Jardine Engineering Corporation Limited

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

Monthly Environmental Monitoring and Audit Report for September 2011

(Version 1.1)

Certified By _____
(Environmental Team Leader)

REMARKS:

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

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 3rd monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract no. DE/2009/09 "Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B". This report documents the findings of EM&A Works conducted in September 2011.

2. The major site activities undertaken in the reporting month included:

- FAT of new ACB panels to UV switchboard;
- Installation of cable supports and cable laying at Pipe Gallery;
- Installation of E&M equipment for FC No. 11B & 12Band; and
- Installation of E&M equipment for New Ferric Chloride Dosing Compound.

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

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

Environmental Licenses and Permits

5. Environmental related licenses/permits granted to the Project include the Environmental Permit (EP) for the Project.

Key Information in the Reporting Month

6. 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	Remark
	Number	Nature			
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 (August 11)	Submitted to EPD on 28th September 2011 (EP condition 6.6).	No comment	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

7. Major site activities for the coming two months will include:

- Reconnection of new ACB panels to UV switchboard;
- Cable laying at Pipe Gallery;
- Installation of E&M equipment for FC No. 11B & 12B;
- Installation of E&M equipment for New Ferric Chloride Dosing Compound; and
- Installation of new PLC system J in CBC

8. The future environmental concerns are air quality, noise impacts and waste management from construction works.

1 INTRODUCTION

Background

1.1 Tai Po Sewage Treatment Works (TPSTW) is located within the Tai Po Industrial Estate. It currently comprises four Stages: I, II, IVA and IVB works. The TPSTW - Stage V aims to upgrade the existing STW to provide additional sewage treatment capacity from the present design flow of 88,000 m^3/day to 130,000 m^3/day to meet the demands of both the existing and future developments, and to meet the revised discharge license requirements.

1.2 The TPSTW Stage V, Phase I and Phase II are Designated Projects under the Environmental Impact Assessment Ordinance (Cap. 449) with the same EIAO Register No. AEIAR – 081/2004. A study of environmental impact assessment (EIA) was undertaken to evaluate various environmental impacts associated with the works within these two Designed Projects. An EIA Report as well as an Environmental Monitoring and Audit (EM&A) Manual were approved by the Environmental Protection Department (EPD) on 28 October 2004.

1.3 The Stage V works will be implemented in 2 phases. The design capacities of Phase I and Phase II works are 100,000 m^3/d and 130,000 m^3/d respectively. An Environmental Permit (EP) No. EP-265/2007 was issued on 22 March 2007 for the TPSTW Stage V Phase II to the Drainage Services Department (DSD) as the Permit Holder. The project "Tai Po Sewage Treatment Works – Stage V Phase IIB" formed part of the Phase II works, includes additional secondary treatment process units (1 primary clarifier; 3 bioreactors and 2 final clarifiers) in TPSTW for its future extended plant design capacity of 120,000 m^3/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 16 May 2011.

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 3rd monthly EM&A report summarizing the EM&A works for the Project in September 2011.

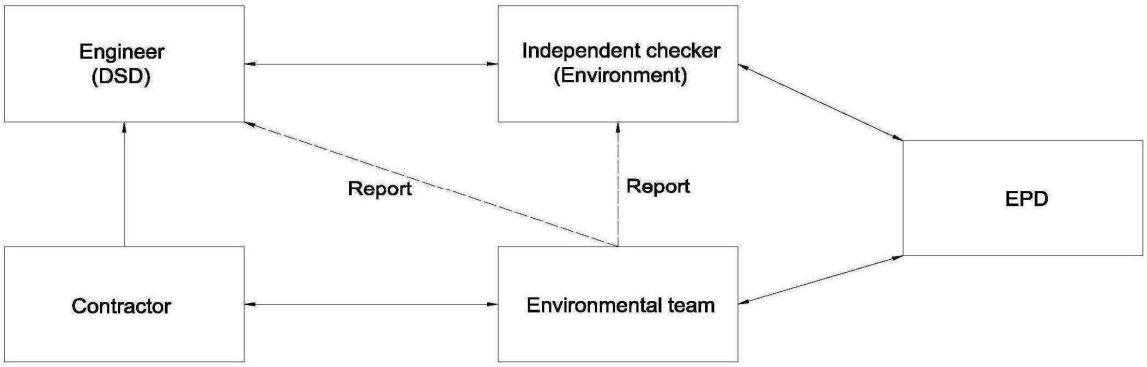
Project Organizations

1.5 Different parties with different levels of involvement in the project organization include:

- Project Proponent / Engineer's Representative (ER) – Drainage Services Department
- Environmental Team (ET) – Cinotech Consultants Ltd.
- Independent Environmental Checker (IEC) – Ove Arup and Partners Hong Kong Limited
- Contractor –Jardine Engineering Corporation Ltd.

