1 no)
1	Excavation for FC10B	15 10101/44	0205044				
	Pile Head Construction for FC10B	15 18NOV11		0			avation for FC10B
	Base Slab for FC10B	20 03DEC11		0			ile Head Construction for FC
	Structural Wall for FC10B	22 23DEC11		30d		i I I I I I	Base Slab for FC10B
	Watertightness Test for FC10B	35 14JAN12		30d			Structural Wall for FC
	Concrete Coating for FC10B	20 18FEB12		45d	· · · · · · · · · · · · · · · · · · ·		Watertightness Tes
	Excavation for FC9B	10 09MAR12		45d			Concrete Coating
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	xcavation for FC8B	15 18DEC11		10d	· · · · · · · · · · · · · · · · · · ·	i i i i i i i i i i i i i i i i i i i	Excavation for FC8B
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	Base Slab for FC8B	22 01FEB12		25d	· · · · · · · · · · · · · · · · · · ·		Base Slab for FC8B
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	Concrete Coating for FC8B	10 18APR12		25d			Concrete Co
	xcavation for FC7B	15 02JAN12		15d			Excavation for FC7B
	ile Head Construction for FC7B	20 01FEB12		0			Pile Head Construction
	ase Slab for FC7B	22 21FEB12		0			Base Slab for FC7
	tructural Wall for FC7B	35 14MAR12	17APR12	0			Structural Wa
	/atertightness Test for FC7B	20 18APR12	07MAY12	- 0			Watertight
THE REPORT OF A PROPERTY OF	oncrete Coating for FC7B	10 08MAY12		15d			Concrete
peline Wo							
2010 E>	xcavation for Washout Chamber	15 19OCT11	02NOV11	7d		- Evoluati	on for Washout Chamber
	ile Cap of Washout Chamber	30 03NOV11		7d			Cap of Washout Chamber
	ic cap of washout champer						
2020 Pi	tructural Wall of Washout Chamber	30 03NOV11 30 03DEC11		7d			Structural Wall of Washout C

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

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r FC9B Test for FC9B ating for FC9B for FC8B ess for FC8B Coating for FC8B coating for FC8B ion for FC7B /all for FC7B htness Test for FC7B te Coating for FC7B				
r FC9B Test for FC9B for FC8B for FC8B ess for FC8B coating for FC8B coating for FC8B ion for FC7B /all for FC7B te Coating for FC7B te Coating for FC7B			Checked	Approved
r FC9B Test for FC9B ating for FC9B for FC8B ess for FC8B Coating for FC8B coating for FC8B ion for FC7B /all for FC7B htness Test for FC7B te Coating for FC7B				
I for FC8B hess for FC8B Coating for FC8B tion for FC7B Vall for FC7B htness Test for FC7B te Coating for FC7B Chamber			Checked	Approved

Act ID	Description	Oriç Dur		Early Finish	Total Float	2010
eneral						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 JU
Project	Key Date					
1000	Possession of Site		0	28JAN10	11550	Possession of Site
10000	Completion of Section I of Works (365d)		0	28JAN11	7900	
20000	Completion of Section II of Works (460d)		D	01JUN12	330d	>> Comp
30000	Completion of Section III of Works (670d)	(	0	28DEC11	4860	► Completion of Section III of V
40000	Completion of Section IV of Works (365d)	-	0	28JAN11	820d	♦ Completion of Section IV of Works (365d)
50000	Completion of Section V of Works (1185d)	(	D	27APR13		
relimir?	ary, and the second					
1010	Site Clearance	30	29JAN10	27FEB10	0	Site Clearance
1020	Contractor Site Office Set-up	6	28FEB10	28APR10	84d	Contractor Site Office Set-up
1030	Engineer's Accommodation	6	28FEB10	28APR10	1035d	► Engineer's Accommodation
1040	Initial Survey	6	29JAN10	29MAR10	25d	Initial Survey
1050	Condition Survey	.6(	29JAN10	29MAR10	2d	Condition Survey
1060	Environmental Baseline Monitoring	14	4 30MAR10	12APR10	1111d	Environmental Baseline Monitoring
Submiss	non for Approvals		A 1997 A 1997 A			
2010	Engineer's Green Roof	6	29APR10	27JUN10	1035d	Engineer's Green Roof
2020 🐁	Excavation and Lateral Support (ELS)	30	29APR10	28MAY10	84d	Excavation and Lateral Support (ELS)
2030	Project Signboard	30	29APR10	28MAY10	1065d	→ Project Signboard
2040	Pile Load Test Set-up	- 30	30MAR10	28APR10	2d	Pile Load Test Set-up
2050	Falsewk & Fwk for Pile Cap	30	29MAY10	27JUN10	90d	Falsewk & Fwk for Pile Cap
2060	Falsewk & Fwk for Wall Structure	30	28JUN10	27JUL10	90d	Falsewk & Fwk for Wall Structure
2070	Falsewk & Fwk for Top Slab	30	28JUL10	26AUG10	840d	Falsewk & Fwk for Top Slab
2080	Multi-part Cover	4	5 27AUG10	100CT10	840d	Multi-part Cover
2090	FRP Handrail, Stair & Floor	4	5 11OCT10	24NOV10	840d	FRP Handrail, Stair & Floor
2100	FRP Cover	30	0 110CT10	09NOV10	900d	FRP Cover
2110	Aluminium Flooring	45	5 25NOV10	08JAN11	840d	► Realize Aluminium Flooring
2120	Green Roof System at Sludge Dewatering House	60	29APR10	27JUN10	310d	Green Roof System at Sludge Dewatering House
2130	Green Roof System at Transformer House	60	29APR10	27JUN10	1035d	Green Roof System at Transformer House
	Fabrication & Delivery					
3010	Casing for Mini-pile	55	5 29APR10	22JUN10	173d	Casing for Mini-pile
3020	Casing for Socketted H-pile	55	28FEB10	23APR10	0	Casing for Socketted H-pile
030	Steel Member for Socketted H-pile	55	28FEB10	23APR10	0	Steel Member for Socketted H-pile
