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 October 2013

(Version 2.0)

Certified By	Chup (Environmental Team Leader)	
REMARKS:	J	

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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EXECUTIVE SUMMARY

Introduction

- 1. This is the 40th 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 October 2013.
- 2. The major site activities undertaken in the reporting month included:
 - Cable ducting works ;
 - Construction of Mixed Liquor Channel & Sludge Digestion Tank;
 - Construction of covered walkway on roof of Sludge Dewatering House;
 - Construction of FC7B and Sludge Draw-off No. 3;
 - Pipework for Water Reclamation Facility, SAS Thickening House, SBR Tank, Sludge Dewatering House;
 - Construction of Pipe supports for DN1500 Air Main at Central Building Complex;
 - Installation of Irrigation System;
 - Landscaping works;
 - Modification works at switch room of RAS Pumping Station, Central Building Complex, Filtrate Treatment Plant and Inlet Works;
 - Modification works of Flow Splitter Box;
 - Application of protective coating for FC7B; and
 - Demolition of steel chimney and its RC structure.

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**.

 Table I
 Summary Table for Events Recorded in the Reporting Month

Donomotor	No. of Exceedance		No. of Events	Action Taken
Parameter	Action Level	Limit Level	Due to this Project	Action Taken
1-hr TSP	0	0	0	N/A
24-hr TSP	0	0	0	N/A
Noise	0	0	0	N/A

5. 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**.

 Table II
 Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Domonia
Event	Number	Nature	Action Taken	Status	Remark
Complaint received	0		N/A	N/A	
Changes to the assumptions and key construction / operation activities recorded	0		N/A	N/A	
Status of submissions under EP	1	Monthly EM&A Report (September 2013)	Submitted to EPD on 28 th October 2013 (EP condition 6.6)	N/A	
Notifications of any summons & prosecutions	0		N/A	N/A	

Future Key Issues

- 8. Major site activities for the coming two months will include:
 - Cable ducting works;
 - Construction of Sludge Digestion Tank No. 3;
 - Construction of pipe supports for DN1500 air main;
 - Pipework for Water Reclamation Facility for RO Plant, SAS Thickening House, SBR Tank, Sludge Dewatering House;
 - Drainage and Road works;
 - Finishing works for tanks & pillar box of Water Reclamation Facility, Effluent Launder, Pipe Chamber adjacent to PST5;
 - Installation of Irrigation System;
 - Landscaping works;
 - Modification works at CBC, Filtrate Treatment Plant;
 - Modification works of Effluent Launder and Flow Splitter Box;
 - Modification works at Switch Room, Wet Well and RAS Pumps of RAS Pumping Station;
 - Demolition of steel chimney and its RC structure; and
 - Modification works at G/F & 1/F switch room of Inlet Works.
- 9. The future environmental concerns are air quality, noise impacts, waste management and surface runoff from construction works.

1 INTRODUCTION

Background

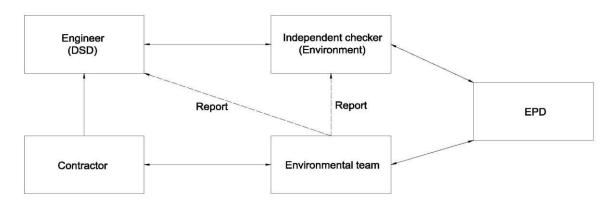
- 1.1 Tai Po Sewage Treatment Works (TPSTW) is located within the Tai Po Industrial Estate. It currently comprises four Stages: I, II, IVA and IVB works. The TPSTW Stage V aims to upgrade the existing STW to provide additional sewage treatment capacity from the present design flow of 88,000 m³/day to 130,000 m³/day to meet the demands of both the existing and future developments, and to meet the revised discharge license requirements.
- 1.2 The TPSTW Stage V, Phase I and Phase II are Designated Projects under the Environmental Impact Assessment Ordinance (Cap. 449) with the same EIAO Register No. AEIAR 081/2004. A study of environmental impact assessment (EIA) was undertaken to evaluate various environmental impacts associated with the works within these two Designed Projects. An EIA Report as well as an Environmental Monitoring and Audit (EM&A) Manual were approved by the Environmental Protection Department (EPD) on 28 October 2004.
- 1.3 The Stage V works will be implemented in 2 phases. The design capacities of Phase I and Phase II works are 100,000 m³/d and 130,000 m³/d respectively. An Environmental Permit (EP) No. EP-265/2007 was issued on 22 March 2007 for the TPSTW Stage V Phase II to the Drainage Services Department (DSD) as the Permit Holder. The project "Tai Po Sewage Treatment Works Stage V Phase IIB" formed part of the Phase II works, includes additional secondary treatment process units (1 primary clarifier; 3 bioreactors and 2 final clarifiers) in TPSTW for its future extended plant design capacity of 120,000 m³/day. A master construction programme of the Project is provided in Appendix M. 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 40th monthly EM&A report summarizing the EM&A works for the Project in October 2013.

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.

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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. Edmond Put	Project Coordinator and Audit Team Leader	2151 2035	3107 1388
	Mr. Henry LEUNG	Monitoring Team Leader	2151 2087		
Arup	Independent Environmental	Mr. Coleman NG	Independent Environmental Checker	2268 3097	2865 6493
Arup	Checker	Mr. Ken LEE	Assistant to Independent Environmental Checker	2268 3573	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 Officer	9320 3608	

Table 1.1Key Project Contacts

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Construction Programme

- 1.9 The site activities undertaken in the reporting month were:
 - Cable ducting works ;
 - Construction of Mixed Liquor Channel & Sludge Digestion Tank;
 - Construction of covered walkway on roof of Sludge Dewatering House;
 - Construction of FC7B and Sludge Draw-off No. 3;
 - Pipework for Water Reclamation Facility, SAS Thickening House, SBR Tank, Sludge Dewatering House;
 - Construction of Pipe supports for DN1500 Air Main at Central Building Complex;
 - Installation of Irrigation System;
 - Landscaping works;
 - Modification works at switch room of RAS Pumping Station, Central Building Complex, Filtrate Treatment Plant and Inlet Works;
 - Modification works of Flow Splitter Box;
 - Application of protective coating for FC7B; and
 - Demolition of steel chimney and its RC structure.

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.

Monitoring Locations

2.3 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

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

Table 2.2Air Quality Monitoring Equipment

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

Monitoring Parameters, Frequency and Duration

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

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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

Table 2.3Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Methodology and QA/QC Procedure

Instrumentation

2.6 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

- 2.7 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

- 2.8 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μ m diameter. A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.
- 2.9 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 $\pm 5\%$. A convenient working RH was 40%.
- 2.10 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

- 2.11 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 m³/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

- 2.12 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

- 2.13 In the reporting month, 1-hr TSP monitoring was carried out as schedule at each designated monitoring station on 14 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 and cloudy.
- 2.14 All measured 1-hr and 24-hr TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting month.
- 2.15 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 ³	Maximum µg/m ³	Average µg/m ³	Action Level, µg/m ³	Limit Level, µg/m ³
1-hr TSP (CAM1)	34	223	115	315	500
24-hr TSP (CAM1)	56	136	111	171	260
1-hr TSP (CAM2)	73	223	137	336	500
24-hr TSP (CAM2)	72	155	127	177	260
1-hr TSP (CAM3)	84	233	138	344	500
24-hr TSP (CAM3)	78	153	130	192	260

Table 2.4Summary Table of Air Quality Monitoring Results during the
reporting month

2.16 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	SVANTEK - SVAN 955	1
Calibrator	SVANTEK - SV30A	1
Wind Speed Anemometer	Vane Anemometer, Model AZ8904 (Serial no. 974835)	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 ₁₀ and L ₉₀ 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**.

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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 **Appendix F**. 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 L _{eq} (30min) dB(A)	Maximum L _{eq} (30min) dB(A)	Average L _{eq} (30min) dB (A)	Action Level	Limit Level
NM1	58.2	61.7	59.7	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 Locations

4.2 Monitoring of oxygen, methane and carbon dioxide was performed for excavations at 1m depth or more within the Consultation Zone. In this reporting month, all the excavation works that at 1m depth or more have been finished or backfilled. No landfill gas monitoring was necessary in the reporting month.

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 4th, 11th, 18th, 25th and 30th October 2013 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 11th October 2013. 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**.

D	Valid	Period	D-4-1-	64-4
Permit / License No.	From	То	- Details	Status
Environmental Permi	it (EP)			
EP-265/2007	22/3/2007	N/A	 Expansion and upgrading of existing <u>Tai Po Sewage Treatment Works from</u> <u>100,000 m³/day to 130,000 m³/day</u>: (a) additional secondary treatment process units(1 primary clarified; 3 bioreactors and 2 final clarifiers); (b) reconstruction of 4 existing final clarified; (c) provision of ultraviolet disinfection facilities; (d) additional sludge treatment facilities; and (e) ancillary works to existing treatment facilities. 	Valid
Consruction Noise Pe		1		
GW-RN0299-12	01/07/12	30/12/12	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.	Expired
GW-RN0614-12	01/01/13	30/06/13	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.	Expired
GW-RN0376-13	01/07/13	31/12/13	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.	Valid
Discharge Licence	25/10/10	21/10/15	Distance of induct internet	E
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	Expired
Waste Disposal (Cher	-			
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 materials, metals and general refuse. The quantities of waste generated in this reporting month are summarized in **Appendix K**.

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 J**.
- 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
	27 September 2013	<u>Reminder:</u> Clear the sand and mud near the car washing bay.	The observation was observed to be improved/rectified by the Contractor during the audit session on 4 October 2013.
Water	4 October 2013	Reminder: Stand water was observed near tank no.11. The contractor was reminded to clear the stand water.	The observation was observed to be improved/rectified by the Contractor during the audit session on 11 October 2013.
Quality	18 October 2013	<u>Reminder:</u> Stand water in idle sedimentation tank should be cleared.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 October 2013.
	30 October 2013	<u>Reminder:</u> Stand water near FC 2B and 4B should be cleared.	Follow up action will be reported in next reporting period.
Air Quality	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Waste /	27 September 2013	<u>Reminder:</u> Clear the scrap metal near the haul road.	The observation was observed to be improved/rectified by the Contractor during the audit session on 4 October 2013.
Waste / Chemical Management	4 October 2013	<u>Reminder:</u> Construction materials were observed to accumulate near tank no. 9. The contractor was reminded to clear the construction materials and dispose of properly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 11 October 2013.
Permit/ Licenses	N/A	N/A	N/A

 Table 5.2
 Observations and Recommendations of Site Audit

Summary of Exceedances

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

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 I**. 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 summon received since the Project commencement. The Complaint Log is attached in **Appendix L.**

6 FUTURE KEY ISSUES

- 6.1 Key issues to be considered in the coming month include:
 - Effluent discharge generated from surface runoff;
 - Dust generation 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**.

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Construction Program for the Next Month

- 6.3 A tentative construction programme is provided in **Appendix M**. The major construction activities in the coming month will include:
 - Cable ducting works;
 - Construction of Sludge Digestion Tank No. 3;
 - Construction of pipe supports for DN1500 air main;
 - Pipework for Water Reclamation Facility for RO Plant, SAS Thickening House, SBR Tank, Sludge Dewatering House;
 - Drainage and Road works;
 - Finishing works for tanks & pillar box of Water Reclamation Facility, Effluent Launder, Pipe Chamber adjacent to PST5;
 - Installation of Irrigation System;
 - Landscaping works;
 - Modification works at CBC, Filtrate Treatment Plant;
 - Modification works of Effluent Launder and Flow Splitter Box;
 - Modification works at Switch Room, Wet Well and RAS Pumps of RAS Pumping Station;
 - Demolition of steel chimney and its RC structure; and
 - Modification works at G/F & 1/F switch room of Inlet 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

- Avoid blockage of gully inlets and ensure proper protection of the gully from ingress of sandy water.
- Ensure proper use and maintenance of the de-silting facilities.
- Provide sediment tank for settling runoff prior to disposal.
- Remove and settle out sand and silt at wheel washing facilities regularly.
- Pump out stagnant water and avoid ponding water accumulation.