1.6 The responsibilities of respective parties are detailed in Section 1.10 of the Final EM&A Manual of the Project.

1.7 The Project Organization during Construction Phase



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

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
DSD	E&M Branch	Mr. TONG Sau Kit	Senior Engineer	2594 7304	2827 8532
		Mr. TSE Ho	Engineer	2660 7638	
Cinotech	Environmental Team	Dr. Priscilla CHOY	ET Leader	2151 2089	3107 1388
		Mr. TY YEUNG	Project Coordinator and Audit Team Leader	2151 2099	
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087	
Arup	Independent Environmental Checker	Mr. Coleman NG	Independent Environmental Checker	2268 3097	2865 6493
		Mr. Lawrence KAN	Assistant to Independent Environmental Checker	2268 3212	
JEC	E&M Contractor	Mr. Alex Law	Project Manager	9312 8659	2887 9090
		Mr. Dexter Chan	Site Agent	6391 2499	
		Mr. Alex Iu	Environmental Officer	6393 2904	

Construction Programme

1.9 The site activities undertaken in the reporting month were:

- Reconnection of new ACB panels to UV switchboard;
- Cable laying at Pipe Gallery;
- Installation of E&M equipment for FC No. 11B & 12B;
- Installation of E&M equipment for New Ferric Chloride Dosing Compound; and
- Installation of new PLC system J in CBC.

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.

Table 2.1 Locations for Air Quality Monitoring

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.

Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Graseby GMW 2310 HVS, Model GS-2310105-1, Serial no. 10239 and 0810	2
	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.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

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

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 μm 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 ±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 m^3/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 ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±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 6 occasions. The monitoring schedule was updated and is shown in **Appendix C**. The weather during the monitoring sessions was mainly sunny, cloudy and rainy.

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.

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

Parameter	Minimum $\mu g/m^3$	Maximum $\mu g/m^3$	Average $\mu g/m^3$	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
1-hr TSP (CAM1)	46	107	70	315	500
24-hr TSP (CAM1)	19	58	40	171	260
1-hr TSP (CAM2)	44	116	83	336	500
24-hr TSP (CAM2)	25	92	53	177	260
1-hr TSP (CAM3)	53	125	90	344	500
24-hr TSP (CAM3)	36	104	63	192	260

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 3.1 Location 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 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 955 (Serial No. 14303)	1
Calibrator	SV30A (Serial No. 10965)	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 3.3 Noise Monitoring Parameters, Frequency and Duration

Station	Parameter	Period	Frequency
NM1	L_{eq}(30 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**.

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 Leq(30min) dB(A)	Maximum Leq(30min) dB(A)	Average Leq(30min) dB (A)	Action Level	Limit Level
NM1	60.8	62.1	61.5	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 ENVIRONMENTAL AUDIT

Site Audits

4.1 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**.

4.2 Site audits were conducted on 1st, 9th, 15th, 22th and 30th September 2011 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 9th September 2011. No site inspection was conducted by EPD during the reporting month. The details of observations during site audit can refer to **Table 4.2**.

Review of Environmental Monitoring Procedures

4.3 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.

Status of Environmental Licensing and Permitting

4.4 All permits/licenses obtained for the Project are summarized in **Table 4.1**.

Table 4.1 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-265/2007	22/3/2007	N/A	Expansion and upgrading of existing Tai Po Sewage Treatment Works from 100,000 m^3/day to 130,000 m^3/day: (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

Status of Waste Management

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

Implementation Status of Environmental Mitigation Measures

4.6 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**.

4.7 During site inspections in the reporting month, no observation and non-conformance were identified. In addition, there was no major environmental deficiency being identified at 9th, 15th, 22th and 30th September 2011. The observations and recommendations made during the audit sessions are summarized in **Table 4.2**.

Table 4.2 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Waste/Chemical Management	1 September 2011	Reminder: - All work area should be cleaned regularly to remove any litter and general refuse near FST.	The situation was observed rectified in audit session 110909.

	1 September 2011	Reminder: - To dispose of or store properly the C&D materials at Sodium Hypochlorite room.	The situation was observed rectified in audit session 110909.

Summary of Exceedances

4.8 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

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

Summary of Complaint and Prosecution

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

4.11 There was no environmental complaint, prosecution or notification of summons received since the Project commencement. The Complaint Log is attached in **Appendix L**.

5 FUTURE KEY ISSUES

5.1 Key issues to be considered in the coming month include:

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

Monitoring Schedule for the Next Month

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

Construction Program for the Next Month

5.3 A tentative construction programme is provided in **Appendix M**. The major construction activities in the coming month will include:

- Reconnection of new ACB panels to UV switchboard;
- Cable laying at Pipe Gallery;
- Installation of E&M equipment for FC No. 11B & 12B;
- Installation of E&M equipment for New Ferric Chloride Dosing Compound; and
- Installation of new PLC system J in CBC.