3040	DI Water Pipe Puddle & Tee	180	29JAN10	27JUL10	90d	
	DI Water Pipeline	180	29JAN10	27JUL10	1005d	Steel Member for Shelter
	Steel Member for Shelter	60	29JAN10	29MAR10	1125d	Steel Member for Shelter
100 million (1996)	f Works					
Service and the service of the servi	Vorks	-				
	Section I of Work		29JAN10		0	Section I of Work
	Pre-drilling Works (18 nos)		10MAR10	. 1	· · · 0	Pre-drilling Works (18 nos)
	Preliminary Socketted H-pile		24APR10		0	
	Load Test for Preliminary Pile		01MAY10		· 0	> EL LOAD I EST for Preliminary Pile
	Socketted H-piling (56 nos)		15MAY10	1	0	Socketted H-piling (56 nos)
	Proof Drilling (4 nos)		07AUG10		0	Proof Drilling (4 nos)
	Load Test for Main Pile (1 no)		07AUG10		0	Load Test for Main Pile (1 no)
	Removal of DN525 & DN900 conc. pipe	45	04JUL10	17AUG10	164d	Removal of DN525 & DN900 conc. pipe
THE OWNER AND ADDRESS OF	nfier No. F@14B & FC12B					
1010	Excavation for FC12B	21	21AUG10	10SEP10	0	Excavation for FC12B
1020	Pile Head Construction for FC12B	. 17	11SEP10	27SEP10	4d	Pile Head Construction for FC12B
1025	Base Slab of FC12B	22	180CT10	180CT10	7d	Base Slab of FC12B
1030	Structural Wall for FC12B	35	19OCT10	22NOV10	7d	Structural Wall for FC12B
1040	Watertightness Test for FC12B	20	23NOV10	12DEC10	7d	Watertightness Test for FC12B
1050	Concrete Coating for FC12B	10	18DEC10	27DEC10	32d	Concrete Coating for FC12B
1060	Backfilling for FC12B	+		01JAN11	7d	►  Backfilling for FC12B
	Excavation for 11B		· · · · · · · · · · · · · · · · · · ·	01OCT10	0	Excavation for 11B
2020	Pile Head Construction for FC11B		<u> </u>	180CT10	0	- Pile Head Construction for FC11B
rt date	29JAN10 Early bar		· · · · · · · · · · · · · · · · · · ·			
sh date	29JAN10 Early bar 27APR13 Progress bar					
a date	29JAN10		19 196			China Harbour Engineering Co. Ltd.
	0600010					
						TPSTW Stage 5 Phase 2B
	er 1A Summary bar Start milestone point Finish milestone point					TPSTW Stage 5 Phase 2B

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Description	Orig Dur	Early Start	Early Finish	Total Float	2010 2011 2013
					FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV I
of Site	0		28JAN10	1155d	Possession of Site
of Section I of Works (365d)	0		28JAN11	790d	Completion of Section 1 of Works (365d)
of Section II of Works (460d) of Section III of Works (670d)	0		01JUN12		-► Completion of Section II of Works (460d)
of Section IV of Works (365d)	0	-	28DEC11	486d	Completion of Section III of Works (670d)
of Section V of Works (1185d)			28JAN11 27APR13	820d	♦ Completion of Section IV of Works (365d)
		Sec. 1			
1Ce	30 29	JAN10	27FEB10	0	Site Clearance
Site Office Set-up		FEB10	28APR10	84d	Contractor Site Office Set-up
Accommodation	60 28	FEB10	28APR10	1035d	► Engineer's Accommodation
y	60 29	JAN10	29MAR10		Initial Survey
urvey		JAN10	29MAR10		Condition Survey
ital Baseline Monitoring	14 30	MAR10	12APR10	1111d	Revironmental Baseline Monitoring
war Green Roof					
and Lateral Support (ELS)			27JUN10		Engineer's Green Roof
iboard			28MAY10 28MAY10		Excavation and Lateral Support (ELS)
est Set-up			28MAY10 28APR10	1065d 2d	→ Project Signboard
wk for Pile Cap			27JUN10	90d	File Load Test Set-up
Fwk for Wall Structure	30 28		27JUL10	90d	Falsewk & Fwk for Wall Structure
Fwk for Top Slab	30 28.		26AUG10		Falsewk & Fwk for Top Slab
over		AUG10	100CT10	840d	Multi-part Cover
ail, Stair & Floor	45 110	OCT10	24NOV10	840d	FRP Handrail, Stair & Floor
· · · · · · · · · · · · · · · · · · ·			09NOV10	900d	→ mass FRP Cover
Flooring			08JAN11	840d	Aluminium Flooring
System at Sludge Dewatering House			27JUN10	310d	Green Roof System at Sludge Dewatering House
System at Transformer House	60 29/	APR10	27JUN10	1035d	Green Roof System at Transformer House
/ini-pile	55120	APR10		470.1	
ocketted H-pile	55 28		22JUN10 23APR10	173d	Casing for Mini-pile
er for Socketted H-pile	55 28		23APR10		
pe Puddle & Tee	180 29		27JUL10	004	► Terminal Steel Member for Socketted H-pile
peline	180 29.	1000 000 0000	27JUL10	1005d	Di Water Pipeline
er for Shelter				1125d	Steel Member for Shelter
	$\pi^{1/N} = \{ 0, 1, 2, \dots, N\}$				
		100.00000000000000000000000000000000000			
Work	365 * 29		<u>.</u>	0	Section I of Work
Vorks (18 nos)			23APR10	· · · 0	Pre-drilling Works (18 nos)
Socketted H-pile			30APR10	0	Preliminary Socketted H-pile
r Preliminary Pile		-	14MAY10	· 0	
-piling (56 nos)			06AUG10	0	Socketted H-piling (56 nos)
) (4 nos) r Main Pile (1 no)			20AUG10 20AUG10	0	Proof Drilling (4 nos)
DN525 & DN900 conc. pipe			20AUG10 17AUG10	1044	Load Test for Main Pile (1 no)
MB.& FC12B	i 40 040			164d	
or FC12B	21 214	UG10	30000000000000000000000000000000000000	0	Excavation for FC12B
onstruction for FC12B	1 · · · · · · · · · · · · · · · · · · ·		27SEP10	 4d	Pile Head Construction for FC12B
f FC12B			180CT10	7d	► Base Slab of FC12B
all for FC12B			22NOV10	7d	Structural Wall for FC12B