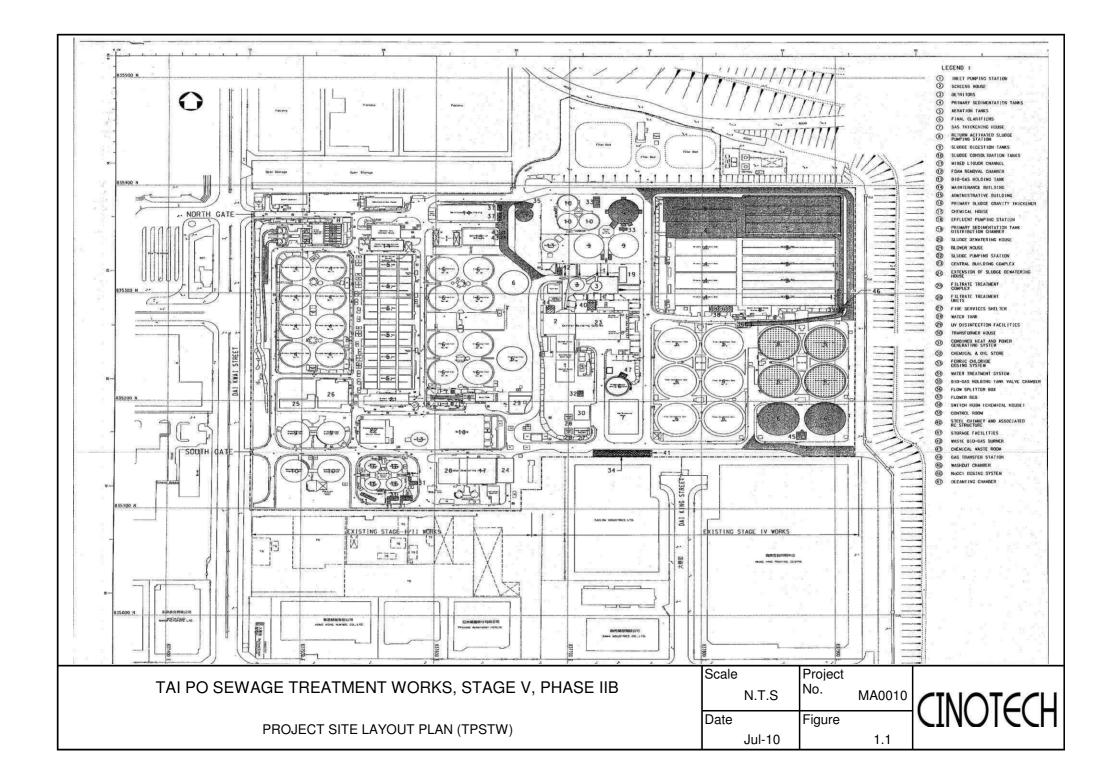
Waste / Chemical Management

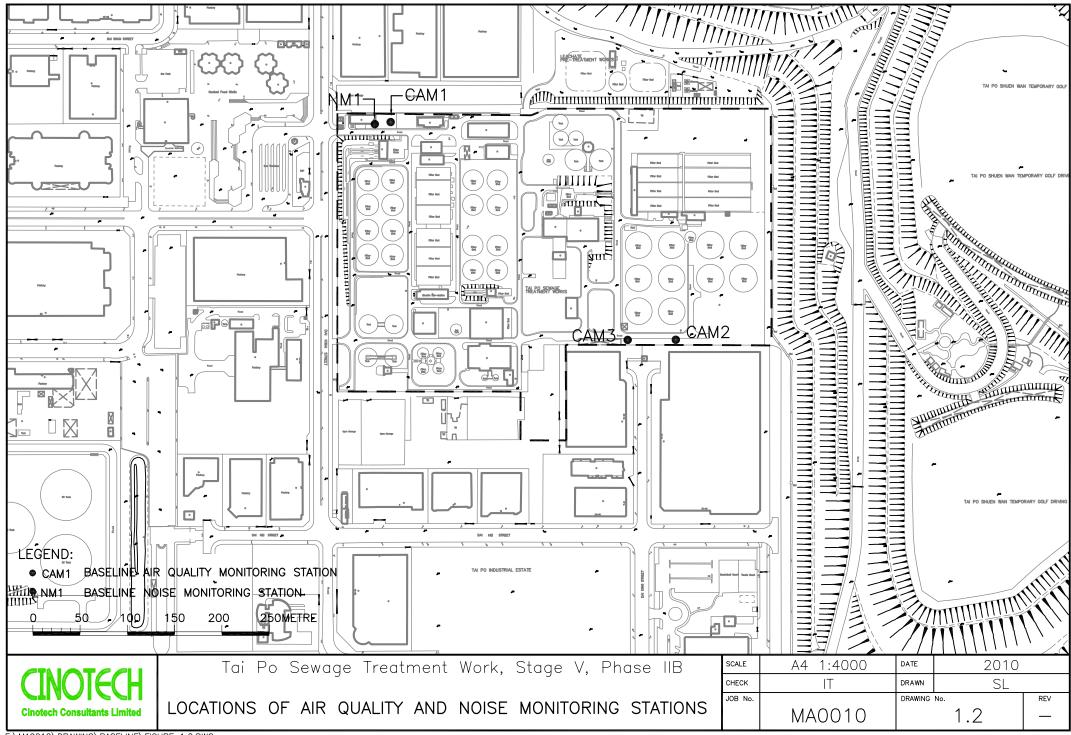
• Avoid accumulation of C&D waste materials or general refuse on site.

20

- Provide proper rubbish bins / skips for waste collection.
- Proper label the chemicals on site and store properly with drip tray.
- Sort and disposal of C & D waste and general refuse properly.

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

24-Hour TSP

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

Construction Noise

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



File No. MA0010/37/0052

						The No.	MR0010/3/10032
Station	CAM1 - Govern	ment Staff Quart		-	WK		-
Date:	26-Aug-13	Next Due Date:					-
Equipment No.:	A-01-37			Serial No.	1704		-
· · · · · · ·			Ambient	Condition	·····		n fan fan fan fan fan fan fan fan fan fa
Temperatu	re, Ta (K)	301.4	Pressure, Pa	1 11 2 11 10		757.6	
L					.		
		Oı	ifice Transfer St	andard Inform	ation		
Equipm	ent No.:	A-04-04	Slope, me	0.0574	Intercep	t, bc	-0.0478
Last Calibr		3-Oct-12		me x Qstd + I	$bc = [\Delta H \times (Pa/76)]$	i0) x (298/Ta	a)] ^{1/2}
Next Calibr	ation Date:	2-Oct-13			x (Pa/760) x (298		
		•					
			Calibration of	TSP Sampler			
Calibratian		Or	fice			HVS	
Calibration Point	ΔH (orifice), in. of water	[ΔН x (Pa/76	0) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	∆W (HVS), in. of oil		760) x (298/Ta)] ^{1/2} Y- axis
1	11.8	3.41		60.25	8.1		2.83
2	9.7		3.09		6.5		2.53
3	7.3		2.68	47.56	4.9		2.20
4	5.2		2,26	40.27	3.3		1.80
5	3.2		1.78	31.77	2.1		1.44
Slope , mw =	AU	_		Intercept, bw	-0.13	76	-
ł	coefficient* =		993	-			
*If Correlation (Coefficient < 0.99	0, check and reca	alibrate.				
			Set Point (Calculation			
From the TSP F	ield Calibration C	Surve_take Ostd =		Surcuman			
	ssion Equation, th						
FIOII LIC Regie	ssion Equation, in		Tunig to				
		mw x (Qstd + bw = $[\Delta W]$	x (Pa/760) x (2	298/Ta)] ^{1/2}		
Therefore, S	Set Point; $W = (n^2)$	w x Qstd + bw)	² x (760 / Pa) x (Ta / 298) =	3.93		-
l							
Damarlan							
Remarks:							
	•		1				
Conducted by:	wk. Jang	Signature:	K	wan	_	Date:	261812013
Checked by		Signature:	-b		-	Date:	26 August 201

26/8/2013 26/24yut 2013 Date:



						-	MA0010/37/0053
Station		ment Staff Quart	•		: <u>Wк</u>		
Date:	23-Oct-13		Next Due Date:	: <u>22-Dec</u>	:-13		
Equipment No.:	A-01-37			Serial No.	1704		
	- 115 (115 (116 (116 (116 (116 (116 (116	an an tradición de la composición de la	Ambient				
Temperatu	ire, Ta (K)	296.8	Pressure, Pa	a (mmHg)	-	763.8	
The part of the property of the					· · · · · · · · · · · · · · · · · · ·		Terra da la terra de la companya de la com
			ifice Transfer St			ter i seriege	
Equipme		A-04-05	Slope, mc	0.0592	Intercep		-0.0283
Last Calibr		26-Dec-12			$bc = [\Delta H x (Pa/76)]$		
Next Calibr	ation Date:	25-Dec-13		Qstd ≕ {[∆H	x (Pa/760) x (298	/Ta)] ^{1/2} -bc} /	me
			anterata in the state and	a an	n, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,		
			Calibration of	TSP Sampler			
Calibration		Or	fice	T		HVS	
Point	ΔH (orifice), in. of water	[ΔH x (Pa/76	0) x (298/Ta)] ^{1/2}	Qstd (CFM)	ΔW		60) x $(298/Ta)$] ^{1/2} Y-
· · ·				X - axis	(HVS), in. of oil	<u> </u>	axis
1	12.3	3.52		59.99	7.8		2.81
2	9.8	3.14		53.60	6.2		2.50
3	7.6	2.77		47.26	5.0		2.25
4	5.2	2	.29	39.17	3.4		1.85
5	3.4	1	.85	31.77	2.0		1.42
	ession of Y on X						
Slope, mw =	0.0483	-		Intercept, bw	-0.076	i1	
Correlation c		0.9		-			
*If Correlation C	Coefficient < 0.99	0, check and reca	librate.				
				www.www.www.www.www.www.www.www.			
			Set Point C	Calculation			
From the TSP Fi	eld Calibration C	urve, take Qstd =	43 CFM				
From the Regres	sion Equation, th	e "Y" value accor	ding to				
		mw x Q	$std + bw = [\Delta W]$	x (Pa/760) x (2	98/Ta)] ¹²		
Therefore Se	= t Point W = (m)	$w \propto O \operatorname{std} + \operatorname{hw})^2$	x (760 / Pa) x (1	Fa / 208)	2.00		
Therefore, or	10 m, w = (m)	w x Qstu (bw)	x(70071a)x(1 a / 290) -	3.98		
Remarks:							
		· · · · · · · · · · · · · · · · · · ·					

	Date: つう Date: 0ろ	10/13 October 2013
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File No. MA0010/A40/0052

Station	CAM2 - Hung H	ing Printing Cer	itre	Operator:	WK		11110010/110/0002	
Date: 26-Aug-13			. 1	Next Due Date:		-13		
Equipment No.: A-01-40				Serial No.	10239			
			4 1	Candition		· · · · ·		
(P		301.2		Condition	internatione.	757.9		
Temperatu	ire, 1a (K)	301.2	Pressure, Pa	t (mining)		131.9		
		0	rifice Transfer St	andard Inform	ation			
Equipm	ent No.:	A-04-04	Slope, mc				-0.0478	
Last Calibr	ation Date:	3-Oct-12		mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$				
Next Calibr	ration Date:	2-Oct-13		Qstd = ${[\Delta H]}$	x (Pa/760) x (298	/Ta)] ^{1/2} -bc} /	/ mc	
		•						
				TSP Sampler				
Calibration		Orfice [ΔH x (Pa/760) x (298/Ta)] ^{1/2}		0-11/073-0		HVS	60) x (298/Ta)] ^{1/2} Y-	
Point	ΔH (orifice), in. of water			Qstd (CFM) X - axis	ΔW (HVS), in. of oil		axis	
1	11.7		3.40	60.02	8.0		2.81	
2	9.7		3.09	54.73	6.5		2.53	
3	7.4	2.70		47.91	4.8		2.18	
4	5.2	2.27		40.29	3.3		1.80	
5	3.1	1.75		31.30	2.0		1.40	
By Linear Reg Slope , mw =	ression of Y on X 0.0491			Intercept, bw	-0.152	28		
	coefficient* =	0.9	994					
	Coefficient < 0.99			-				
Laura, faatooradista				nete oppositetetetetetetetetetetetetetetetetetete				
Puese die TOD D	ield Calibration C	umia taka Oata		Calculation	deere sedijid		gibiera e l'Alter de Buier	
	ssion Equation, the							
i iom the regio	ssion Equation, en							
		mw x	$Qstd + bw = [\Delta W]$	x (Pa/760) x (2	298/Ta)] ^{1/2}			
Thorafora 9	Set Point; W = (m	$w = Ootd \pm bw$	2 v (760 / Pa) v ($T_{2}/298 =$	3.88			
Therefore, c	set rount, w - (in	w x Qsiu + ow)	X(70071a)X(147270)-				
Remarks:								
	WITH TO THE AND AND AND AND AND AND AND AND AND AND			•				
	1 2		1)		_		
a			12					
Conducted by: Checked by		Signature: Signature:	K.	voi /	-	Date: Date:	26 8 2013	



Q3 October do13

Date:

File No. MA0010/A40/0053

Station	tion CAM2 - Hung Hing Printing Centre			Operator	• •		
Date:	23-Oct-13		_	Next Due Date: 22-De		Dec-13	
Equipment No.: A-01-40			Serial No. 10239)		
	Transfillar og s	a da sa si kasari				nan ana si na si na ana ani na mangana si na si	
<u>- 1.1 1.33343</u>			1	Condition			
Temperatu	ire, Ta (K)	296.9	Pressure, P	a (mmHg)		763.6	
		0	rifice Transfer St	andard Inforn	nation		
Equipme	ent No.:	A-04-05	Slope, mc				
Last Calibr	ation Date:	26-Dec-12		mc x Qstd +	bc = [ΔH x (Pa/76	60) x (298/Ta)] ^{1/2}	
Next Calibr	ation Date:	25-Dec-13		Qstd = $\{ \Delta H$	x (Pa/760) x (298	/Ta)] ^{1/2} -bc} / mc	
		• Ngagana ang agama		<u>an an an</u> an Andreas			
		Antonio antonio antonio Antonio antonio	Calibration of	f TSP Sampler		HVS	
Calibration	ΔH (orifice),			Qstd (CFM)	ΔW	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Point	in. of water			X - axis	(HVS), in. of oil		
1	11.3		3.38	57.50	7.5	2.75	
2	9.8		3.14	53,58	6.1	2.48	
3	7.6	2.77		47.24	4.9	2.22	
4	5.2	2.29		39.16	3.2	1.80	
5	3.3		.82	31.29	2.0	1.42	
_	ession of Y on X	C					
Slope, mw =	•	-		Intercept, bw	-0,146	53	
Correlation c			986	-			
*If Correlation (Coefficient < 0.99	0, check and reca	llibrate.				
		<u> Andreas</u> Andreas					
Press dia TOD D				Calculation			
	ield Calibration C						
From the Regres	sion Equation, th	e "Y" value acco	rding to				
		mw x (Q std + bw = [ΔW	x (Pa/760) x (2	298/Ta)] ^{1/2}		
Therefore, So	et Point; W = (m	w x Qstd + bw)*	x (760 / Pa) x (Ta / 298) =	3.95		
<u></u>							
Remarks:							
				1			
)			·····	
Conducted by:	WK Jang	Signature:	Kw	mil_		Date: 23/10/13	

Checked by: ______ Signature:



		UT OH				File No.	MA0010/35/0052		
Station CAM3 - Talcon Industrial Ltd			Operator:		WK				
Date:	26-Aug-13		Next Due Date:						
Equipment No.:	Equipment No.: A-01-35			Serial No.					
		. te 1 e tit eer	Ambient	Condition	· .	~ *			
Temperatu	re. Ta (K)	301.3	Pressure, Pa			· · · ·			
Tomportaa		00110	,	(757.8	I		
		Or	ifice Transfer St	andard Inform	ation				
Equipme	ent No.:	A-04-04	Slope, mc 0.0574		Intercept, bc		-0.0478		
Last Calibr	ation Date:	3-Oct-12	mc x Qstd + bc = $[\Delta H x (Pa/760)]$			i0) x (298/Ta)] ^{1/2}		
Next Calibr	ation Date:	2-Oct-13		Qstd = $\{[\Delta H]$	x (Pa/760) x (298	$Pa/760$ x (298/Ta)] ^{1/2} -bc} / mc			
			Calibration of	TSP Sampler					
Calibration		Orf	ice		HVS				
Point	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}		Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/7	60) x (298/Ta)] ^{1/2} Y- axis		
1	12.5	3	.51	62.00	7.6		2.74		
2	9.7	3	.09	54.72	6.1		2.45		
3	8.4	2	.88	50.98	5.2		2.26		
4	5.4	2	.31	41.04	3.3		1.80		
5	3.0	1.72		30.80	1.9		1.37		
Slope , mw = Correlation c		0.9	995	Intercept, bw [,] -	-0.005				
		,	nin di manina di manina di manina di secondo						
E		ineration in the second -		Calculation	n i melder tij stelengeliete 				
	ield Calibration C								
From the Regres	ssion Equation, the	e Y value accor	ang to						
		mw x Q	ostd + bw ≔ [ΔW	x (Pa/760) x (2	98/Ta)] ^{1/2}				
Therefore, S	et Point; W = (m	w x Qstd + bw) ²	x (760 / Pa) x ('	Ta / 298) =	3.69				
L									
Remarks:									
				· · · · ·					
Conducted by: Checked by:	wk. 7ang U	Signature: Signature:	Kw	oni		Date: Date:	26/ 8/ 2013 NG Rugust dol		