6 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 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.

6.2 No exceedance of monitoring results was recorded in the reporting month.

6.3 There was no environmental complaint, prosecution or notification of summons received.

Recommendations

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

Water Impact

- To avoid accumulation of stagnant water on site.

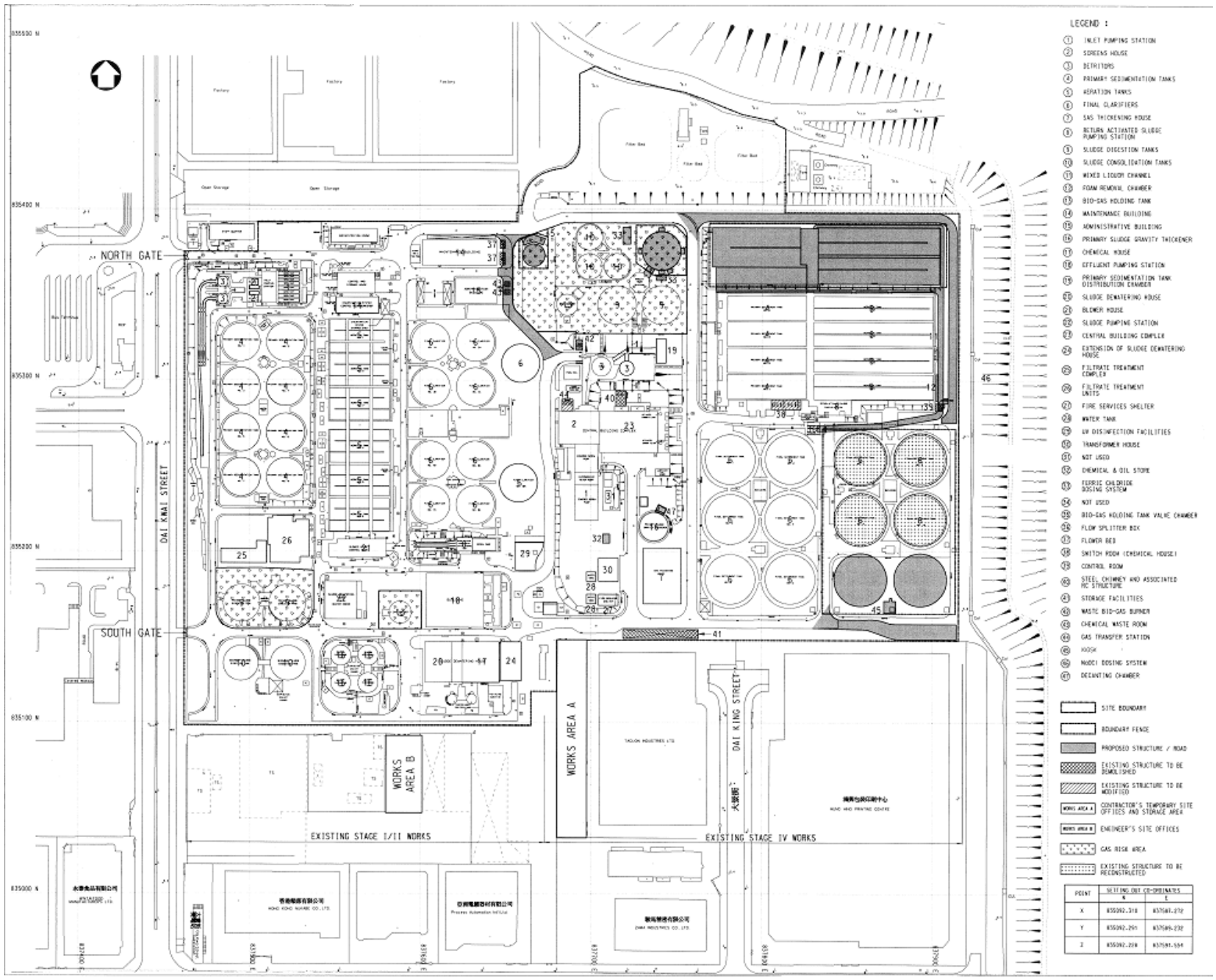
Dust Impact

- To remove fugitive dusty material on the haul road periodically.
- To spray with water on dry dust haul road.