ss Test for FC12B			12DEC10	7d	→ Watertightness Test for FC12B
ating for FC12B			27DEC10	32d	Concrete Coating for FC12B
r FC12B			01JAN11	7d	► Backfilling for FC12B
or 11B			01OCT10	0	Excavation for 11B
enstruction for FC11B	17 020	OCT10	18OCT10	0	- Pile Head Construction for FC11B
0     Early bar       3     Progress bar       0     Critical bar       0     Summary bar       0     Start milestone point       Inc.     Finish milestone point	44 47 48 49 49 49 49 49 49 49 49 49 49 49 49 49			-	Date       Revision       Checked       Approv         05FEB10       0       WML       TKC         07APR10       1       AA       TKC         TPSTW Stage 5 Phase 2B       -       -       -

22050         C           22060         B           22070         C           22075         M           22080         D           22090         R           22100         B           22100         R           22100         B           22100         B           22100         R           22100         R           22100         R           30001         N           30101         S           30110         S           30110         S           30110         S           30110         Pr           30120         Pr           30180         Lc           30210         Pr           30220         Sc           30230         Lc		30           25           45           30           60           30           670           10           106           20           7           14           263           14           15           90	03DEC11 17JAN12 16FEB12 16APR12 16MAY12 29JAN10 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10	31MAR12 30APR12 01JUN12 16JAN12 15FEB12 15APR12 15APR12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10 26JUN11	7d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Motificatio	n from Engir	eer		R MAY JUN JUL AUG SEP OCT	Constr Constr	DN300 DI Pipeline Connection of D Connection of D Connection of E Backfilling DN1000 DI Sludg DN1000 DI Sludg Backfilling Backfilling
22060         B           22070         C           22075         M           22075         M           22090         R           22100         B           30001         N           30120         Pr           30140         Pr           30150         Lc           30160         Sc           30170         Pr           30200         Sc           30210         Pr           30220         Pr           30230         Lc	Backfilling Construction of FMC1B & FMC2B Modification of RAS Pumping Station DN1000 DI Sludge Pipe Removal of DN600 & DN800 Sludge Pipe Backfilling for Sludge Pipe f Works InkS Backfilling for Sludge Pipe f Works inte Clearance Pre-drilling for PST5, AT5~AT7 (41 nos) tre-drilling for PST5, AT5~AT7 (41 nos) tre-drilling for Mixed Liquor Channel (8 nos) tre-drilling for Mixed Liquor Channel (8 nos) tre-drilling for PST5, AT5~AT7 (174 nos) tre-drilling for PST5, AT5~AT7 (174 nos) tre-drilling for PST5, AT5~AT7 (174 nos) tre-drilling for PST5 & AT5~AT7 (174 nos) noof Drilling for PST5 & AT5~AT7 (4 nos) cocketted H-piling for PST5 & AT5~AT7 (4 nos) cod Test for Socketted H-pile (2 nos) tre-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) coad Test for Sludge Digestion Tank (1 no)	25 45 30 60 30 17 30 670 10 10 106 20 7 14 263 14 14 15 90	08MAY12 03DEC11 17JAN12 16FEB12 16APR12 16MAY12 29JAN10 03MAY10 03MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	01JUN12 16JAN12 15FEB12 15APR12 15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Notificatio	Site Clearar	lice			Constr Ma	Libert Backfilling uction of FMC1B & FMC odification of RAS Pump DN1000 DI Sludg Removal of D Backfilling
22070         C           22075         M           22080         D           22090         R           22100         B           22100         B           ection III of         D           Dilling ₩0         30001           30001         N           30005         S           30110         Si           30120         Pr           30130         Pr           30140         Pr           30150         Lc           30160         Sa           30170         Pr           30180         Lc           30190         Pr           30200         Sa           30210         Pr           30220         Pr           30220         Pr           30230         Lc	Construction of FMC1B & FMC2B         Addification of RAS Pumping Station         DN1000 DI Sludge Pipe         Removal of DN600 & DN800 Sludge Pipe         Backfilling for Sludge Pipe         Backfilling for Sludge Pipe         Investigation         Investigation         Addification of RAS Pumping Station         DN1000 DI Sludge Pipe         Removal of DN600 & DN800 Sludge Pipe         Backfilling for Sludge Pipe         Investigation         Investigation <td>45 30 60 30 17 30 670 10 10 20 7 14 263 14 14 15 90</td> <td>03DEC11 17JAN12 16FEB12 16APR12 16APR12 16MAY12 29JAN10 03MAY10 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11</td> <td>16JAN12 15FEB12 15APR12 15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10</td> <td>0</td> <td>·&gt;E</td> <td>Site Clearar</td> <td>lice</td> <td></td> <td>·</td> <td>Constr Ma</td> <td>Libe Backfilling uction of FMC1B &amp; FMC odification of RAS Pump DN1000 DI Sludg Removal of D Backfilling</td>	45 30 60 30 17 30 670 10 10 20 7 14 263 14 14 15 90	03DEC11 17JAN12 16FEB12 16APR12 16APR12 16MAY12 29JAN10 03MAY10 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	16JAN12 15FEB12 15APR12 15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice		·	Constr Ma	Libe Backfilling uction of FMC1B & FMC odification of RAS Pump DN1000 DI Sludg Removal of D Backfilling