						File No.	MA0010/35/0053	
Station	CAM3 - Talcon	Industrial Ltd		Operator:	WK			
Date:	23-Oct-13				22-Dec-13			
Equipment No.:	A-01-35	0810						
			Ambient	Condition				
Temperatu	re, Ta (K)	296.6	Pressure, Pr		764			
				· · · · · · · · · · · · · · · · · · ·				
		Or	ifice Transfer St	andard Inform	ation			
Equipment No.: A-04-05		Slope, mc 0.0592 Intercept, be		t, be	-0.0283			
Last Calibra	ation Date:	26-Dec-12		mc x Qstd + bc = $[\Delta H x (Pa/760) x (298/Ta)]^{1/2}$] ^{1/2}	
Next Calibra	ation Date:	25-Dec-13		Qstd = {[∆H	x (Pa/760) x (298	/Ta)] ^{1/2} -be} /	mc	
			Calibration of	f TSP Sampler				
Calibration		Orfice				HVS		
Point	ΔH (orifice), in. of water	[ΔH x (Pa/760	0) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/76	50) x (298/Ta)] ^{1/2} Y- axis	
1	12.5	3	.55	60.50	7.8		2.81	
2	9,8	3.15		53.62	6.0		2.46	
3	8.3	2.90		49.39	5.1		2.27	
4	5.2	2.29		39.19	3.3		1.83	
5	3.0	1	.74	29.88	1.9		1.39	
By Linear Regr	ession of Y on X							
Slope , mw =	0.0459	_		Intercept, bw	0.014	4		
Correlation c	oefficient* =	0.9	997					
*If Correlation C	coefficient < 0.99	0, check and reca	librate.	-				
			Set Point (Calculation				
From the TSP Fi	eld Calibration C	urve, take Ostd =		Juiculation		en superior de la construction.	ng sana na hearinn na sina ng na hairin a sina. Tin	
From the Regress								
	,,		•					
		mw x Q	ostd + bw ≕ [ΔW	x (Pa/760) x (2	98/Ta)] ^{1/2}			
Therefore Se	t Doint: W - (m	$x = x O atd + b = x^2$	x (760 / Pa) x ('	Το (208) —	2.01			
Therefore, Se		w x Qsia (bw)	x(70071a)x(1 a / 298 j -	3.91			
Remarks:								

· · · · · · · · · · · · · · · · · · ·	Signature:	Kwani J	Date: Date:	<u>23/10/2013</u> <u>23/06/06/2013</u>
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TEST REPORT

Description	Calibration Orifice
Serial No.	0993
Model No.	TE-5025A
Date	3 October 2012

ManufacturerTTemperature,Ta (K)2Pressure, Pa (mmHg)7

TISCH 298 759.2

Plate	Diff.Vol (m ³)	Diff.Time (min)	Diff.Hg (mm)	Diff.H ₂ O (in.)
1	1.00	1.3820	3.2	2.00
2	1.00	0.9800	6.2	4.00
3	1.00	0.8770	7.8	5.00
4	1.00	0.8380	8.7	5.50
5	1.00	0.6930	12.7	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9947	0.7197	1.4134
0.9907	1.0109	1.9989
0.9886	1.1273	2.2348
0.9874	1.1783	2.3439
0.9822	1.4173	2.8268

Y axis= SQRT[H₂O(Pa/760)(298/Ta)] Qstd Slope (m) = <u>2.02751</u> Intercept (b) = <u>-0.04785</u> Coefficient (r) = <u>0.99999</u>

(X axis) Qa	(Y axis)
0.7205	0.8861
1.0121	1.2531
1.1285	1.4010
1.1796	1.4694
1.4189	1.7721
	Qa 0.7205 1.0121 1.1285 1.1796

Y axis= SQRT[H₂O(Ta/Pa)]

Qa Slope (m)	= <u>1.26959</u>
Intercept(b)	= <u>-0.03000</u>

Coefficient (r) = 0.99999

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=I/m{[SQRT(H₂O(Pa/760)(298/Ta))]-b} Qa=I/m{[SQRT H₂O(Ta/Pa)]-b}

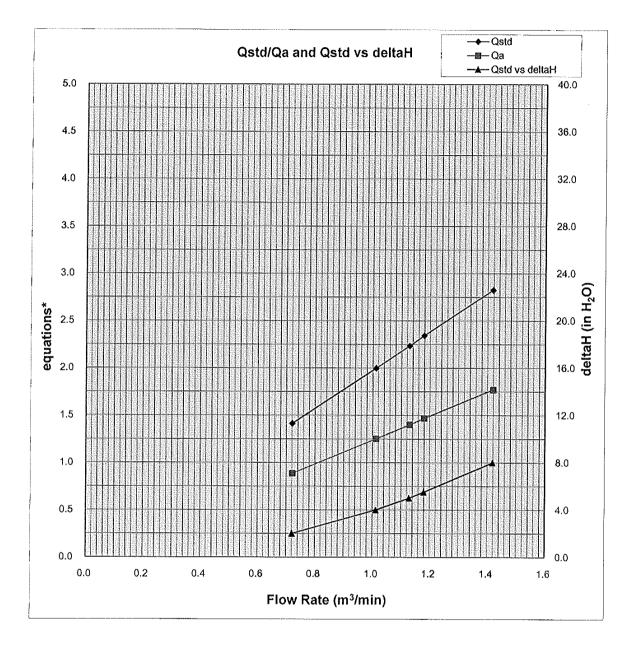
> PREPARED AND CHECKED BY: For and On Behalf of **WELLAB Ltd.**

PATRICK TSE Laboratory Manager

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TEST REPORT



Y-axis equations:

Qstd series: SQRT[Δ H(Pa/Pstd)(Tstd/Ta)]

Qa series: SQRT[Δ H(Ta/Pa)]

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TEST REPORT

APPLICANT: Cinotech Consultants Limited Room 1710, Technology Park, 18 On Lai Street, Shatin, NT, Hong Kong

Test Report No.:	CA/13/130430
Date of Issue:	2013-05-01
Date Received:	2013-04-30
Date Tested:	2013-04-30
Date Completed:	2013-05-01
Next Due Date:	2014-04-30
Page:	1 of 1

ATTN: Mr. W.K Tang

Certificate of Calibration

Item for calibration:

Description	: RS232 Integral Vane Digital Anemometer
Manufacturer	: AZ Instrument
Model No.	: AZ8904
Serial No.	: 974835
Equipment No.	: A-03-03
•	

Test conditions:

Room Temperature Relative Humidity Pressure : 21 degree Celsius : 66% : 101.1 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.

PATRICK TSE Laboratory Manager

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1 of 1

TEST REPORT

Test Report No .: C/N/130104 **Cinotech Consultants Limited** APPLICANT: Date of Issue: Room 1710, Technology Park, 2013-01-05 Date Received: 2013-01-04 18 On Lai Street, Date Tested: 2013-01-04 Shatin, NT, Hong Kong Date Completed: 2013-01-05 Next Due Date: 2014-01-04

ATTN: Mr. W. K. Tang

Certificate of Calibration

Item for calibration:

Description Manufacturer Model No. Serial No. Microphone No. Equipment No.

Test conditions:

Room Temperatre Relative Humidity : 'SVANTEK' Integrating Sound Level Meter : SVANTEK : SVAN 955 : 14303 : 35222 : N-08-05

: 22 degree Celsius : 59%

Page:

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	

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

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PATRICK TSE Laboratory Manager

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TEST REPORT				
APPLICANT:	Cinotech Consultants L	imited	Test Report No.:	C/N/121005/1
	Room 1710, Technology	[,] Park,	Date of Issue:	2012-10-07
	18 On Lai Street,		Date Received:	2012-10-05
	Shatin, NT, Hong Kong		Date Tested:	2012-10-05
			Date Completed:	
			Next Due Date:	2013-10-06
ATTN:	Mr. W.K. Tang		Page:	1 of 1
Item for calibr				
	Description		al Calibrator	
	Manufacturer	: SVANTE	έ K	
	Model No.	: SV30A		
	Serial No.	: 24803 : N-09-03		
	Equipment No.	; IN-09-05		
Test conditions	s:			
	Room Temperatre Relative Humidity	: 23 degree : 64%	e Celsius	
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:				

F

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

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PATRICK TSE Laboratory Manager

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TEST REPORT Test Report No.: C/N/131004/1 **Cinotech Consultants Limited APPLICANT:** Date of Issue: 2013-10-05 Room 1710, Technology Park, Date Received: 2013-10-04 18 On Lai Street, Date Tested: 2013-10-04 Shatin, NT, Hong Kong Date Completed: 2013-10-05 2014-10-04 Next Due Date: 1 of 1 Page: Mr. W.K. Tang ATTN: Item for calibration: : Acoustical Calibrator Description : SVANTEK Manufacturer : SV30A Model No. Serial No. : 24803 : N-09-03 Equipment No. **Test conditions:** : 21 degree Celsius Room Temperatre **Relative Humidity** : 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	$114.0 \pm 0.1 \text{ dB}$

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

PATRICK TSE Laboratory Manager

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APPENDIX C ENVIRONMENTAL MONITORING SCHEDULE

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 October 2013

			Thursday	Friday	Saturday
	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
		1 hr TSP	1 hr TSP		
			24 hr TSP		
7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oc
1 hr TSP Noise	1 hr TSP			1 hr TSP	
		24 hr TSP			
14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	1 hr TSP Noise 24 hr TSP		1 hr TSP	1 hr TSP	
21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oc
1 hr TSP Noise 24 hr TSP	1 hr TSP	1 hr TSP			24 hr TSP
					2.1.1.101
28-Oct	29-Oct	30-Oct	31-Oct		
1 hr TSP Noise		1 hr TSP	1 hr TSP		
	1 hr TSP Noise 14-Oct 21-Oct 1 hr TSP Noise 24 hr TSP 28-Oct 1 hr TSP	1 hr TSP Noise1 hr TSP1 hr TSP Noise1 hr TSP Noise21-Oct22-Oct1 hr TSP Noise1 hr TSP24 hr TSP1 hr TSP Noise24 hr TSP1 hr TSP Noise28-Oct29-Oct1 hr TSP Noise1 hr TSP Noise	$\begin{array}{c c c c c c c }\hline & & & & & & & & & & & & & & & & & & &$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

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

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 November 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Nov	2-Nov
			<i>(</i>))			
3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov
		1 hr TSP	1 hr TSP	1 hr TSP		
			Noise			
				24 hr TSP		
10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov
	1 hr TSP			1 hr TSP	1 hr TSP	
	Noise			1 11 151	1 11 151	
			24 hr TSP			
17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov
		1 hr TSP	1 hr TSP	1 hr TSP		
		Noise	1 11 1 51	1 11 151		
		24 hr TSP				
24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov
24-N0V	23-1NOV	20-INOV	27-NOV	28-1NOV	29-INOV	30-INOV
	1 hr TSP			1 hr TSP	1 hr TSP	
	Noise					
	24 hr TSP					24 hr TSP