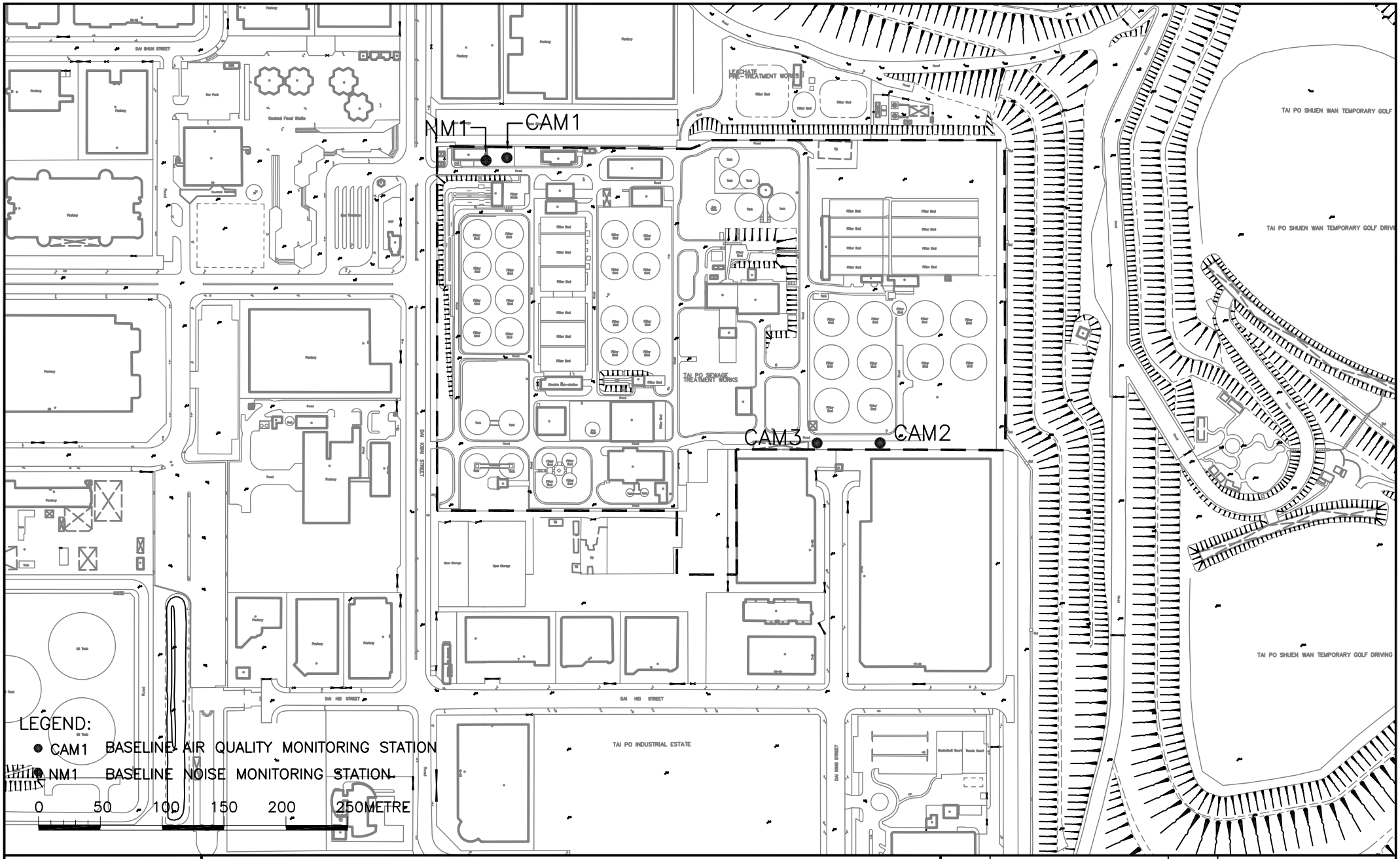
Waste / Chemical Management

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

FIGURES



TAI PO SEWAGE TREATMENT WORKS, STAGE V, PHASE IIB	Scale N.T.S	Proposa No. MA10069	CINOTECH
PROJECT SITE LAYOUT PLAN	Date Mar-11	Figure 1.1	



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Tai Po Sewage Treatment Work, Stage V, Phase IIB

LOCATIONS OF AIR QUALITY AND NOISE MONITORING STATIONS

SCALE	A4 1:4000	DATE	2011
CHECK	IT	DRAWN	TY
JOB No.	MA10069	DRAWING No. 1.2	REV —

F:\MA10069\DRAWING\BASELINE\FIGURE 1.2.DWG

APPENDIX A
ACTION AND LIMIT LEVELS

APPENDIX A – Action and Limit Levels

1-Hour TSP

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

24-Hour TSP

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

Construction Noise

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

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/37/0039

Station: CAM1 - Government Staff Quarter
Operator: WK
Date: 22-Jul-11
Next Due Date: 21-Sep-11
Equipment No.: A-01-37
Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	304.3	Pressure, Pa (mmHg)	756.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.8	3.39	73.78	7.9	2.78
2	9.5	3.04	66.23	6.5	2.52
3	7.4	2.69	58.50	5.0	2.21
4	5.0	2.21	48.15	3.1	1.74
5	3.3	1.79	39.18	1.9	1.36