22075         M           22080         D           22090         R           22100         B           30001         N           30005         S           30110         S           30120         Pr           30130         Pr           30140         Pr           30150         Lc           30160         Sc           30170         Pr           30200         Sc           30210         Pr           30210         Pr           30220         Pr           30230         Lc	Addification of RAS Pumping Station DN1000 DI Sludge Pipe Removal of DN600 & DN800 Sludge Pipe Backfilling for Sludge Pipe F Works State Interference Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for PST5 & AT5~AT7 (41 nos) PST5 & AT	30           60           30           17           30           670           10           106           20           7           14           263           14           15           90	17JAN12 16FEB12 16APR12 16MAY12 29JAN10 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	15FEB12 15APR12 15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice		•		DN1000 DI Sludg
22080         D           22090         R           22100         B           action III         of           Dilling Vo         30001           N         30005           30110         Si           30120         Pr           30130         Pr           30140         Pr           30150         Lc           30160         Si           30170         Pr           30180         Lc           30190         Pr           30210         Si           30210         Pr           30220         Pr           30230         Lc	DN1000 DI Sludge Pipe         Removal of DN600 & DN800 Sludge Pipe         Backfilling for Sludge Pipe         f Works         orks         Jotification from Engineer         section III of Works         Bre-drilling for PST5, AT5~AT7 (41 nos)         tre-drilling for Mixed Liquor Channel (8 nos)         trelimiary Socketted H-piling         oad Test for Preliminary Socketted H-pile         ocketted H-piling for PST5, AT5~AT7 (4 nos)         roof Drilling for Sludge Digestion Tank (6 nos)         ocketted H-piling for SD Tank (29 nos)         roof Drilling for Sludge Digestion Tank (1 no)         oad Test for Sludge Digestion Tank (1 no)	60 30 17 30 670 10 106 20 7 14 263 14 14 15 90	16FEB12 16APR12 16MAY12 29JAN10, 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	15APR12 15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice				DN1000 DI Sludg
22090         R           22100         B           ection III of         Diffing W           30001         N           30005         S           30110         Si           30120         Pr           30130         Pr           30140         Pr           30150         Lc           30160         Sr           30170         Pr           30180         Lc           30190         Pr           30210         Sr           30210         Pr           30210         Pr           30220         Sc           30210         Pr           30210         Pr           30220         Sc           30220         Sc           30230         Lc	Removal of DN600 & DN800 Sludge Pipe Backfilling for Sludge Pipe f Works inks lotification from Engineer section III of Works bite Clearance tre-drilling for PST5, AT5~AT7 (41 nos) tre-drilling for PST5, AT5~AT7 (41 nos) tre-drilling for Mixed Liquor Channel (8 nos) trelimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	30 17 30 670 10 106 20 7 14 263 14 14 15 90	16APR12 16MAY12 29JAN10 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	15MAY12 01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice				Removal of D
22100 B action III of Drilling ₩/0 30001 N 30005 S 30110 Si 30120 Pr 30130 Pr 30150 Lc 30160 Sr 30160 Sr 30170 Pr 30180 Lc 30190 Pr 30200 Sr 30210 Pr 30215 Lc 30220 Pr 30230 Lc	Backfilling for Sludge Pipe I Works Investigation from Engineer Section III of Works Site Clearance Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for PST5, AT5~AT7 (41 nos) road Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) roof Drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) pad Test for Sludge Digestion Tank (1 no)	17 30 670 10 106 20 7 14 263 14 14 14 15 90	16MAY12 29JAN10. 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	01JUN12 27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice				Backfilling