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 Time Condition Temp. (K) Pressure (Pa) Initial Final weight (g) Initial Final Time(hrs.) Initial Final (m³/min) (m³/	Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elaps	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
3-Oct-13 09:00 Sunny 298.4 763.2 3.5953 3.6008 0.0055 19884.1 19885.1 1.0 1.22 1.22 1.22 7.3.3 75 7-Oct-13 13:45 Sunny 303.9 755.2 3.7538 3.7679 0.0141 1990.1 1.0 1.21 1.21 1.21 1.21 73.3 75 8-Oct-13 09:00 Sunny 299.3 758.8 3.7640 3.7803 0.0163 19910.1 1901.1 1.0 1.22 1.22 1.22 73.0 223 11-Oct-13 09:00 Sunny 302.6 759.5 3.7450 3.7491 0.0041 19936.1 1.0 1.21 1.21 1.21 7.2 7.6 15-Oct-13 09:00 Sunny 299.7 762.8 3.7495 3.7655 0.0070 19936.1 19937.1 1.0 1.23 1.23 1.23 7.3 7.3 16-Oct-13 09:00 Sunny 296.3 767.8	Date	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
7-Oct-13 13:45 Sunny 303.9 755.2 3.7538 3.7679 0.0141 1990.1 1.0 1.21 1.21 1.21 72.3 195 8-Oct-13 09:00 Sunny 299.3 758.8 3.7640 3.7803 0.0163 19910.1 19911.1 1.0 1.22 1.22 1.22 1.22 73.0 223 11-Oct-13 09:00 Sunny 302.6 759.5 3.7450 3.7491 0.0041 19935.1 19936.1 1.0 1.21 1.21 1.21 72.7 56 15-Oct-13 09:00 Sunny 299.7 762.8 3.7495 3.7565 0.0070 19936.1 19937.1 1.0 1.22 1.22 1.22 73.1 96 17-Oct-13 09:00 Sunny 296.3 767.8 3.7609 3.7634 0.0025 19961.1 19962.1 1.0 1.23 1.23 73.7 3.7 36 18-Oct-13 09:00 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 1906.1 1.0	2-Oct-13	09:00	Sunny	300.1	762.7	3.6549	3.6617	0.0068	19883.1	19884.1	1.0	1.22	1.22	1.22	73.1	93
8-Oct-13 09:00 Sunny 299.3 758.8 3.7640 3.7803 0.0163 19910.1 19911.1 1.0 1.22 1.22 1.22 1.22 73.0 223 11-Oct-13 09:00 Sunny 302.6 759.5 3.7450 3.7491 0.0041 19935.1 19936.1 1.0 1.21 1.21 1.21 72.7 56 15-Oct-13 09:00 Sunny 299.7 762.8 3.7495 3.7565 0.0070 19936.1 19937.1 1.0 1.22 1.22 1.22 73.1 96 17-Oct-13 09:00 Sunny 299.7 762.8 3.7609 3.7634 0.0025 19961.1 19962.1 1.0 1.23 1.23 1.23 73.7 34 18-Oct-13 09:00 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 1996.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 14:.00 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 1998.1	3-Oct-13	09:00	Sunny	298.4	763.2	3.5953	3.6008	0.0055	19884.1	19885.1	1.0	1.22	1.22	1.22	73.3	75
11-Oct-13 09:00 Sunny 302.6 759.5 3.7450 3.7491 0.0041 19935.1 19936.1 1.0 1.21 1.21 1.21 72.7 56 15-Oct-13 09:00 Sunny 299.7 762.8 3.7495 3.7565 0.0070 19936.1 19937.1 1.0 1.22 1.22 1.22 73.1 96 17-Oct-13 09:00 Sunny 296.3 767.8 3.7609 3.7634 0.0025 19961.1 19962.1 1.0 1.23 1.23 1.23 73.7 34 18-Oct-13 09:00 Sunny 297.1 767.1 3.7730 3.7808 0.0078 19962.1 19963.1 1.0 1.23 1.23 1.23 73.6 106 21-Oct-13 08:30 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 1906.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 14:.00 Sunny 300.4 762.6 3.6418 3.6499 0.0081 1998.1 1990.1 1.0	7-Oct-13	13:45	Sunny	303.9	755.2	3.7538	3.7679	0.0141	19909.1	19910.1	1.0	1.21	1.21	1.21	72.3	195
15-Oct-13 09:00 Sunny 299.7 762.8 3.7495 3.7565 0.0070 19936.1 19937.1 1.0 1.22 1.22 1.22 7.3.1 96 17-Oct-13 09:00 Sunny 296.3 767.8 3.7609 3.7634 0.0025 19961.1 19962.1 1.0 1.23 1.23 1.23 7.3.7 34 18-Oct-13 09:00 Sunny 297.1 767.1 3.7730 3.7808 0.0078 19962.1 19963.1 1.0 1.23 1.23 1.23 7.3.6 106 21-Oct-13 08:30 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 1.0 1.23 1.23 1.23 7.3.6 166 22-Oct-13 14:.00 Sunny 300.4 762.6 3.6418 3.6499 0.0081 19989.1 1.0 1.22 1.22 1.22 7.3.0 111 23-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19989.1 1990.1 1.0 1.23 1.23 <td>8-Oct-13</td> <td>09:00</td> <td>Sunny</td> <td>299.3</td> <td>758.8</td> <td>3.7640</td> <td>3.7803</td> <td>0.0163</td> <td>19910.1</td> <td>19911.1</td> <td>1.0</td> <td>1.22</td> <td>1.22</td> <td>1.22</td> <td>73.0</td> <td>223</td>	8-Oct-13	09:00	Sunny	299.3	758.8	3.7640	3.7803	0.0163	19910.1	19911.1	1.0	1.22	1.22	1.22	73.0	223
17-Oct-13 09:00 Sunny 296.3 767.8 3.7609 3.7634 0.0025 19961.1 19962.1 1.0 1.23 1.23 1.23 73.7 34 18-Oct-13 09:00 Sunny 297.1 767.1 3.7730 3.7808 0.0078 19962.1 19963.1 1.0 1.23 1.23 1.23 73.6 106 21-Oct-13 08:30 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 19964.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 14:.00 Sunny 300.4 762.6 3.6418 3.6499 0.0081 1998.1 1999.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19989.1 1990.1 1.0 1.23 1.23 1.23 73.6 160 28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 2014.1 2015.1 1.0	11-Oct-13	09:00	Sunny	302.6	759.5	3.7450	3.7491	0.0041	19935.1	19936.1	1.0	1.21	1.21	1.21	72.7	56
18-Oct-13 09:00 Sunny 297.1 767.1 3.7730 3.7808 0.0078 19962.1 19963.1 1.0 1.23 1.23 1.23 1.23 73.6 106 21-Oct-13 08:30 Sunny 296.4 764.9 3.7582 3.7704 0.0122 19963.1 19964.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 14:.00 Sunny 300.4 762.6 3.6418 3.6499 0.0081 19989.1 1.0 1.22 1.22 1.22 73.0 111 23-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19989.1 1990.1 1.0 1.23 1.23 1.23 73.6 160 28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 20014.1 2015.1 1.0 1.23 1.23 1.23 73.5 46 30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6688 0.0096 22015.1 22016.1 1.0	15-Oct-13	09:00	Sunny	299.7	762.8	3.7495	3.7565	0.0070	19936.1	19937.1	1.0	1.22	1.22	1.22	73.1	96
21-Oct-13 08:30 Sunný 296.4 764.9 3.7582 3.7704 0.0122 19963.1 19964.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 14:00 Sunny 300.4 762.6 3.6418 3.6499 0.0081 19988.1 1998.1 1.0 1.23 1.23 1.23 73.6 166 22-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19989.1 1990.1 1.0 1.23 1.23 1.23 73.6 160 28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 20014.1 20015.1 1.0 1.23 1.23 1.23 73.5 46 30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6688 0.0096 22015.1 2016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0	17-Oct-13	09:00	Sunny	296.3	767.8	3.7609	3.7634	0.0025	19961.1	19962.1	1.0	1.23	1.23	1.23	73.7	34
22-Oct-13 14:.00 Sunný 300.4 762.6 3.6418 3.6499 0.0081 19989.1 19989.1 1.0 1.22 1.22 1.22 73.0 111 23-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19989.1 1990.1 1.0 1.23 1.23 1.23 73.6 160 28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 20014.1 20015.1 1.0 1.23 1.23 1.23 73.5 46 30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6688 0.0096 22015.1 22016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 1.22 1.22 1.22 73.2 115 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 <td>18-Oct-13</td> <td>09:00</td> <td>Sunny</td> <td>297.1</td> <td>767.1</td> <td>3.7730</td> <td>3.7808</td> <td>0.0078</td> <td>19962.1</td> <td>19963.1</td> <td>1.0</td> <td>1.23</td> <td>1.23</td> <td>1.23</td> <td>73.6</td> <td>106</td>	18-Oct-13	09:00	Sunny	297.1	767.1	3.7730	3.7808	0.0078	19962.1	19963.1	1.0	1.23	1.23	1.23	73.6	106
23-Oct-13 09:00 Sunny 296.2 764.4 3.6956 3.7074 0.0118 19980.1 19990.1 1.0 1.23 1.23 1.23 73.6 160 28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 20014.1 20015.1 1.0 1.23 1.23 1.23 73.5 46 30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6668 0.0096 22015.1 22016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 1.22 1.22 1.22 73.2 115 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 1.22 1.22 1.22 73.2 115 Min 34 34 34 34 34 34 34 34 34	21-Oct-13	08:30	Sunny	296.4	764.9	3.7582	3.7704	0.0122	19963.1	19964.1	1.0	1.23	1.23	1.23	73.6	166
28-Oct-13 09:00 Sunny 296.2 767.5 3.6332 3.6366 0.0034 20014.1 20015.1 1.0 1.23 1.23 1.23 73.5 46 30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6668 0.0096 22015.1 22016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 1.22 1.22 1.22 73.2 115 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 2017.1 1.0 1.22 1.22 73.2 115	22-Oct-13	14:.00	Sunny	300.4	762.6	3.6418	3.6499	0.0081	19988.1	19989.1	1.0	1.22	1.22	1.22	73.0	111
30-Oct-13 09:00 Sunny 296.9 766.4 3.6572 3.6668 0.0096 22015.1 22016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 1.0 1.22 1.22 1.22 73.4 131 31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 1.0 1.22 1.22 1.22 73.2 115 Min 34	23-Oct-13	09:00	Sunny	296.2	764.4	3.6956	3.7074	0.0118	19989.1	19990.1	1.0	1.23	1.23	1.23	73.6	160
31-Oct-13 09:00 Sunny 298.5 765.9 3.6039 3.6123 0.0084 22016.1 22017.1 1.0 1.22 1.22 1.22 73.2 115 Min 34	28-Oct-13	09:00	Sunny	296.2	767.5	3.6332	3.6366	0.0034	20014.1	20015.1	1.0	1.23	1.23	1.23	73.5	46
Min 34	30-Oct-13	09:00	Sunny	296.9	766.4	3.6572	3.6668	0.0096	22015.1	22016.1	1.0	1.22	1.22	1.22	73.4	131
	31-Oct-13	09:00	Sunny	298.5	765.9	3.6039	3.6123	0.0084	22016.1	22017.1	1.0	1.22	1.22	1.22	73.2	115
															Min	34

Max 223 Average 115

Station CAM2

Heng Hing Printing Centre

Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
Date	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
2-Oct-13	09:00	Sunny	300.1	762.7	3.6505	3.6591	0.0086	29058.3	29059.3	1.0	1.22	1.22	1.22	73.5	117
3-Oct-13	09:00	Sunny	298.4	763.2	3.6334	3.6393	0.0059	29059.3	29060.3	1.0	1.23	1.23	1.23	73.7	80
7-Oct-13	14:00	Sunny	303.9	755.2	3.6039	3.6186	0.0147	29084.3	29085.3	1.0	1.21	1.21	1.21	72.7	202
8-Oct-13	09:00	Sunny	299.3	758.8	3.5882	3.6044	0.0162	29085.3	29086.3	1.0	1.22	1.22	1.22	73.4	221
11-Oct-13	09:00	Sunny	302.6	759.5	3.7454	3.7516	0.0062	29110.3	29111.3	1.0	1.22	1.22	1.22	73.0	85
15-Oct-13	09:00	Sunny	299.7	762.8	3.7547	3.7623	0.0076	29111.3	29112.3	1.0	1.23	1.22	1.23	73.5	103
17-Oct-13	09:00	Sunny	296.3	767.8	3.7564	3.7619	0.0055	29136.3	29137.3	1.0	1.24	1.24	1.24	74.1	74
18-Oct-13	09:00	Sunny	297.1	767.1	3.7682	3.7786	0.0104	29137.3	29138.3	1.0	1.23	1.23	1.23	74.0	141
21-Oct-13	09:00	Sunny	296.4	764.9	3.7727	3.7850	0.0123	29138.3	29139.3	1.0	1.23	1.23	1.23	74.0	166
22-Oct-13	14:00	Sunny	300.4	762.6	3.7800	3.7919	0.0119	29163.3	29164.3	1.0	1.22	1.22	1.22	73.4	162
23-Oct-13	09:00	Sunny	296.2	764.4	3.7525	3.7692	0.0167	29164.3	29165.3	1.0	1.23	1.23	1.23	74.0	226
28-Oct-13	09:00	Sunny	296.2	767.5	3.5903	3.5957	0.0054	29189.3	29190.3	1.0	1.23	1.23	1.23	73.7	73
30-Oct-13	09:00	Sunny	296.9	766.4	3.6540	3.6623	0.0083	29190.3	29191.3	1.0	1.23	1.23	1.23	73.6	113
31-Oct-13	09:00	Sunny	298.5	765.9	3.7389	3.7498	0.0109	29191.3	29192.3	1.0	1.22	1.22	1.22	73.4	149
														Min	73

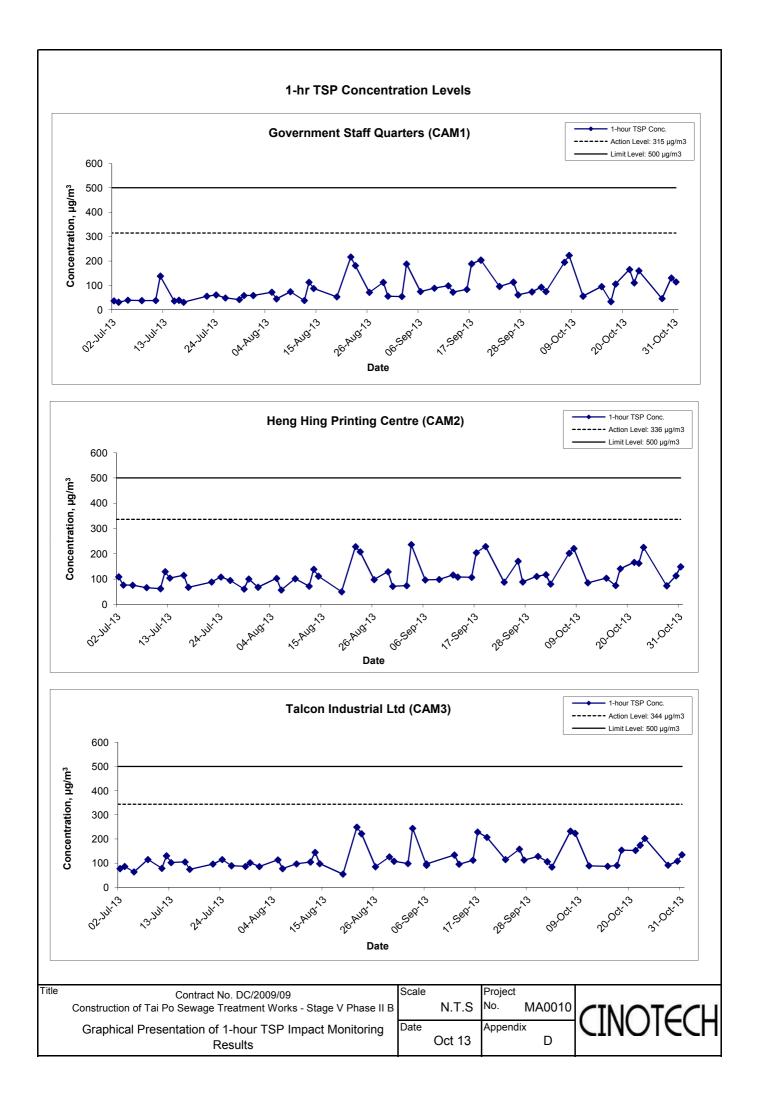
Appendix D - 1-hour TSP Monitoring Results

Station CAM3

Talcon Industrial Ltd

Date	Sampling	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
Dale	Time	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
2-Oct-13	09:00	Sunny	300.1	762.7	3.6617	3.6695	0.0078	22292.9	22293.9	1.0	1.22	1.22	1.22	73.5	106
3-Oct-13	09:00	Sunny	298.4	763.2	3.6418	3.6480	0.0062	22293.9	22294.9	1.0	1.23	1.23	1.23	73.7	84
7-Oct-13	14:00	Sunny	303.9	755.2	3.6085	3.6254	0.0169	22318.9	22319.9	1.0	1.21	1.21	1.21	72.7	233
8-Oct-13	09:00	Sunny	299.3	758.8	3.6098	3.6262	0.0164	22319.9	22320.9	1.0	1.22	1.22	1.22	73.4	223
11-Oct-13	09:00	Sunny	302.6	759.5	3.7471	3.7536	0.0065	22344.9	22345.9	1.0	1.22	1.22	1.22	73.0	89
15-Oct-13	09:00	Sunny	299.7	762.8	3.7536	3.7600	0.0064	22345.9	22346.9	1.0	1.23	1.23	1.23	73.5	87
17-Oct-13	09:00	Sunny	296.3	767.8	3.7747	3.7814	0.0067	22370.9	22371.9	1.0	1.24	1.24	1.24	74.2	90
18-Oct-13	09:00	Sunny	297.1	767.1	3.7727	3.7841	0.0114	22371.9	22372.9	1.0	1.23	1.23	1.23	74.1	154
21-Oct-13	09:00	Sunny	296.4	764.9	3.7712	3.7825	0.0113	22372.9	22373.9	1.0	1.23	1.23	1.23	74.0	153
22-Oct-13	14:00	Sunny	300.4	762.6	3.7880	3.8008	0.0128	22397.9	22398.9	1.0	1.22	1.22	1.22	73.4	174
23-Oct-13	09:00	Sunny	296.2	764.4	3.7423	3.7573	0.0150	22398.9	22399.9	1.0	1.23	1.23	1.23	74.0	203
28-Oct-13	09:00	Sunny	296.2	767.5	3.6430	3.6497	0.0067	22423.9	22424.9	1.0	1.22	1.22	1.22	73.1	92
30-Oct-13	09:00	Sunny	296.9	766.4	3.6374	3.6453	0.0079	22424.9	22425.9	1.0	1.22	1.22	1.22	73.0	108
31-Oct-13	09:00	Sunny	298.5	765.9	3.7489	3.7587	0.0098	22425.9	22426.9	1.0	1.21	1.21	1.21	72.7	135
														Min	84

Min 84 Max 233 Average 138



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	eight (g)	Particulate	Elapse	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m³)
3-Oct-13	Sunny	298.6	763.0	3.6581	3.8803	0.2222	19885.1	19909.1	24.0	1.22	1.22	1.22	1758.4	126
9-Oct-13	Sunny	299.9	759.9	3.7433	3.8406	0.0973	19911.1	19935.1	24.0	1.22	1.22	1.22	1751.5	56
15-Oct-13	Sunny	299.9	762.6	3.7367	3.9529	0.2162	19937.1	19961.1	24.0	1.22	1.22	1.22	1754.4	123
21-Oct-13	Sunny	296.6	764.7	3.6874	3.8871	0.1997	19964.1	19988.1	24.0	1.23	1.23	1.23	1765.8	113
26-Oct-13	Sunny	294.3	767.5	3.6769	3.9176	0.2407	19990.1	20014.1	24.0	1.23	1.23	1.23	1770.5	136
													Min	56
													Max	136
													Average	111