By Linear Regression of Y on X

Slope , mw = 0.0415 **Intercept, bw =** -0.2495

Correlation coefficient* = 0.9989

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 2.41

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 22/7/11

Checked by: WK Signature: Date: 22 July 2011

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/37/0040

Station: CAM1 - Government Staff Quarter
Operator: WK
Date: 21-Sep-11
Next Due Date: 20-Nov-11
Equipment No.: A-01-37
Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	298.7	Pressure, Pa (mmHg)	760.4

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.42	74.32	8.0	2.83
2	9.8	3.13	68.05	6.4	2.53
3	7.5	2.74	59.58	5.1	2.26
4	5.2	2.28	49.67	3.2	1.79
5	3.1	1.76	38.43	1.9	1.38

By Linear Regression of Y on X

Slope , mw = 0.0403 **Intercept, bw =** -0.1828

Correlation coefficient* = 0.9986

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 2.41

Remarks:

Conducted by: wk. Tang Signature: Kwai Date: 21/9/11

Checked by: [illegible] Signature: [illegible] Date: 21 September 2011

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/A40/0039

Station: CAM2 - Hung Hing Printing Centre Operator: WK

Date: 22-Jul-11 Next Due Date: 21-Sep-11

Equipment No.: A-01-40 Serial No. 10239

Ambient Condition			
Temperature, Ta (K)	304.3	Pressure, Pa (mmHg)	756.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.38	73.47	7.8	2.76
2	9.9	3.11	67.61	6.6	2.54
3	7.5	2.70	58.89	5.2	2.25
4	5.2	2.25	49.09	3.1	1.74
5	3.4	1.82	39.77	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0411 **Intercept, bw =** -0.2398

Correlation coefficient* = 0.9972

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **2.40**

Remarks:

Conducted by: WK Tang Signature: Kwai Date: 22/7/11

Checked by: IZ Signature: Date: 22 July 2011

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/A40/0040

Station: CAM2 - Hung Hing Printing Centre
Operator: WK
Date: 21-Sep-11
Next Due Date: 20-Nov-11
Equipment No.: A-01-40
Serial No. 10239

Ambient Condition			
Temperature, Ta (K)	298.8	Pressure, Pa (mmHg)	760.3

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.5	3.39	73.67	7.8	2.79
2	9.7	3.11	67.69	6.4	2.53
3	7.5	2.74	59.56	5.2	2.28
4	5.1	2.26	49.18	3.2	1.79
5	3.2	1.79	39.03	1.9	1.38

By Linear Regression of Y on X

Slope , mw = 0.0407 **Intercept, bw =** -0.2037

Correlation coefficient* = 0.9984

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 2.40

Remarks:

Conducted by: wk Tang Signature: Kwan Date: 21/9/11

Checked by: Signature: Date: 21 September 2011

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/35/0039

Station	CAM3 - Talcon Industrial Ltd	Operator:	WK
Date:	22-Jul-11	Next Due Date:	21-Sep-11
Equipment No.:	A-01-35	Serial No.	0810

Ambient Condition			
Temperature, Ta (K)	304.3	Pressure, Pa (mmHg)	756.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.5	3.35	72.84	7.5	2.70
2	9.7	3.08	66.92	6.7	2.56
3	7.6	2.72	59.28	4.8	2.16
4	5.4	2.29	50.02	3.3	1.79
5	3.3	1.79	39.18	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0401 **Intercept, bw =** -0.1908

Correlation coefficient* = 0.9975

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 2.42

Remarks:

Conducted by: WK Tang Signature: Date: 22/7/11

Checked by: Signature: Date: 22 July 2011

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/35/0040

Station: CAM3 - Talcon Industrial Ltd
Date: 21-Sep-11
Equipment No.: A-01-35

Operator: WK
Next Due Date: 20-Nov-11
Serial No. 0810

Ambient Condition			
Temperature, Ta (K)	298.9	Pressure, Pa (mmHg)	760.1

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0462	Intercept, bc	-0.0163
Last Calibration Date:	11-Oct-10	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Oct-11	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.4	3.37	73.33	7.6	2.75
2	9.7	3.11	67.67	6.8	2.60
3	7.4	2.72	59.15	5.0	2.23
4	5.2	2.28	49.64	3.3	1.81
5	3.3	1.81	39.62	2.0	1.41