action III of           Ditiling: Vio           30001         N           30005         S           30110         Si           30110         Si           30110         Si           30110         Si           30120         Pri           30130         Pri           30140         Pri           30150         Lc           30160         Si           30170         Pri           30180         Lc           30190         Pri           30200         Si           30215         Lc           30220         Pri           30230         Lc	f Works Inks Ideification from Engineer Section III of Works Site Clearance Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for PST5, AT5~AT7 (41 nos) road Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) coad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) coad Test for Sludge Digestion Tank (1 no)	30 670 10 20 7 14 263 14 14 15 90	29JAN10, 03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	27FEB10 02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice		•		
Diulling Wo           30001         N           30005         S           30110         Si           30120         Pi           30130         Pi           30140         Pi           30150         Lc           30160         Si           30170         Pi           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30220         Pr           30230         Lc	Interference Inter	670 10 200 7 14 263 14 14 14 15 90	03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice			-	Section III of Works
30001         Ni           30005         Si           30110         Si           30110         Si           30110         Si           30120         Pi           30130         Pi           30140         Pi           30150         Lc           30160         Si           30170         Pi           30180         Lc           30190         Pi           30200         Si           30210         Pi           30215         Lc           30220         Pi           30230         Lc	Iotification from Engineer iection III of Works ite Clearance Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for Mixed Liquor Channel (8 nos) Pre-drilling for PST5, AT5~AT7 (41 nos) recketted H-pilling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) re-drilling for SLudge Digestion Tank (6 nos) ocketted H-pilling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) pad Test for Sludge Digestion Tank (1 no)	670 10 200 7 14 263 14 14 14 15 90	03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice			-	Section III of Works
30005         Si           30110         Si           30110         Si           30120         Pi           30130         Pi           30140         Pi           30150         Lc           30160         Si           30170         Pi           30180         Lc           30190         Pi           30200         Si           30215         Lc           30220         Pi           30220         Pi           30230         Lc	ection III of Works ite Clearance Pre-drilling for PST5, AT5~AT7 (41 nos) Pre-drilling for Mixed Liquor Channel (8 nos) relimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	670 10 200 7 14 263 14 14 14 15 90	03MAY10 03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	02MAR12 12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0	·>E	Site Clearar	lice		•		 Section III of Works
30110         Si           30120         Pi           30130         Pi           30140         Pi           30150         Lc           30160         Si           30170         Pi           30180         Lc           30190         Pi           30200         Sc           30210         Pi           30220         Pi           30220         Pi           30220         Di           30215         Lc           30220         Pi           30230         Lc	ite Clearance re-drilling for PST5, AT5~AT7 (41 nos) re-drilling for Mixed Liquor Channel (8 nos) relimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) pad Test for Sludge Digestion Tank (1 no)	10 106 20 7 14 263 14 14 14 15 90	03MAY10 13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	12MAY10 26AUG10 15SEP10 22SEP10 06OCT10	0		Site Clearar	ICe				Section III of Works
30120         Pr           30130         Pr           30140         Pr           30150         Lc           30160         Sr           30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30230         Lc	re-drilling for PST5, AT5~AT7 (41 nos) re-drilling for Mixed Liquor Channel (8 nos) relimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) pad Test for Sludge Digestion Tank (1 no)	106 20 7 14 263 14 14 14 15 90	13MAY10 27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	26AUG10 15SEP10 22SEP10 06OCT10		•' €]		ICe	DOTE		-	