Station CAM2 Heng Hing Printing Centre

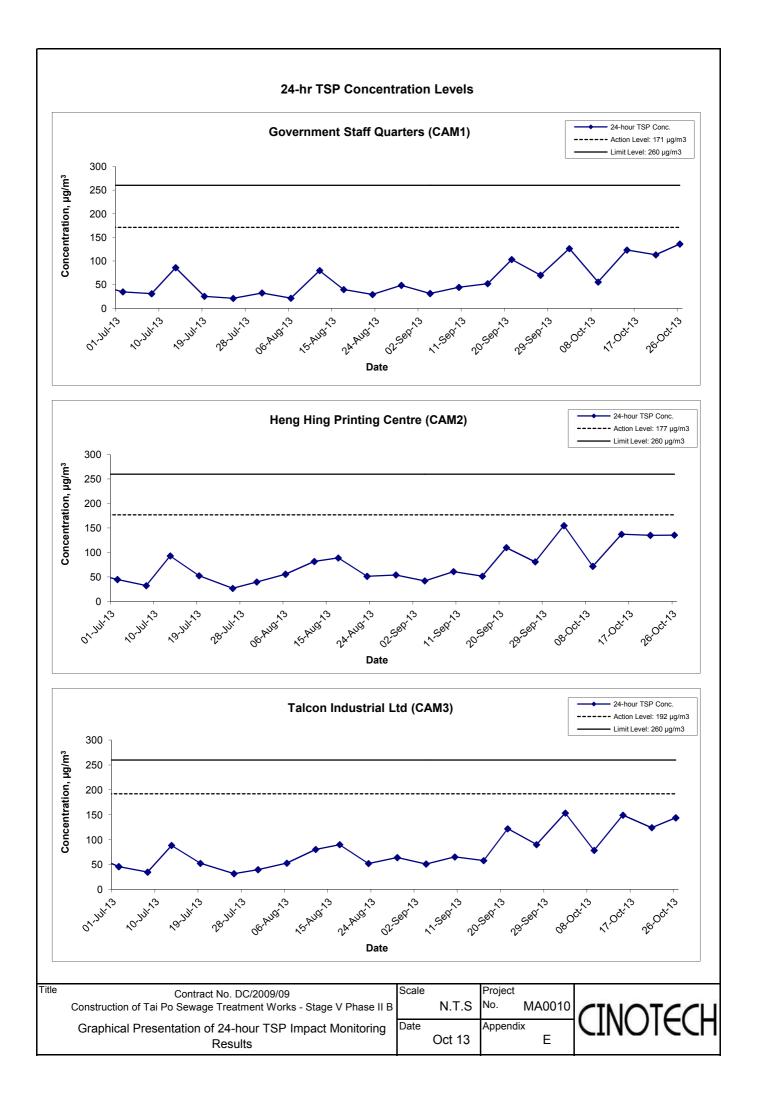
Start Date	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elaps	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m³)
3-Oct-13	Sunny	298.6	763.0	3.7521	4.0258	0.2737	29060.3	29084.3	24.0	1.23	1.23	1.23	1767.5	155
9-Oct-13	Sunny	299.9	759.9	3.7397	3.8659	0.1262	29086.3	29110.3	24.0	1.22	1.22	1.22	1760.6	72
15-Oct-13	Sunny	299.9	762.6	3.7514	3.9933	0.2419	29112.3	29136.3	24.0	1.22	1.22	1.22	1763.5	137
21-Oct-13	Sunny	296.6	764.7	3.7676	4.0072	0.2396	29139.3	29163.3	24.0	1.23	1.23	1.23	1774.8	135
26-Oct-13	Sunny	294.3	767.5	3.6668	3.9072	0.2404	29165.3	29189.3	24.0	1.23	1.23	1.23	1774.7	135
													Min	72
													Max	155
													Average	127

Station CAM3

Talcon Industrial Ltd

Start Date	Weather	Air	Atmospheric	Filter W	eight (g)	Particulate	Elaps	e Time	Sampling	Flow Rate	e (m ³ /min.)	Av. flow	Total vol.	Conc.
Start Date	Condition	Temp. (K)	Pressure (Pa)	Initial	Final	weight (g)	Initial	Final	Time(hrs.)	Initial	Final	(m ³ /min)	(m ³)	(µg/m ³)
3-Oct-13	Sunny	298.6	763.0	3.7640	4.0351	0.2711	22294.9	22318.9	24.0	1.23	1.23	1.23	1768.2	153
9-Oct-13	Sunny	299.9	759.9	3.7356	3.8736	0.1380	22320.9	22344.9	24.0	1.22	1.22	1.22	1760.8	78
15-Oct-13	Sunny	299.9	762.6	3.7613	4.0244	0.2631	22346.9	22370.9	24.0	1.23	1.22	1.22	1763.9	149
21-Oct-13	Sunny	296.6	764.7	3.7295	3.9496	0.2201	22373.9	22397.9	24.0	1.23	1.23	1.23	1776.1	124
26-Oct-13	Sunny	294.3	767.5	3.6717	3.9249	0.2532	22399.9	22423.9	24.0	1.22	1.22	1.22	1760.2	144
						-	-					-	Min	78
													Max	153

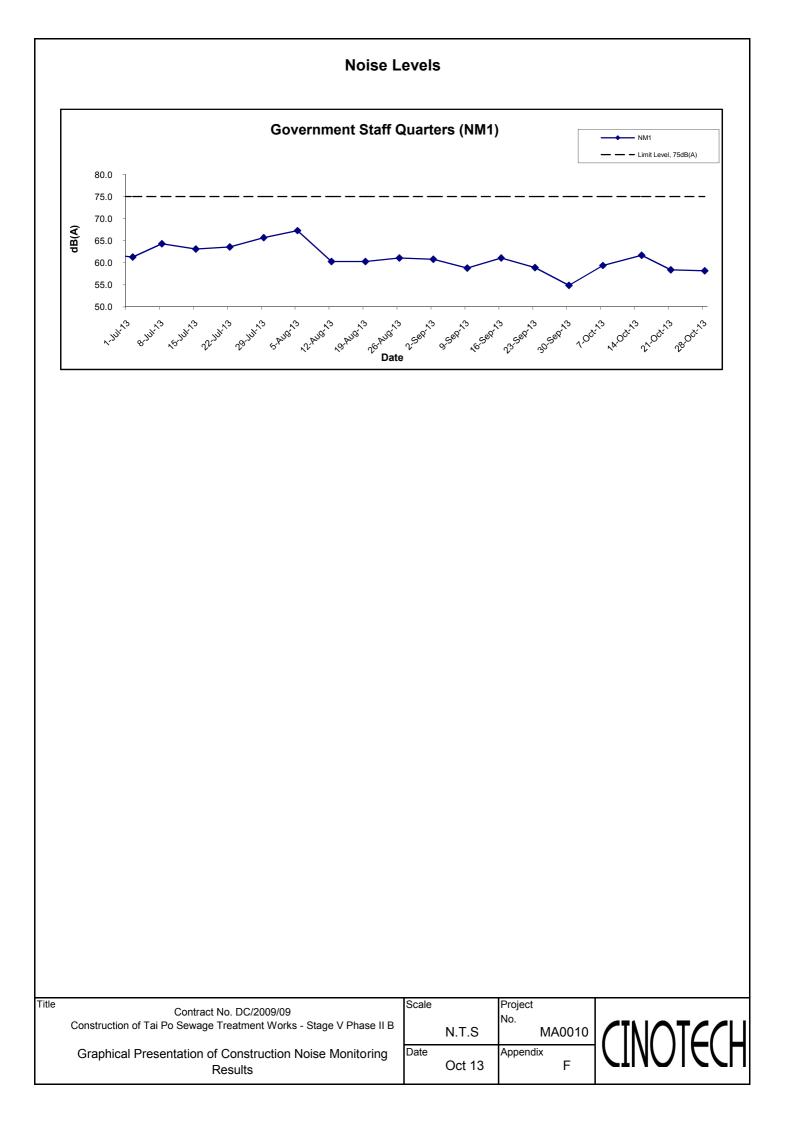
Average 130



APPENDIX F NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - Noise Monitoring Results

Location NM1	- Governme	ent Staff Quart	ters		
Data	Time		dE	8 (A) (30-min))
Date	Time	Weather	L _{eq}	L ₁₀	L ₉₀
7-Oct-13	13:45	Fine	59.4	60.1	56.6
15-Oct-13	13:00	Sunny	61.7	63.0	56.4
21-Oct-13	09:00	Sunny	58.4	59.7	54.8
28-Oct-13	09:00	Sunny	58.2	60.4	54.7
		Average	59.7	60.8	55.6
		Minimum	58.2	59.7	54.7
		Maximum	61.7	63.0	56.6



APPENDIX G SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: October 2013

- 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 H SITE AUDIT SUMMARY

Checklist Reference Number	131004	
Date	4 October 2013 (Friday)	
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	
131004-R02	• Stand water was observed near tank no. 11. The contractor was reminded to clear the stand water.	B 12
	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.	
131004-R01	 Part E - Waste / Chemical Management Construction materials were observed to accumulate near tank no. 9. The contractor was reminded to clear the construction material and dispose of properly. 	E 4ii
	Part F - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part G – Reminder	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	Follow-up on previous audit section (Ref. No.:130927), all environmental deficiencies have been rectified by the contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam	Kurl	4 October 2013
Checked by	Dr. Priscilla Choy	WF	4 October 2013

Checklist Reference Number	131011	
Date	11 October 2013 (Friday)	
Time	10:00-10:45	

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

Ref. No.	Remarks/Observations	Related Iten No.
	Part B - Water Quality	
	• No environmental deficiency was identified during the site inspection.	
	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.	
	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	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	Follow-up on previous audit section (Ref. No.:131004), all environmental deficiencies were observed to be improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam	Kerrel	21 October 2013
Checked by	Dr. Priscilla Choy	WZ	21 October 2013

Checklist Reference Number	131018	
Date	18 October 2013 (Friday)	
Time	10:00-11:00	and the second

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

Ref. No.	Remarks/Observations	Related Item
	Part B - Water Quality	110.
131018-R01	• Stand water in idle sedimentation tank should be cleared.	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.	
	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	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	Follow-up on previous audit section (Ref. No.:131011), all environmental deficiencies were observed to be improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Edmond Put	tu	22 October 2013
Checked by	Dr. Priscilla Choy	WEL	22 October 2013

Checklist Reference Number	131025	
Date	25 October 2013 (Friday)	
Time	10:00-11:00	

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

Ref. No.	Remarks/Observations	Related Iten No.
	Part B - Water Quality	
	• No environmental deficiency was identified during the site inspection.	
	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. 	
	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	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	Follow-up on previous audit section (Ref. No.:131018), all environmental deficiencies were observed to be improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Edmond Put	to	28 October 2013
Checked by	Dr. Priscilla Choy	WI	28 October 2013

Checklist Reference Number	131030	
Date	30 October 2013 (Wednesday)	
Time	10:00-11:00	

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

Ref. No.	Remarks/Observations	Related Item
		No.
	Part B - Water Quality	
131030-R01	• Stand water near FC 2B and 4B should be cleared.	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.	
	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	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	Follow-up on previous audit section (Ref. No.:131018), all environmental deficiencies were observed to be improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Edmond Put	les-	1 November 2013
Checked by	Dr. Priscilla Choy	WI	1 Novermber 2013

APPENDIX I EVENT ACTION PLANS

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

APPENDIX I (2) – Event Action Plan for Construction Noise Monitoring (Construction Phase)

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

APPENDIX I (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 J UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

Type of Impact	Recommended Mitigation Measures	Status
Air Quality	Dust mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation shall be incorporated to control dust emission. Notice shall be given to authority prior to commencing of work	\checkmark
Noise	Use of quiet PME	N/A
	 Good Site Practice Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; Mobile plant, if any, should be sited as far from NSRs as possible; Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	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.	√

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

Type of Impact	Recommended Mitigation Measures	Status
	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.	V
	 Precautionary measures to minimize landfill gas hazard during excavation: No smoking or burning shall be allowed No worker shall work alone at any time in the confined space or any excavation trenches Construction equipment shall be equipped with a vertical exhaust at least 0.6 m above ground level and /or with a park arrestors Electrical motors and electrical extension cords shall be explosive-proof or intrinsically safe Permit to Work procedures to be adopted for welding, flame cutting or other hot works in trenches or confined spaces Forced ventilation if working in a trench deeper than 1 m Close all valves immediately after piping assembly or conduiting construction. For the large diameter pipes, pipe end shall be capped on one side. Forced ventilation shall also be provided before commissioning of the pipeline and staff entering and working in it Routine monitoring shall be conducted in all excavations to ensure the works shall be included in the Safety Plan Monitoring shall be conducted at the cracks on the ground floor during ground-works construction 	~
	 Where there are any temporary site offices, or any other buildings which have enclosed spaces with the capacity to accumulate landfill gas, then they should either: be located on an area which has been proven to be free of landfill gas (by survey with portable gas detectors) and monitored manually by the Safety Officer or an approved wand appropriately qualified person to ensure that hazardous concentration of landfill gas does not occur; or be raised clear of the ground. If buildings are raised clear of the ground, a minimum, clear separation (as measured from the highest point on the ground surface to the underside of lowest floor joist) should be 500mm 	V

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

APPENDIX K WASTE GENERATION IN THE REPORTING MONTH Name of Department: DSD

Contract No.: DC/2009/09

(Notes: The following Waste Flow Table should be used for contracts either not included under the Pay for Safety and Environment Scheme or exempted from the full requirement for environmental management)

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		Actual Quantities	of Inert C&D Mat	erials Generated	Monthly		Actual Quantities of C&D Wastes Generated Monthly					
Month	Total Quantity Generated	al Quantity Broken Concrete Reused in the		Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastic (see Note 2)	Chemical Waste	Others, e.g. general refuse	
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)	
Jan	1.031	0	0	0	1.031	0	0.8	0	0	0	0.01	
Feb	2.255	0	0	0	2.255	0	0	0	.0	0	0.01	
Mar	1.620	0	0	0	1.620	0	0	0	0	0	0.01	
Apr	0.004	0	0	0	0.004	0	0	0	0	0	0.01	
May	0	0	0	0	0	0	0	0	0	0	0.02	
June	0	0	0	0	0	0	0	0	0	0	0.01	
Sub-total	4.910	0	0	0	4.910	0	0.8	0	0	0	0.07	
July	0	0	0	0	0	0	0	0	0	0.03	0.01	
Aug	0	0	0	0	0	0	0	0	0	0	0.01	
Sept	0	0	0	0	0	0	0.1	0	0	0	0.01	
Oct	0.003	0	0	0	0.003	0	0.1	0	0	0	0.01	
Nov												
Dec												
Total	4.913	0	0	0	4.913	0	1.0	0	0	0.03	0.11	

Waste Flow Table

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 L COMPLAINT LOG

APPENDIX L – COMPLAINT LOG

Reporting Month: October 2013

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

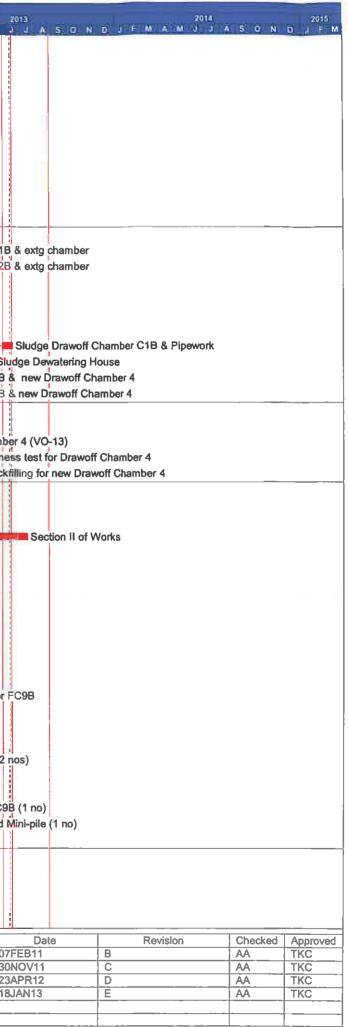
Remarks: No environmental complaint was received in the reporting month.