By Linear Regression of Y on X

Slope , mw = 0.0408 **Intercept, bw :** -0.1994

Correlation coefficient* = 0.9984

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 2.43

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 21/9/11

Checked by: CA Signature: Date: 21 September 2011

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

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.: Date of Issue: Date Received: Date Tested: Date Completed: Next Due Date:	C/11/110503 2011-05-03 2011-04-29 2011-04-29 2011-05-03 2012-05-02
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

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	: 23 degree Celsius
Relative Humidity	: 65%
Pressure	: 101.3 kPa

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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

TEST REPORT

Description	Calibration Orifice	**Manufacturer**	Thermo Andersen
Serial No.	1536	**Temperature,Ta (K)**	295
Model No.	G25A	**Pressure, Pa (mmHg)**	751.5
Date	11 October 2010		

Plate	Diff.Vol (m^3)	Diff.Time (min)	Diff.Hg (mm)	Diff.H_2O (in.)
1	1.00	1.3050	3.8	1.50
2	1.00	0.9250	7.6	3.00
3	1.00	0.8540	8.9	3.50
4	1.00	0.7530	11.4	4.50
5	1.00	0.6210	16.5	6.50

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9938	0.7615	1.2240
0.9888	1.0689	1.7311
0.9870	1.1558	1.8698
0.9837	1.3064	2.1201
0.9769	1.5732	2.5481

Y axis= SQRT[H_2O(Pa/760)(298/Ta)]

Qstd Slope (m) = 1.63228
Intercept (b) = -0.01631
Coefficient (r) = 0.99998

Va	(X axis) Qa	(Y axis)
0.9949	0.7624	0.7674
0.9899	1.0701	1.0852
0.9882	1.1571	1.1722
0.9848	1.3079	1.3291
0.9780	1.5749	1.5974

Y axis= SQRT[H_2O(Ta/Pa)]

Qa Slope (m) = 1.02211
Intercept (b) = -0.01022
Coefficient (r) = 0.99998

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(H_2O(Pa/760)(298/Ta))]-b}
Qa=I/m{[SQRT H_2O(Ta/Pa)]-b}

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
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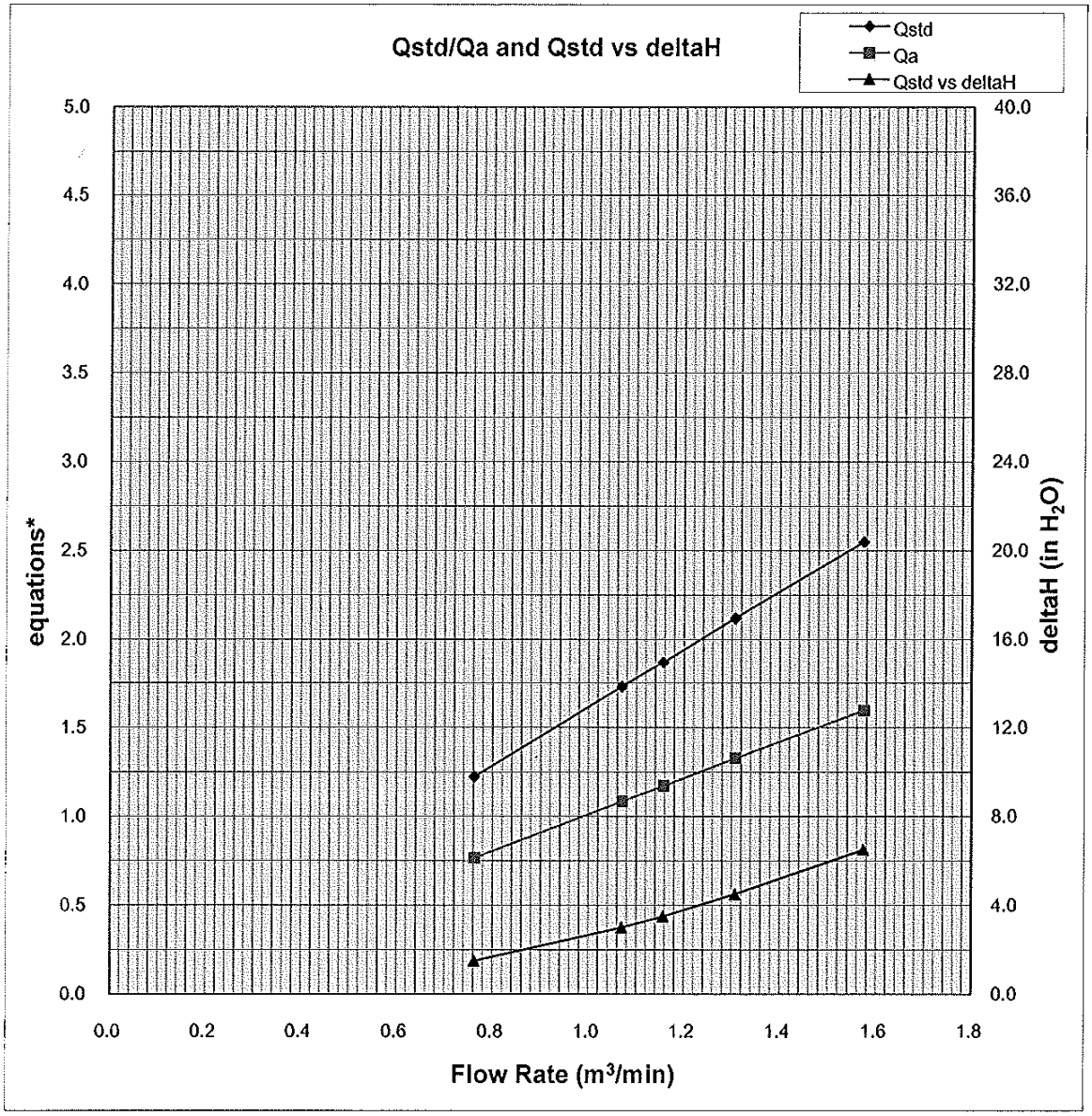
Website: www.wellab.com.hk