30130         Pr           30140         Pr           30150         Lc           30160         Sc           30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30230         Lc	re-drilling for Mixed Liquor Channel (8 nos) relimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	20 7 14 263 14 14 14 15 90	27AUG10 16SEP10 23SEP10 07OCT10 27JUN11	15SEP10 22SEP10 06OCT10	0	· · · · · ·		Big Pro_drilling for				1
30140         Pr           30150         Lc           30160         Sc           30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30220         Pr           30220         Pr	relimiary Socketted H-piling oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5-AT7 (174 nos) roof Drilling for PST5 & AT5-AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	7 14 263 14 14 14 15 90	16SEP10 23SEP10 07OCT10 27JUN11	22SEP10 06OCT10	0				rələ, Alə~Al7 (4	1 nos)		. *
30150         Lc           30160         Sc           30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30220         Pr           30220         Pr	oad Test for Preliminary Socketted H-pile ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	14 263 14 14 15 90	23SEP10 07OCT10 27JUN11	06OCT10	0				for Mixed Liquor Ch	annel (8 nos)	· · · · · · · · · · · · · · · · · · ·	
30160         Sa           30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30220         Pr           30220         Lc	ocketted H-piling for PST5, AT5~AT7 (174 nos) roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	263 14 14 15 90	07OCT10 27JUN11						Socketted H-piling			
30170         Pr           30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30220         Pr           30230         Lc	roof Drilling for PST5 & AT5~AT7 (4 nos) oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	14 14 15 90	27JUN11	26JUN11	0				st for Preliminary So			
30180         Lc           30190         Pr           30200         Sc           30210         Pr           30215         Lc           30220         Pr           30230         Lc	oad Test for Socketted H-pile (2 nos) re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	14 15 90			0					Socketted H-pilin		
30190         Pr           30200         So           30210         Pr           30215         Lc           30220         Pr           30230         Lc	re-drilling for Sludge Digestion Tank (6 nos) ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	15 90	27JUN11	10JUL11	0					► ■ Proof Drilling fo		
30200 So 30210 Pr 30215 Lc 30220 Pr 30230 Lc	ocketted H-piling for SD Tank (29 nos) roof Drilling for Sludge Digestion Tank (1 no) oad Test for Sludge Digestion Tank (1 no)	90		10JUL11	0	•••••		-		Load Test for S	ocketted H-pile (2	10s) -
30210         Pr           30215         Lc           30220         Pr           30230         Lc	roof Drilling for Sludge Digestion Tank (1 no) pad Test for Sludge Digestion Tank (1 no)			30SEP10 29DEC10	225d 225d				g for Sludge Digest			
30215         Lc           30220         Pr           30230         Lc	oad Test for Sludge Digestion Tank (1 no)			29DEC10 05JAN11						ng for SD Tank (29 nos)		
30220 Pr 30230 Lo		- t t	30DEC10	12JAN11	232d 225d					or Sludge Digestion Tank (1	no)	
30230 Lo	File for filled Eldor Onutrific		16SEP10	22SEP10	88d					Sludge Digestion Tank (1 n	10)	
	pad Test for Mini-pile (1 no)		23SEP10	060CT10	88d	·			Mini-pile for Mixed			
	lini-piling for Mixed Liquor Channel (79 nos)		070CT10	24APR11	88d				st for Mini-pile (1 no	) Mini-piling for Mixed Liquo	- Ohannal (70	
	roof Drilling for Mixed Liquor Channel (1 no)			01MAY11	111d					Proof Drilling for Mixed Liquo	r Channel (79 nos)	
	bad Test for Mixed Liquor Channel (2 nos)	[·····]	25APR11	08MAY11	104d	1			2 I	Broof Drilling for Mixed L 		(
	re-drilling for Bio-gas Holding Tank (3+1 nos)		16SEP10	25SEP10	250d				for Bio-gas Holding		uor Channel (2 nos)	
	ini-piling for Bio-gas Holding Tank (12+8 nos)		25APR11	15JUN11	145d					Mini-piling for Bio-c	non Holding Took //	12+9 200
	roof Drilling for Bio-gas Holding Tank (1 no)			22JUN11	145d					Proof Drilling for E	Bio-cas Holding Tark (1	$\frac{270 \text{ hos}}{100}$
	dimentation Tank & Aeration Tank										no-gas noiding rai	
31010 Ex	cavation for AT5 & AT6	30	11JUL11	09AUG11	0						for AT5 & AT6	
31020 Pil	le Head for AT5 & AT6 (22 nos)		10AUG11		· · · · ·	a a la caracteria.					d for AT5 & AT6 (2)	
	le Head for AT5 & AT6 (86 nos remained)		03SEP11		0							
	le Cap for AT5 & AT6		260CT11		32d							& AT6 (86 nos remaine
	ructural Wall for AT5 & AT6			13JAN12	32d						Pile Cap for A	
	atertness Test for AT5 & AT6		14JAN12		32d							ral Wall for AT5 & AT6
	cavation for Effluent Chamber		10AUG11		4d						on for Effluent Chan	ertness Test for AT5 &
	le Head for Effluent Chamber (15 nos)			02SEP11							ad for Effluent Chan	
	le Cap for Effluent Chamber			22SEP11	65d						Cap for Effluent Cha	nber (15 nos)