APPENDIX M CONSTRUCTION PROGRAMME

Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	2010 FMAMJJASONDJFMAMJJASONDJFMAMJJASONDJF	2013 MAMJJA5
General							
4000	Presenting of Other						
1000	Possession of Site	0		28JAN10		Possession of Site	
10000	Completion of Section I of Works (365+12d) Completion of Section II of Works (460d)	0		09FEB11 24DEC12		Completion of Section I of Works (365+12d)	letion of Section II of
30000	Completion of Section III of Works (4000)	0		13MAR12		Completion of Section III of Works (67	
40000	Completion of Section IV of Works (365+14d)	0		11FEB11		Completion of Section IV of Works (365+14d)	, o. 110/
50000	Completion of Section V of Works (1185d)	0	1	27APR13			Completion of
60000	T&C for FC11B & FC12B by E&MP	60	150CT12	10JAN13		T&C 1	for FC11B & FC12B I
60010	Notice on Suspension of Aeration Tank No. 4			27JAN13	-595d	Not	tice on Suspension of
60020	Notice on Suspension of Extg Chlorination House			27FEB13	-1d		Notice on Suspensio
60030	Notice on Suspension of Gas Holder Tank No. 2	10	18FEB13	27FEB13	-1d		Notice on Suspensio
60040	Takeover of Bio-gas Holding Tank Support Area	10	01MAY13	10MAY13	-58d		Takeover of I
60050	Notice on Functioning of FC7B ~ FC12B	10	15JUN13	24JUN13	-528d		Notice o
60060	Notice on Suspension of Aeration Tank No. 1-3	10	13SEP13	22SEP13	-618d		
1010	Site Clearance	20	20 14 140	27FEB10		Site Clearance	
1020	Contractor Site Office Set-up			31MAY10		Contractor Site Office Sel-up	
1030	Engineer's Accommodation			02JUN10		- Engineer's Accommodation	
1040	Initiat Survey			29MAR10		Initial Survey	
1050	Condition Survey			14JUN10		Condition Survey	
1060	Environmental Baseline Monitoring			22APR10		Environmental Baseline Monitoring	
1070	Replacing Floor Tile for Engineer's Accomodation			07OCT10		Replacing Floor Tile for Engineer's Accomodation	
Sutemas	Han her Arenne						
2010	Engineer's Green Roof			17SEP10		Engineer's Green Roof	
2020	Excavation and Lateral Support (ELS)			09JUL10		Excavation and Lateral Support (ELS)	
2030	Project Signboard (DELETED)			27DEC10		Project Signboard (DELETED)	
2040	Pile Load Test Set-up			20NOV10	-	Pile Load Test Set-up	
2050 2060	Falsewk & Fwk for Pile Cap Falsewk & Fwk for Wall Structure			19JUL10		Falsewk & Fwk for Pile Cap	
2060	Falsewk & Fwk for Top Slab			19JUL10 19JUL10		Falsewk & Fwk for Top Slab	
2070	Multi-part Cover			1930L10		Multi-part Cover	
2000	FRP Handrall, Stair & Floor			11JAN12		FRP Handrail, Stair & Floor	
2100	FRP Cover			11JAN12		FRP Cover	
2120	Green Roof System at Sludge Dewatering House			270CT11		Green Roof System at Sludge Dewatering House	
	Green Roof System at Transformer House			270CT11		Green Roof System at Transformer House	1 1 2 3 1 9
(Annual la	Asaliens						
3010	Casing for Mini-pile			19AUG10		Casing for Mini-pile	
3020	Casing for Replaced Socketted H-pile		and the state of the	19AUG10		Casing for Replaced Socketted H-pile	11 12 12 12 12 12
3030 3040	Steel Member for Socketted H-pile DI Water Pipe Puddle & Tee			30AUG10 29SEP10		Steel Member for Socketted H-pile	
	DI Water Pipeline			295EP10 295EP10		Di Water Pipeline	
	Steel Member for Shelter			23NOV10		Di Water Pipeline Steel Member for Shelter	8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
Section I o		001	2550210	23140 4 10	-		
Dillino 9	Werthick						
10001	Section I of Work (Substantial Completion)	365	29JAN10	25MAY11		Section I of Work (Substantial Completion)	
10010	Pre-drilling Works (18 nos)	45	10MAR10	31MAY10		Pre-drilling Works (18 nos)	
10020	Preliminary Pile	7	21SEP10	28SEP10		Preliminary Pile	
-	Load Test for Preliminary Pile	14 2	210CT10	30OCT10		Load Test for Preliminary Pile	
	Alternative Proposed Mini-piling (56 nos)		and the second se	08NOV10		Alternative Proposed Mini-piling (56 nos)	
-	Proof Drilling (4 nos)		and the second	27NOV10		Proof Drilling (4 nos)	
10060	Load Test for Main Pile (1 no)	14	26NOV10	07DEC10		Load Test for Main Pile (1 no)	
	Excavation for FC11B			29JAN11		Bile Meed Construction for EC11B	
	Pile Head Construction for FC11B Base Slab of FC11B			11FEB11 02MAR11		Pile Head Construction for FC11B	
		20	ITEO []	VENNARCE			
Start date Finish date	29JAN10 Early bar 25DEC13 Progress bar						07FEB11
Data date	18JAN13					TPSTW Stage 5 Phase 2B	30NOV11
Run date	20JAN13 Summany har					II OTH OUGO OT HOSE LD	23APR12
Page numb	era Systems, Inc.					Moster Brogram	18JAN13
	Finish milestone point					Master Program	
J- =							· · ·

2013	5 0 N	6) E		2014 J J A	5 0 N	2015 D J F M
Section II of	Works (4	460d)				
ompletion o	f Section	VofWo	rks (1185d)			
B & FC12B	by E&MF	>		,		
uspension o Suspensio				9		
Suspensio	on of Gas	Holder T	ank No. 2			
akeover of						
1					ank No. 1-	3
3 9 3 3 4						
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1						
8 3 3 2						
8 5 1 1						
			Deviat			
Date)7FEB11		В	Revision		Checked AA	Approved TKC
30NOV11 23APR12		C D	-		AA AA	TKC TKC
IBJAN13		E			AA	TKC

Act ID	Description	Orig Early Dur Start	Early Finish	Total Float	2010 2011 2012 2012 2012 2012 2012 2012
10140	Structural Wall for FC11B		15APR11		Structural Wall for FC11B
10150	Watertightness Test for FC11B	20 26APR11	19MAY11		Watertightness Test for FC11B
10160	Concrete Coating for FC11B		29AUG11		Concrete Coating for FC11B
10170	Backfilling for FC11B (Stage I)	20 20MAY11	15AUG11		Backfilling for FC11B (Stage I)
10180	Excavation for 12B	15 13JAN11	15MAR11		Excavation for 12B
10190	Pile Head Construction for FC12B	15 22FEB11	16MAR11		Pile Head Construction for FC12B
10200	Base Slab of FC12B	20 12MAR11	30MAR11		Base Slab of FC12B
10210	Structural Wall for FC12B	20 01APR11	25MAY11		Structural Wall for FC12B
10220	Watertightness Test for FC12B	20 03JUN11	15JUN11		Watertightness Test for FC12B
10230	Concrete Coating for FC12B	7 22AUG11	29AUG11		Concrete Coating for FC12B
10240	Backfilling for FC12B (Stage 1)	20 20JUN11	15AUG11		Backfilling for FC12B (Stage 1)
10250	Pillar Box for FC11B & FC12B	30 20JUL11	13AUG11		Pillar Box for FC11B & FC12B
	When a				
11010	DN700 DI Pipe % FC11B & extg chamber	50 17SEP12	170CT12		DN700 DI Pipe % FC11B
11020	DN700 DI Pipe % FC12B & extg chamber	50 17SEP12	170CT12		DN700 DI Pipe % FC12B
11030	Sludge Drawoff Chamber C2B-C3B & Pipework	30 13JUL10	28SEP10		Sludge Drawoff Chamber C2B-C3B & Pipework
11040	Sealing extg M/H E9 for sewer diversion	10 15FEB11	24FEB11		Sealing extg M/H E9 for sewer diversion
11050	Removal of extg DN900 conc. pipe	20 25FEB11	07JUN11		Removal of extg DN900 conc. pipe
11060	Removal of extg DN525 conc. pipe		04MAY11		Removal of extg DN525 conc. plpe
11070	Sludge Drawoff Chamber C1B & Pipework	20 28MAY13		-493d	
11080	Cable Ducting at Sludge Dewatering House	150 12MAY12			► Cable Ducting at Stu
11090	DN500 DI Pipe % FC11B & new Drawoff Chamber 4	30 10JAN12			DN500 DI Pipe % FC11B 8
11100	DN500 DI Pipe % FC12B & new Drawoff Chamber 4	30 10JAN12	050CT12		DN500 DI Pipe % FC12B 8
**********	i Cittan]	
12010	Demolition of extg Drawoff Chamber 4 (VO-13)	20 08DEC11			Demolition of extg Drawoff Chamber 4 (VO-13)
12020	Construction of new Drawoff Chamber 4 (VO-13)	90 23DEC11			Construction of new Drawoff Chambe
12025	Water-tightness test for Drawoff Chamber 4	14 18JAN13		86d	Water-tightnes
Section II	Backfilling for new Drawoff Chamber 4	30 19MAR13	17APR13	-433d	Backf
20001	Notification from Engineer	90 22SEP11	22SEP11		►I Notification from Engineer
20010	Section II of Works	460 22SEP11	15JUL13	-203d	
20020	Removal of extg Final Settlement Tank No. 7		10JAN11		Removal of extg Final Settlement Tank No. 7
	Removal of extg Final Settlement Tank No. 10		28MAR11		Removal of extg Final Settlement Tank No. 10
	Pre-drilling Works for FC78, 68 & 10B (27 nos)	45 12APR11			Pre-drilling Works for FC7B, 8B & 10B (27 nos)
	Removal of extg Final Settlement Tank No. 8	90 21FEB11			Removal of extg Final Settlement Tank No. 8
	Clearing extg Final Settlement Tank No. 9	7 120CT11			Clearing extg Final Settlement Tank No. 9
	Removal of extg Final Settlement Tank No. 9	90 14OCT11			Removal of extg Final Settlement Tank No. 9
	Pre-drilling Works for FC9B (9 nos)	45 20JAN12			Pre-drilling Works for FC9B (9 nos)
20090	Alternative Proposed Mini-piles for FC8B & FC10B		04NOV11		Alternative Proposed Mini-piles for FC8B & FC10B
	Alternative Proposed MinI-piles for FC7B	40 25NOV11			Alternative Proposed Mini-piles for FC7B
	Alternative Proposed Mini-piles for FC9B	40 16APR12			Alternative Proposed Mini-piles for F
	Proof Drilling for FC10B (2 nos)		22SEP11		Proof Drilling for FC10B (2 nos)
	Proof Drilling for FC8B (2 nos)	20 23NOV11			Proof Drilling for FC8B (2 nos)
	Proof Drilling for FC7B (2 nos)	14 21MAR12			Proof Drilling for FC/B (2 nos)
	Proof Drilling for FC98 (2 nos)	14 03SEP12			Load Test for extg Pile at FC8B & FC10B (2 nos)
20160	Load Test for extg Pile at FC8B & FC10B (2 nos)	20 30AUG11			Load Test for extg Pile at FC7B (1 no)
	Load Test for extg Pile at FC7B (1 no)	20 27SEP11			Load Test for extg Pile at FC/B (1 no)
	Load Test for extg Pile at FC9B (1 no)	10 13AUG12			Load Test for Altern. Proposed N
	Load Test for Altern. Proposed Mini-pile (1 no)	10 02AUG12			
friend Line	Pre-drilling Works for Washout Chamber (1 no)	14 19MAY10			Len Pre-drilling Works for Washout Chamber (1 no)
	Excavation for FC10B	30 27SEP11			Pile Head Construction for FC10B
	Pile Head Construction for FC10B	35 01NOV11			Base Slab for FC10B
	Base Slab for FC10B Structural Wall for FC10B	20 05DEC11			Base Stab for FC10B
		30 04AUG12	U85EP12		Structural vvalitor PC10B
Start date Finish date Data date Run date Page numb c Primave	era Systems, Inc.				TPSTW Stage 5 Phase 2B Master Program
	Finish milestone point				



Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	2010. . A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A
21050	Watertightness Test for FC10B	25	040CT12	120CT12		Watertightness Test
	Concrete Coating for FC10B			18JUN13	-186d	
	Backfilling for FC10B			06NOV12		Backfilling for FC
	Excavation for FC8B		28NOV11			Excavation for FC8B
	Pile Head Construction for FC8B		30JAN12			
	Base Slab for FC8B		20FEB12			Base Slab for FC8B
	Structural Wall for FC8B			17JUL12		Structural Wall for FC8B
	Watertightness Test for FC8B		03AUG12			Watertightness Test for
- +	Concrete Coating for FC8B		30MAY13	1	-186d	
	Backfilling for FC8B			06NOV12	-1000	
	Excavation for FC9B					Backfilling for FC
	Pile Head construction for FC9B		050CT12			Excavation f
			260CT12			
	Base Slab for FC9B		07NOV12		100.1	Base Sla
	Structural Wall for FC9B		17JAN13	16FEB13	-433d	
	Watertightness for FC98			13MAR13	-130d	
	Concrete Coating for FC98			29MAY13	-186d	
	Backfilling for FC9B			03MAY13	-130d	
	Excavation for FC7B	30	25JAN13	23FEB13	-221d	
	Pile Head Construction for FC7B	35	24FEB13	30MAR13	-221d	
240	Base Slab for FC7B	20	31MAR13	19APR13	-221d	
1250	Structural Wall for FC7B	30	20APR13	19MAY13	-221d	
260	Watertightness Test for FC7B		20MAY13		-221d	
270	Concrete Coating for FC7B	_	19JUN13		-186d	
280	Backfilling for FC7B			02AUG13		
2002	DN700 DI Dine %EC22 & oute chamber	1 20	0485040	1000710		
	DN700 DI Pipe %FC8B & extg chamber		21SEP12			
	DN700 DI Pipe % FC10B & extg chamber		21SEP12			
	DN700 DI Pipe % FC9B & extg chamber		14MAR13		-130d	
	DN700 DI Pipe % FC78 & extg chamber		14JUN13		-221d	
	DN500 DI Pipe % FC10B & new Drawoff Chamber 4		22SEP12	<u> </u>		
	DN500 DI Pipe % FC9B & new Drawoff Chamber 4		17FEB13		-433d	
	DN500 DI Pipe % FC7B & new Drawoff Chamber 3		17JUN13		-234d	
	DN500 DI Pipe % FC8B & new Drawoff Chamber 3		17JUN13		-234d	
	Excavation of Inspection Pit T8	20	21DEC10	23DEC10		Excavation of Inspection Pit T8
2060	Sealing DN600 & DN800 Scum Pipes at RAS	10	180CT11	01NOV11		Sealing DN600 & DN800 Scum Pipes at RAS
2070 F	Removal of extg 3 nos. of dosing pipes & trench	15	07JAN12	03MAR12		Removal of extg 3 nos. of dosing pipes & tr
1080 F	Removal of DN800 Sludge Pipe for piling	15	01DEC11	08MAR12		Removal of DN800 Sludge Pipe for piling
090 F	Removal of DN600 Sludge Pipe	30	18JAN13	16FEB13	-585d	
	Construction of FMC2B		20JUN12			Construction
	Modification of RAS Pumping Station		28JAN13		-450d	
	DN1000 DI Sludge Pipe		28JAN13		-595d	
	Backfilling for Sludge Pipe		27FEB13		-81d	
	Construction of FMC1B + removal of DN800 pipe		17NOV11			-> Construction of FMC1B
	Backfilling for FMC1B		29SEP12			Backfilling for FM
		2.0		2900112		
010 F	Pre-drilling for new Drawoff Chamber 3 (1 no)	7	25JUN11	02JUL11		Pre-drilling for new Drawoff Chamber 3 (1 no)
020 1	1st Delimotion of extg Drawoff Chamber 3 (VO13)	20	30NOV11	05DEC11		1st Delimotion of extg Drawoff Chamber 3 (VO13)
	Mini-piling for new Drawoff Chamber 3 (2 nos)	-	05NOV12			Mini-piling for
	ELS for Drawoff Chamber 3	-	18JAN13		-493d	
	2nd Demolition of extg Drawoff Chamber 3 (VO13)	-	07FEB13		-493d	
	Construction of new Drawoff Chamber 3 (VO13)		17FEB13		-493d	
	Watertightness Test for Drawoff Chamber 3 (VO13)		28MAY13		-4930 -234d	
	Backfilling for new Drawoff Chamber 3 (VO13)			15AUG13	-234d	
	Works	30	1130113	1040013	-2,340	╞────┤───┼──┼──┼──┼──┼──┼──┼──┼──┼
ning Sta	ofka -					
	Notification from Engineer	30	02APR10	02APR10		Notification from Engineer
date	29JAN10 Early bar 25DEC13 Emerson bar		- 20			
n dete						
n date date	IOJAN IS					
date date late	18JAN13 Critical bar					TPSTW Stage 5 Phase 2B
date late numbe	20JAN13					IPSIW Stage 5 Phase 2B