TEST REPORT



Y-axis equations:

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

Qa series: SQRT[ΔH(Ta/Pa)]

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.: Date of Issue: Date Received: Date Tested: Date Completed: Next Due Date:	C/N/110124/1 2011-01-24 2011-01-21 2011-01-21 2011-01-24 2012-01-23
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 17204
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 55%.

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/101110/1
Date of Issue:	2010-11-10
Date Received:	2010-11-08
Date Tested:	2010-11-08
Date Completed:	2010-11-10
Next Due Date:	2011-11-09

ATTN: **Mr. Henry Leung** Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 22 degree Celsius
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 ± 0.1 dB

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

PATRICK TSE
Laboratory Manager

APPENDIX C
ENVIRONMENTAL MONITORING SCHEDULE

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

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

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

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

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

APPENDIX D
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix D - 1-hour TSP Monitoring Results

Station CAM1 **Government Staff Quarters**

Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
1-Sep-11	9:00	Sunny	303.0	758.0	3.3949	3.4013	0.0064	16331.1	16332.1	1.0	1.22	1.22	1.22	73.0	88
6-Sep-11	11:00	Sunny	302.3	757.8	3.4011	3.4058	0.0047	16356.1	16357.1	1.0	1.22	1.22	1.22	73.0	64
7-Sep-11	9:00	Sunny	301.1	758.7	3.3677	3.3711	0.0034	16357.1	16358.1	1.0	1.22	1.22	1.22	73.2	46
8-Sep-11	9:00	Sunny	301.7	756.9	3.3753	3.3831	0.0078	16358.1	16359.1	1.0	1.22	1.22	1.22	73.1	107
12-Sep-11	10:00	Sunny	303.4	760.3	3.3265	3.3323	0.0058	16383.1	16384.1	1.0	1.22	1.22	1.22	73.0	79
15-Sep-11	11:00	Cloudy	304.1	755.0	3.3924	3.3960	0.0036	16408.1	16409.1	1.0	1.21	1.21	1.21	72.7	49
16-Sep-11	9:00	Cloudy	302.3	757.3	3.3540	3.3580	0.0040	16409.1	16410.1	1.0	1.22	1.22	1.22	73.0	55
19-Sep-11	9:00	Cloudy	296.5	762.7	3.3895	3.3945	0.0050	16410.1	16411.1	1.0	1.23	1.23	1.23	73.9	68
21-Sep-11	10:00	Sunny	297.9	761.8	3.3751	3.3808	0.0057	16436.1	16437.1	1.0	1.23	1.23	1.23	73.7	77
22-Sep-11	9:00	Cloudy	297.9	761.8	3.3758	3.3819	0.0061	16437.1	16438.1	1.0	1.22	1.22	1.22	73.1	83
26-Sep-11	9:00	Sunny	299.1	760.4	3.3754	3.3799	0.0045	16438.1	16439.1	1.0	1.21	1.21	1.21	72.9	62
27-Sep-11	13:00	Sunny	301.9	756.6	3.4135	3.4169	0.0034	16463.1	16464.1	1.0	1.21	1.21	1.21	72.4	47
30-Sep-11	14:00	Cloudy	301.3	759.2	3.3832	3.3891	0.0059	16465.1	16466.1	1.0	1.21	1.21	1.21	72.6	81
														Min	46
														Max	107
														Average	70