	ructural Wall for Effluent Chamber		23SEP11		73d							r Effluent Chamber
	p Slab & Upstand Wall of Effluent Chamber		02NOV11		73d	•••••••••••••••••••••••••••••••••••••••					JI	r Eπiuent Champer
	atertightness for Effluent Chamber		02DEC11		730 77d	     					1.11	hess for Effluent Chaml
	cavation for PST5 & AT7		20AUG11		47d						ation for PST5 & A	1
	e Head for PST5 & AT7 (51 nos)		260CT11		-+/u ^	1						PST5 & AT7 (51 nos)
	e Cap for PST5 & AT7	1	27NOV11								Pile Read for I	010 0 ATT (01 1105)
	ructural Wall for PST5 & AT7			14FEB12								ructural Wall for PST5
	atertightness Test for PST5 & AT7			02MAR12	0	l						Watertightness Test fo
	version of DN80 Fire Fighting Main		01JUL10 *		242d	. 1	1 1 1 1 1 1 8189/06#9	Piversion of D	N80 Fire Fighting M	ain		waterugntness Test to
	cavation for Sludge Digestion Tank No.3 (SDT3)	1		01FEB11	2420 225d	1						
	e Head Construction for SDT3 (29 nos)			21FEB11	225d					for Sludge Digestion Tank		
	se Slab for SDT3			23MAR11	225d			· · · · · · · · · · · · · · · · · · ·		d Construction for SDT3 (2		
	uctural Wall for SDT3			22APR11	225d	1				e Slab for SDT3 Structural Wall for SDT3		
	lined Top Slab for SDT3	· · · · · · · · · · · · · · · · · · ·	23APR11		225d					Structural Wall for SD13		
date	29JAN10 Eady bar						<u></u>			The line of the stability		<u> </u>
sh date	27APR13											-
a date 1 date	29JAN10 Critical bar						China H	arbour Eng	ineering Co.	. Ltd.		-
e number	06APR10 Summary bar								5 Phase 2B			-
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I SEP OCT NOV DEC JAN FEB MAR APR N300 DI Pipe to FC7B~FC12B	2013 MAY JUN JUL AUG SEP	OCT NOV DEC
2B ng Station Pipe		
N600 & DN800 Sludge Pipe or Sludge Pipe		
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AT7 PST5 & AT7		
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Act Description		otal —	2010
31220 Watertightness Test for SDT3			MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG S
31230 Air Tightness Test for SDT3		248d	→ ₩ Watertightness Test for SDT3
31240 Excavation for Mixed Liquor Channel (MLC)	30 25MAY11 23JUN11	88d	Excavation for Mixed Liquor Channel (MLC)
31250 Pile Cap for MLC	60 24JUN11 22AUG11	88d	Pile Cap for MLC
31260 Structural Wall for MLC		88d	Structural Wall for MLC
31265 Watertightness Test for MLC		18d	► Watertightness Test for MLC
31270 Excavation for Bio-gas Holding Tank Support	· · · · · · · · · · · · · · · · · · ·	144d	► Excavation for Bio-gas Holding Tank Support
31280 Pile Cap for Tank Support & Valve Chamber	30 04JUL11 02AUG11	144d	→  Pile Cap for Tank Support & Valve Chamber
31290 Structural Wall for Valve Chamber	40 03AUG11 11SEP11 1	144d	Structural Wall for Valve Chamber
31300 Watertightness Test for Valve Chamber	15 12SEP11 26SEP11 1	158d	→ Watertightness Test for Valve Chamber
Pipeline Works			
32005 Pipework for PST5, AT5 ~ AT7		280d	Pipework for PST5, AT5 ~ AT7
32010 Pipework Connection to AT5 & AT6	10 14JAN12 23JAN12	39d	Pipework Connection to AT5 & A
32020 Pipework for Effluent Chamber 32030 Pipework Connection to PST5 & AT7		73d	Pipework for Effluent Chamber
32030 Pipework Connection to PST5 & AT7 32040 Pipework for SDT3	15 15FEB12 29FEB12	2d	Pipework Connection to PS
32060 Pipework for MLC		225d 88d	Pipework for SDT3     Pipework for MLC
32070 Pipework for Valve Chamber		000  44d	
Modification // Removal Works			
33010 Removal of extg Control Room	30 25APR11 24MAY11	88d	Removal of extg Control Room
33020 Modification of extg Chemical House for SwitchRM		83d	Modification of extg Chemical House for SwitchRM
33030 Modification of extg Flow Splitter Box		253d	→ → Modification of extg Flow Splitter Box
33040 Modification of extg Aeration Tanks	60 25NOV11 23JAN12	39d	► Modification of extg Aeration Tan
33050 Modification of extg Effluent Launder	60 25NOV11 23JAN12	39d	Modification of extg Effluent Laur
33060 Shelter for NaOCI Dosing System		24d	Shelter for NaOCI Dosing System
33070 Watertightness Test for NaOCI Dosing Shelter		24d	Shelter Watertightness Test for NaOCI Dosing Shelter
33080 Modification of Primin. Sludge Gravity Thickener Section IV of Works	30 15JUN10 * 14JUL10 1	13d	Modification of Primin. Sludge Gravity Thickener
Drilling-Works			
40010 Section IV of Works	365 29JAN10 28JAN11		Section IV of Works
40015 Diversion of DN600 Concrete Pipe		49d	Diversion of DN600 Concrete Pipe
40110 Pre-drilling for Decanting Chamber (1 no)		490 49d	Pre-drilling for Decanting Chamber (1 no)
40120 Mini-piling for Decanting Chamber (4 nos)		49d	→ Mini-piling for Decanting Chamber (4 nos)
40130 Proof Drilling (4 nos)		49d	Proof Drilling (4 nos)
40140 Load Test for Mini-pile (1 no)	14 20AUG10 02SEP10	63d	Evad Test for Mini-pile (1 no)
Structural Works			
41010 Excavation for Decanting Chamber	10 17SEP10 26SEP10	49d	Excavation for Decanting Chamber