2013 J J A S O N	2014 D J F M A M J J	A 5 0 N	2015 D J F M							
FC10B Concrete Coating	for EC10B									
5 5 8 8										
B										
Concrete Coating	for FC8B									
C9B										
FC9B										
Wall for FC9B										
htness for FC9B										
Concrete Coating f	or FC9B									
n for FC9B										
ead Construction fo	r FC7B									
e Slab for FC7B										
Structural Wall for F										
Watertightness T										
Concrete Coatir										
Dacking										
& extg chamber										
3 & extg chamber										
00 DI Pipe % FC9B	& exig chamber e % FC7B & exig chamber									
& new Drawoff Ch	_									
DI Pipe % FC9B &	new Drawoff Chamber 4									
	e % FC7B & new Drawoff									
DN500 DI Pip	e % FC8B & new Drawoff	Chamber 3								
f DN600 Sludge Pip	e									
AC2B	ning Station									
DI Sludge Pipe										
ng for Sludge Pipe										
noval of DN800 pipe	9									
	Drawoff Chamber 3 (2 nos)									
woff Chamber 3										
1100	f Chamber 3 (VO13) / Drawoff Chamber 3 (VO1	(3)								
Watertightness T	est for Drawoff Chamber 3	(1/013)								
Backfilling	for new Drawoff Chamber	3 (VO13)								
3										
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Date 7FEB11	Revision B	AA	Approved TKC							
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	Act ID	Description	Orig Early Dur Start	Early Finish	Total Float	2010 FMAMJJASONDJFMAMJJASONDJFMAMJ JASONDJFMAMJ
	30010	Section III of Works	670 03MAY10 0	2DEC13	-640d	
ŗ	30020	Site Clearance	10 28MAY10 2	9JUL10		Site Clearance
	30030	Pre-drilling for PST5, AT5-AT7 (41 nos)	106 26MAY10 0	20CT10		Pre-drilling for PST5, AT5-AT7 (41 nos)
	30040	Pre-drilling for Mixed Liquor Channel 1 (25 nos)	20 12MAY10 2	4AUG10		Pre-drilling for Mixed Liquor Channel 1 (25 nos)
	30050	Pre-drilling for Mixed Liquor Channel 2 (6 nos)	20 04OCT10 1	50CT10		Pre-drilling for Mixed Liquor Channel 2 (6 nos)
	30060	Prelimiary Socketted H-plling	7 18OCT10 2			Prelimiary Socketted H-piling
	30070	Load Test for Preliminary Socketted H-pile	14 18NOV10 2			Load Test for Preliminary Socketted H-plle
	30080	Socketted H-piling for PST5, AT5~AT7 (174 nos)	263 19OCT10 1			Socketted H-piling for PST5, AT5-AT7 (174 nos)
	30090	Proof Drilling for PST5 & AT5-AT7 (4 nos)	14 21MAR11 1	!		Proof Drilling for PST5 & AT5~AT7 (4 nos)
	30100	Load Test for Socketted H-pile (2 nos)	14 18MAR11 3			Load Test for Socketted H-pile (2 nos)
	30110	Pre-drilling for Sludge Digestion Tank (7 nos)	18 28AUG10 2			Pre-drilling for Sludge Digestion Tank (7 nos)
	30120	Socketted H-piling for SD Tank (29 nos)		2MAR11		Socketted H-piling for SD Tank (29 nos)
	30130	Proof Drilling for Sludge Digestion Tank (2 no)	14 02APR11 0			Proof Drilling for Sludge Digestion Tank (2 no)
	30140	Load Test for Sludge Digestion Tank (1 no)	7 01APR11 1			Preliminary Mini-pile for Mixed Liquor Channel
	30150	Preliminary Mini-pile for Mixed Liquor Channel	7 03NOV10 2			Load Test for Preliminary Mini-pile (1 no)
	30160	Load Test for Preliminary Mini-pile (1 no)		0JAN11		Minl-piling for Mixed Liquor Channel (43 nos)
	30170	Mini-piling for Mixed Liquor Channel (43 nos)	200 03NOV10 2		_	Mini-pilling for Mixed Liquor Channel (16 nos)
	30180 30190	Mini-piling for Mixed Liquor Channel (16 nos)	41 04APR11 0 55 31MAY11 1		_	→ Mini-piling for MLC (M60~M67)
	30190	Mini-piling for MLC (M60-M67) Mini-piling for MLC (M68-M79)	42 28NOV11 0			Mini-piling for MLC (M68–M79)
	30200	Mini-plling for MLC (M08-W79)	45 04DEC12 1			Mini-piling for M
	30220	Proof Drilling for Mixed Liquor Channel (1 no)		9JUL11		Proof Drilling for Milxed Liquor Channel (1 no)
	30230	Remaining Proof Drilling for MLC (1 no)	14 080CT12 1			Remaining Proof Drilling
	30235	Proof Drillig for add. 4 plles of MLC (VO97)	14 04FEB13 1		-341d	Proof Drillig
	30240	Load Test for Mixed Liquor Channel (1 no)	14 20APR12 2		-0410	Load Test for Mixed Liquor Channel (1 no)
	30250	Pre-drilling for Blo-gas Holding Tank (3 nos)		6AUG10		Pre-drilling for Bio-gas Holding Tank (3 nos)
	30260	Minl-pillng for Blo-gas Holding Tank (3103)		3MAR11		Mini-pillng for Bio-gas Holding Tank (4+8 nos)
		Proof Drilling for Bio-gas Holding Tank (1 to)		5MAY11		Proof Drilling for Bio-gas Holding Tank (1 no)
		Load Test for Bio-gas Holding Tank Area (1 no)	14 04APR11 1		_	Load Test for Bio-gas Holding Tank Area (1 no)
	-	Secondition Tink & Second Line	1			
	31000	Excavation for AT5 & AT6 1st pour	30 17MAR11 2	5MAY11		Excavation for AT5 & AT6 1st pour
	31010	Excavation for AT5 & AT6 2nd pour	20 26MAY11 0	7SEP11		Excavation for AT5 & AT6 2nd pour
	31020	Pile Head for AT5 & AT6 1st pour (63 nos)	14 16APR11 0	7JUL11		Pile Head for AT5 & AT6 1st pour (63 nos)
	31030	Pile Head for AT5 & AT6 2nd pour (45 nos)	53 08JUL11 1		1	Pile Head for AT5 & AT6 2nd pour (45 nos)
	31040	Pile Cap for AT5 & AT6 1st pour	30 08JUL11 0	3AUG11		Pile Cap for AT5 & AT6 1st pour
	31050	Pile Cap for AT5 & AT6 2nd pour	30 18SEP11 0	40CT11		Pile Cap for AT5 & AT6 2nd pour
	31060	Structural Wall for AT5 & AT6 1st pour (14pours)		9DEC11		Structural Wall for AT5 & AT6 1st pour (14pours)
	31070	Structural Wall for AT5 & AT6 2nd pour (10pours)		8FEB12		Structural Wall for AT5 & AT6 2nd pour (10pours)
		Watertightness Test for AT5		6MAR12	_	Watertightness Test for AT5
		Watertightness Test for AT6		3MAY12	-	Watertightness Test for AT6
		Backfilling for AT5	30 03MAR12 1		_	Backfilling for AT5
		Backfilling for AT6	30 30MAY12 0			Excavation for Effluent Chamber
		Excavation for Effluent Chamber	10 01AUG11 0		<u> </u>	Pile Head for Effluent Chamber (15 nos)
		Pile Head for Effluent Chamber (15 nos)		6OCT11		Pile Cap for Effluent Chamber
		Pile Cap for Effluent Chamber		5DEC11	_	Structural Wall for Effluent Chamber
		Structural Wall for Effluent Chamber		6MAR12	_	Top Slab & Upstand Wall of Effluent Chamber
		Top Slab & Upstand Wall of Effluent Chamber	30 02FEB12 3			Watertightness for Effluent Laun
		Watertightness for Effluent Launder Excavation for PST5	15 19MAY12 1 20 01AUG11 2			Excavation for PST5
		Provision of Platform for Add. Load Test (VO56)	15 11APR12 2		-	Provision of Platform for Add. Load Test (VO
		Add. Load Test for AT7 (VO56)	11 02MAY12 1			Add. Load Test (VO
		Excavation for AT7	15 09JAN12 2			Excavation for AT7
		Pile Head for PST5 Pipe Chamber (6 nos)	14 19AUG11 0			Pile Head for PST5 Pipe Chamber up to base soffit
		Pile Cap for PST5 Pipe Chamber up to base soffit	30 170CT11 0			Pile Cap for PST5 Pipe Chamber up to base soffit
		Plie Head for AT7 (30 nos)	20 01FEB12 1			Pile Head for AT7 (30 nos)
		Pile Head for PST5 (15 nos)	28 01FEB12 2			Pile Head for AT7 (30 nos)
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	inish date					07
	ala dale	18JAN13 Critical bar				TPSTW Stage 5 Phase 2B
	tun date	20JAN13				
F	age numb	era Systems, Inc.				Master Program
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Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	2010 2011 2012 J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M
31250	Pile Cap for AT7	Presented in	13FEB12	16JUL12		Pile Cap for AT7
	Pile Cap for PST5		23MAR12			Pile Cap for PST5
_	Structural Wall for PST5 & AT7 (10 pours)			040CT12		
	Watertightness Test for PST5 & AT7		08SEP12	30NOV12		► Structural Wall for PST5
	Backfilling for PST5 & AT7		290CT12	14DEC12		Backfilling for PS
	Details of Sludge Digestion Tank No. 3		28FEB12	24APR12		Details of Studge Digestion Tank No. 3
	Excavation for Sludge Digestion Tank No.3 (SDT3)					Details of Sludge Digestion Tank No. 3
-			21MAY12			Excavation for Sludge I
	Pile Head Construction for SDT3 (29 nos)		15SEP12	170CT12		
	Base Slab for SDT3		30OCT12			Base Slab for SDT3
	Backfilling + Removing Struts for SDT3		22NOV12			
	Structural Wall for SDT3		25DEC12		-469d	
	Inclined Top Slab for SDT3		01MAR13		-469d	
	Watertightness Test for SDT3		<u> </u>	04MAY13	_469d	
	Air Tightness Test for SDT3		05MAY13		-469d	
1370	Backfilling for SDT3	13	12MAY13	24MAY13	-437d	
1400	Excavation for MCL Bay 7 + Foam Removal House	10	270CT11	07NOV11		Excavation for MCL Bay 7 + Foam Removal House
1410	Pile Cap for MLC Bay 7 + Foam Removal House	30	07SEP11	07DEC11		Pile Cap for MLC Bay 7 + Foam Removal House
1420	Construction of MLC Bay 7 + Foam Removal House	60	08NOV11	09MAR12		Construction of MLC Bay 7 + Foam Removal House
1500	Excavation for MLC (Bay 4&5)	15	11APR12	16OCT12		Excavation for MLC (Ba
505	Excavation for MLC (Bay 1-2)		06OCT12			Excavation for MLC (Ba
	Excavation for MLC (Bay 3 & 6)		18FEB13		-171d	Excavati
	Pile Cap + Structural Wall for MLC (Bay 4&5)		11MAY12			Pile Cap + St
	Pile Cap + Structural Wall for MLC (Bay 1-2)		220CT12			L≫annan Pile Cap + Stru
	Construction of residual cantilever slab of AT6		01JAN13			Construction
	Pile Cap + Structural Wall for MLC (Bay 3 & 6)		05MAR13		-171d	
	Concreting surround for DN1500 Concrete Pipe		17SEP12		-1110	
	Excavation for MLC (Bay 8&9)		14JAN13	16FEB13	-618d	
	Pile Cap for MLC (Bay 8-1 & 9)		28JAN13	13MAR13	-618d	
	Structural Wall for MLC (Bay 8-1 & 9)		10FEB13		-618d	
	Pile Cap + Structural Wall for MLC (Bay 8-2)	_	22MAR13		-618d	
	Watertightness Test for MLC					
	· · · · · · · · · · · · · · · · · · ·		01MAY13		-618d	
	Concrete Coating for MLC	30	16MAY13		-618d	
	Backfilling for MLC		16MAY13		-510d	
	Excavation for Bio-gas Holding Tank Support		29APR11			Excavation for Bio-gas Holding Tank Support
	Pile Head for Bio-gas Holding Tank Support		11MAY11			Pile Head for Bio-gas Holding Tank Support
	Construction of Blo-gas Holding Tank Support			13AUG11	_	Construction of Bio-gas Holding Tank Support
	Excavation for Valve Chamber		18AUG11		_	Excavation for Valve Chamber
	Pile Head Construction for Valve Chamber		110CT11			Pile Head Construction for Valve Chamber Pile Cap for Tank Support & Valve Chamber
	Pile Cap for Tank Support & Valve Chamber		050CT11			Pile Cap for Tank Support & Valve Chamber
	Structural Wall for Valve Chamber		28NOV11			Structural Wall for Valve Chamber Backfilling for Valve Cham
840	Backfilling for Valve Chamber	30	28JAN12	24SEP12		Backfilling for Valve Cham
	(CONE)					
000	Excavaling Trial Pit No. T1 & T2 (SI01)	20	1BJUN10	06AUG10		Excavating Trial Plt No. T1 & T2 (SI01)
001	Diversion of DN150 Fire Flghting Main at SDT3		25AUG10			Diversion of DN150 Fire Fighting Main at SDT3
002	Diversion of DN80 Wash Water Pipe at SDT3		20SEP10			Diversion of DN80 Wash Water Pipe at SDT3
003	Diversion of PE Sewage Pipe at SDT3 (RFI/43)		18OCT10			Diversion of PE Sewage Pipe at SDT3 (RFI/43)
	Removal of FF, WW & PE after diversion (RFI/43)		18JAN13		-320d	Removal of
	Pipework for AT5 - AT7		13APR12			Pipework for AT5 ~ AT7
_	Pipework for Pipe Chamber @PST5		17FEB13		-438d	
	Pipework Connection to AT5 & AT6	10	18JAN13		-320d	Pipework Co
	Pipework for Effluent Chamber	19	290CT12		0200	►∎ Pipework for Effluent
	Pipe Support at Effluent Launder (PVO)				420-	
			02JAN13		-438d	
	DN900 Sewage Pipe to PST5		09AUG12			DN900 Sewage Pipe
	Pipework for SDT3		12MAY13		-469d	
	Pipework for MLC		18JAN13		-355d	
070 F	Pipework for Valve Chamber	29	07NOV11	13AUG12		Pipework for Valve Chamber
date	29JAN10 Early bar					
n date	25DEC13 Progress bar					
date	18JAN13					TPSTW Stage 5 Phase 2B
ate	20JAN13					
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AT7 (10 pours)
 for PST5 & AT7
15 & AT7
Digestion Tank No.3 (SDT3)
for SDT3 (29 nos)
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of residual cantilever slab of AT6
le Cap + Structural Wall for MLC (Bay 3 & 6)
nd for DN1500 Concrete Pipe
for MLC (Bay 8&9)
for MLC (Bay 8-1 & 9)
ral Wall for MLC (Bay 8-1 & 9)
Cap + Structural Wall for MLC (Bay 8-2)
Vatertightness Test for MLC
Concrete Coating for MLC
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ber
FF, WW & PE after diversion (RFI/43)
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Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	2010 2011 2011 2012 MAMJJASONDJEMAMJJASONDJEMAM
32080	DN1500 Air Main	90	08AUG11	15FEB13	-339d	DN1500 A
32090	Gas Pipe to Gas Transfer Station	-		28APR13	-1d	
	Gas Pipe connecting Gas Holder Tank			28APR13	-1d	Ga
00040	ait 1. Povezkali Weita.	1				
	Removal of extg Control Room			07FEB13	-331d	Removal of
	Modi. of ChemIcal House for Switch Room (VO57)			05OCT12		Modi. of Chemical House
	Modi. of extg Flow Splitter Box Stage I (VO16)		28JAN13	28MAR13	-380d	Modi.
	Modi. of extg Flow Splitter Box Stage II (VO16)			23AUG13	-528d	
	Modification of extg Aeration Tank No. 4	-+	2BJAN13	26FEB13	-350d	- Modificat
	Modification of extg Aeration Tank No. 1~3	60	23SEP13	21NOV13	-618d	
	Modification of extg Effluent Launder Stage I	60	2BJAN13	28MAR13	-380d	Modifi
33075	Modification of extg Effluent Launder Stage II	60	25JUN13	23AUG13	-118d	
33080	Shelter for NaOCI Dosing System	60	23MAY13	21JUL13	-510d	
33090	Watertightness Test for NaOCI Dosing Sheller	15	22JUL13	05AUG13	-510d	
ection IV	of Works					
40040						
	Section IV of Works	+ +		25DEC13	-1048d	
	Pre-drilling for Decanting Chamber (1 no)	7	06MAY10	11MAY10		Pre-drilling for Decanting Chamber (1 no)
	Dismantling Extg Cantilever of PSGT (VO02)	14	22JUL10	02AUG10		Dismantling Extg Cantilever of PSGT (VO02)
40040	Minl-piling for Decanting Chamber (4 nos)	28	27AUG10	130CT10		Mini-piling for Decanting Chamber (4 nos)
40050	Proof Drilling (2 nos)	28	190CT10	26OCT10		Proof Drilling (2 nos)
	Excavation for Decanting Chamber	++		03NOV10		Excavation for Decanting Chamber
	Plle Cap for Decanting Chamber			15DEC10		Pile Cap for Decanting Chamber
	Structural Wall for Decanting Chamber	30	16DEC10	31JAN11	1 0	Structural Wall for Decanting Chamber
	FRP Cover for Decanting Chamber	20	28SEP12	170CT12	,	FRP Cover for Decantin
41050	Excavation for Chemical & Oil Store	15	04AUG10	19AUG10		Excavation for Chemical & Oil Store
41060	Base Slab for Chemical & Oil Store	20	20AUG10	13SEP10	1	Base Slab for Chemical & Oil Store
41070	Structural Wall for Chemical & Oil Store	40	14SEP10	01NOV10		Structural Wall for Chemical & Oil Store
41080	Top Slab for Chemical & Oil Store	20	25OCT10	01NOV10		Top Slab for Chemical & Oil Store
41090	Conc. Plinth at CHPG Stage I/II (VO64)	120 0	07FEB12	29JAN13	-718d	Conc. Plinth
41100	Conc. Plinth at Waste Burner (VO60)	120	07FEB12	260CT12		Conc. Plinth at Waste
10010	C. Chemonia Wickle	1				
	Removal of Chemical Waste Room		23JUL10			Removal of Chemical Waste Room
	Removal of Flower Bed			280CT10		Removal of Flower Bed
	Removal of Waste Blo-gas Burner at Stage I/II			16FEB13	-796d	
	Removal of Chimney & Associated RC Structure		17FEB13		-796d	Rer
	Removal of Storage Facilities		29AUG12			Removal of Storage Faciliti
	Water Reclamation Facility for RO Plant (VO97)			07MAR13	-755d	Water R
	Shelter for FeCI3 Dosing System	60 1	11NOV10	15DEC10		Shelter for FeCl3 Dosing System
2080	Rectification of Shelter for FeCl3 Dosing System	15 1	IOJAN11	22JAN11		Rectification of Shelter for FeCl3 Dosing System
2090	Steelwork for FeCI3 Dosing Shelter	30 2	20DEC10	30APR11		Steelwork for FeCI3 Dosing Shelter
12100	Watertightness Test for FeCI3 Dosing Shelter	16 1	14MAR11	27MAR11		Watertightness Test for FeCl3 Dosing Shelter
12110	Removal of FeCI3 Dosing System	60 1	14APR12	20APR12		Removal of FeCI3 Dosing System
2120	Modifi of Central Blg Complex (VO43)	770 1	10NOV11	25DEC13	-1048d	
	Modification of SAS Thickening House (VO53)		140CT11		-727d	Modification
	Modi. of Primary Sludge Gravity Thickener (VO02)		22DEC10			Modi, of Primary Slu
	Modification of Filtrate Treatment Plant (VO33)		4JAN13		-821d	
	Modification of Chlorination House (VO18)		07NOV11		-719d	Modification
	Floor Opening at Service Tower Building (16 nos)	+	240CT11		1100	Floor Opening at Service Tower Building (16 nos)
	Modi. of Genset Rm at Inlet Works (VO101)		2NOV12		-733d	► The second se
	Covered Walkway @ Sludge Dewatering House (VO94)			31MAR13	-7330 -779d	
			ZUEUTE	0114124(10]	4190	
3010 F	Road & Drainage Works in Portion A	120 1	I2JUL10	15JUN11		Road & Drainage Works In Portion A
4010 /	Additional Works for FeCI3 Dosing System	100 2	8APR11	10AUG11		Additional Works for FeCl3 Dosing System
rt date	29JAN10 Early bar					
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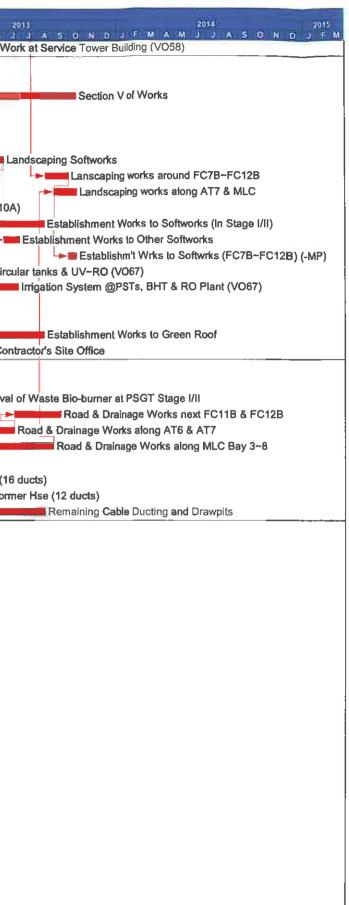
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· 4	to Gas Trans	fer Station			
a 1	E	as Holder Tank			
extg	Control Room				
	witch Room (V	(057)			
of exte	g Flow Splitter	Box Stage I (VO16)		
-	Modi. of e	xtg Flow Splitter Bo	x Stage	II (VO16)	
on of	extg Aeration	Tank No. 4			
		Modification of extg	Aeration	n Tank No. 1	~3
	of extg Efflue	nt Launder Stage I			Í
-	Modificatio	on of extg Effluent L	aunder	Stage II	
		OCI Dosing System			
	Watertightn	ess Test for NaOCI	Dosing	Shelter	
		Section IV of W	orks		
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g Una	amber				
al CH	IPG Stage I/II	(1/064)			
	r (VO60)				
Jame	(0000)				
f Was	ste Bio-aas Bu	mer at Stage I/II			
- 1	-	Associated RC Str.	icture		
es					
	ation Facility f	or RO Plant (VO97)		
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		Modifi of Centra	l Blg Co	mplex (VO4	3)
of S/	AS Thickening	House (VO53)	2		
	ravity Thicken	• •			
_		e Treatment Plant (VO33)		
	Iorination Hou				
enset	Rm at Inlet W	orks (VO101)			
ed W	alkway @ Sluc	Ige Dewatering Hou	ise (VO	94)	
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Act ID	Description	Orig Early Dur Start	Early Finish	Total Float	2010 FMAMJJASONDJEMAMJJASONDJEMAMJJASONDJEMA	5 M 3
44020	Additional Work at Service Tower Building (VO58)	20 18JAN13	06FEB13	-726d		
Section \	/ of Works		the state of the			
(mining	And the second se					
50010	Section V of Works	1185 29JAN10	140CT13	-170d		
50020	Tree Survey	60 08MAR10	09APR10		Tree Survey	
50030	Tree Transplanting & Felling Tree	90 22APR10	260CT10		Tree Transplanting & Felling Tree	
50040	Establishment Works to Transplanted Tree	365 03NOV10	02NOV11		Establishment Works to Transplanted Tree	
50050	Landscaping Softworks	650 21JUL10	27MAY13	-60d		La
50056	Lanscaping works around FC7B-FC12B	45 16AUG13	29SEP13	-171d		
50058	Landscaping works along AT7 & MLC	45 01SEP13	15OCT13	-171d		
50060	Establishment Works to Softworks (FC1A-FC10A)	365 12MAR11	11MAR12		Establishment Works to Softworks (FC1A~	FC10A)
50065	Establishment Works to Softworks (in Stage I/II)	365 14AUG12	13AUG13	-108d		
50070	Establishment Works to Other Softworks	30 28MAY13	26JUN13	-60d		
50072	Establishm't Wrks to Softwrks (FC7B~FC12B) (-MP)	16 30SEP13	150CT13	-171d		
50080	Imigation System @circular tanks & UV~RO (VO67)	120 28JUL12	310CT12		Irrigation System	@circul
50085	Irrigation System @PSTs, BHT & RO Plant (VO67)	45 11MAY13	24JUN13	-58d		>
50090	Green Roof at Sludge Dewatering System	120 05JAN12	19MAR12		Green Roof at Sludge Dewatering System	j.
50100	Green Roof at Transformer House	120 05JAN12	19MAR12		Green Roof at Transformer House	
50110	Establishment Works to Green Roof	365 14AUG12		-108d		
50120	Green Roof at Contractor's Site Office	20 28NOV12	17DEC12		Green Roof	at Cont
2						
51010	Diversion of DN600 Concrete Pipe	45 18MAY10	25AUG10		Diversion of DN600 Concrete Pipe	
51020	Removal of Waste Bio-burner at PSGT Stage I/II	60 18JAN13	18MAR13	40d	Re	emoval o
51030	Road & Drainage Works next FC11B & FC12B	90 17JUN13	14SEP13	-140d		- 2
51040	Road & Drainage Works along AT6 & AT7	120 17FEB13	16JUN13	-140d		
51045	Road & Drainage Works along MLC Bay 3~8	120 04MAY13	31AUG13	-171d		
51050	Cable Ducting and Drawpits for FC11B & FC12B	20 18JUL11	14AUG11		Cable Ducting and Drawpits for FC11B & FC12B	
51070	Cable Ducting % CBC & Transformer Hse (16 ducts)	60 03NOV11	13APR12		Cable Ducting % CBC & Transformer H	•
51080	Cable Ducting % CBC & Transformer Hse (12 ducts)	60 01MAR12	24JUL12		Cable Ducting % CBC & Tra	insforme
51100	Remaining Cable Ducting and Drawpits	350 28MAY12	15AUG13	-110d		

Start date	29JAN10	Early bar
Finish date	25DEC13	Progress bar
Data date	18JAN13	Critical bar
Run date	20JAN13	
Page number	7A	Summary bar
c Primavera	a Systems, Inc.	Start milestone point
		Finish milestone point

TPSTW Stage 5 Phase 2B

Master Program



Date	Revision	Checked	Approved
7FEB11	B	AA	TKC
IONOV11] C	AA	TKC
3APR12	D	AA	TKC
8JAN13	E	AA	TKC