41020 Pile Cap for Decanting Chamber		54d	a la la 🖡 🕨 📰 Pile Cap for Decanting Chamber. En a secondaria de la contra de la casa fadar de la contra d
41030 Structural Wall for Decanting Chamber		54d	Structural Wall for Decanting Chamber
41040 Top Slab for Decanting Chamber		54d	Top Slab for Decanting Chamber
41050 Excavation for Chemical & Oil Store		49d	Excavation for Chemical & Oil Store
41060 Base Slab for Chemical & Oil Store 41070 Structural Wall for Chemical & Oil Store		49d	Base Slab for Chemical & Oil Store
410/0 Structural Wall for Chemical & Oil Store		49d	Structural Wall for Chemical & Oil Store
41090 Valve Chamber & Conc. Plinth at PSGT Stage I/II		49d 28d	Top Slab for Chemical & Oil Store
Medification // Removal Works			
43010 Removal of Chemical Waste Room	30 01JUN10 * 30JUN10 3	62d	Removal of Chemical Waste Room
43020 Removal of Flower Bed		62d	Removal of Flower Bed
43025 Removal of Waste Bio-gas Burner		21d	Removal of Waste Bio-gas Burner
43030 Removal of Chimney & Associated RC Structure		21d	Removal of Chimney & Associated RC Structure
43040 Removal of Storage Facilities		65d	→ 🚟 Removal of Storage Facilities
43050 Shelter for Water Treatment System		65d	Shelter for Water Treatment System
43070 Shelter for FeCI3 Dosing System		76d	Shelter for FeCl3 Dosing System
43080 Watertightness Test for FeCl3 Dosing Shelter		76d	Watertightness Test for FeCI3 Dosing Shelter
43090 Steelwork for FeCl3 Dosing Shelter		76d	Steelwork for FeCl3 Dosing Shelter
43100 Removal of FeCI3 Dosing System	60 15SEP10 13NOV10	76d	Removal of FeCl3 Dosing System
Start date 29JAN10 Early bar	······································		T
Finish date 27APR13			

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

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Act OD	Description	Orig Dur	Early Start	Early Finish	Total Float	2010 FEB MAR APR MAY JUN JUL A	2011 UG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB M	2012 AR APR MAY JUN JUL AUG S
43110	Modification of Central Blg Complex	150	01JUN10 *	280CT10	92d		Modification of Central Blg Complex	······································
43120	Modification of SAS Thickening House	120	15JUN10 *	120CT10	48d	Accepted and a construction of the constructio	Modification of SAS Thickening House	
43130	Modification of Primary Sludge Thickener	60	130CT10	11DEC10	48d		Modification of Primary Sludge Thickener	
43140	Modification of Filtrate Treatment Plant	120	01JUL10 *	280CT10	92d	Distant I	Modification of Filtrate Treatment Plant	
43150	Modification of Chlorination House	150	15JUL10 *	11DEC10	48d	5342	Modification of Chlorination House	
43160	Floor Opening at Service Tower Building (16 nos)	30	01JUN10 *	30JUN10	92d	Floor	Opening at Service Tower Building (16 nos)	·····
43165	S S Louvre at Inlet Works at Stage IV	60	01JUL10	29AUG10	92d		S S Louvre at Inlet Works at Stage IV	
	Covered Walkway at Sludge Dewatering House	60	30AUG10	280CT10	92d		Covered Walkway at Sludge Dewatering House	
	Draginage Works			lander and a start of the				
	Road & Drainage Works in Portion A	120	21JUL10	17NOV10	362d		Road & Drainage Works in Portion A	
	Road & Drainage Works along MLC	135	16SEP10	28JAN11	0		Road & Drainage Works along MLC	
Section V								-
	iping Works						·	· ·
50010	Section V of Works	1185	29JAN10	27APR13	. 0			
50110	Tree Survey	60	29JAN10	29MAR10	20d	Tree Survey		
50120	Tree Transplanting & Felling Tree	90	30MAR10	27JUN10	20d		ransplanting & Felling Tree	
50130	Establishment Works to Transplanted Tree	365	28JUN10	27JUN11	670d		Establishment Works to Transplante	d Tree
50140	Landscaping Softworks	650	28JUN10	07APR12	20d			Landscaping Softwork
50150	Establishment Works to Softworks	650	28JUN11,	07APR13	20d			
50160	Irrigation System for Green Roof at TPSTW	120	28JUN10	250CT10	310d		Irrigation System for Green Roof at TPSTW	
50170	Green Roof at Sludge Dewatering System	120	26OCT10	22FEB11	310d		Green Roof at Sludge Dewatering System	
50180	Green Roof at Transformer House	120	23FEB11	22JUN11	310d		Green Roof at Transformer House	
Bill and a second se	Establishment Works to Green Roof	365	23JUN11	21JUN12	310d			Establishm
1.	Removal of Waste Bio-burner at PSGT Stage I/II	60	05JUL10 *	02SEP10	28d		Removal of Waste Bio-burner at PSGT Stage I/II	
20	Road & Drainage Works	120	26OCT11	22FEB12	430d			oad & Drainage Works
51030	Cable Ducting and Drawpits	350	01APR12	16MAR13	42d			
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2013 P OCT NOV DEC JAN FEB MAR APR MAY AUG SEP OCT NOV I Section V of Works /orks Establishment Works to Softworks hment Works to Green Roof Cable Ducting and Drawpits and the second (1) Solution of the second se Second seco a ta ta ta construction. A ta ta ta construction de la construction de la construction de la construction de la م مربعهرها جارد آند از از داد د Date Revision Checked Approved 05FEB10 WML TKC 0 07APR10 TKC AA 1

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