Station CAM2 **Heng Hing Printing Centre**

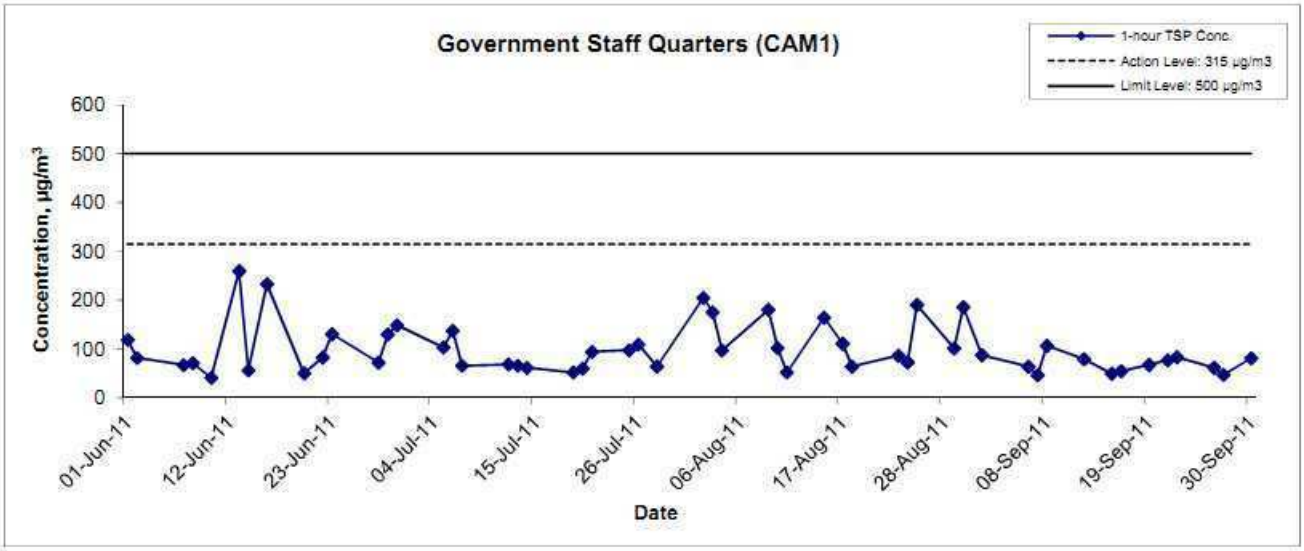
Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
1-Sep-11	9:00	Sunny	303.0	758.0	3.3940	3.4012	0.0072	25506.2	25507.2	1.0	1.22	1.22	1.22	73.3	98
6-Sep-11	11:00	Sunny	302.3	757.8	3.4063	3.4129	0.0066	25531.2	25532.2	1.0	1.22	1.22	1.22	73.4	90
7-Sep-11	9:00	Sunny	301.1	758.7	3.3763	3.3819	0.0056	25532.2	25533.2	1.0	1.23	1.23	1.23	73.5	76
8-Sep-11	9:00	Sunny	301.7	756.9	3.4097	3.4182	0.0085	25533.2	25534.2	1.0	1.22	1.22	1.22	73.4	116
12-Sep-11	10:00	Sunny	303.4	760.3	3.4138	3.4201	0.0063	25558.2	25559.2	1.0	1.22	1.22	1.22	73.4	86
15-Sep-11	11:00	Cloudy	304.1	755.0	3.3922	3.3954	0.0032	25583.2	25584.2	1.0	1.22	1.22	1.22	73.1	44
16-Sep-11	9:00	Cloudy	302.3	757.3	3.3605	3.3679	0.0074	25584.2	25585.2	1.0	1.22	1.22	1.22	73.3	101
19-Sep-11	9:00	Cloudy	296.5	762.7	3.3696	3.3755	0.0059	25585.2	25586.2	1.0	1.24	1.24	1.24	74.2	80
21-Sep-11	10:00	Sunny	297.9	761.8	3.3732	3.3802	0.0070	25610.2	25611.2	1.0	1.23	1.23	1.23	74.0	95
22-Sep-11	9:00	Cloudy	297.9	761.8	3.3794	3.3867	0.0073	25611.2	25612.2	1.0	1.22	1.22	1.22	73.2	100
26-Sep-11	9:00	Sunny	299.1	760.4	3.3915	3.3966	0.0051	25612.2	25613.2	1.0	1.22	1.22	1.22	73.0	70
27-Sep-11	13:00	Sunny	301.9	756.6	3.3293	3.3332	0.0039	25637.2	25638.2	1.0	1.21	1.21	1.21	72.6	54
30-Sep-11	14:00	Cloudy	301.3	759.2	3.3997	3.4047	0.0050	25639.2	25640.2	1.0	1.21	1.21	1.21	72.7	69
														Min	44
														Max	116
														Average	83

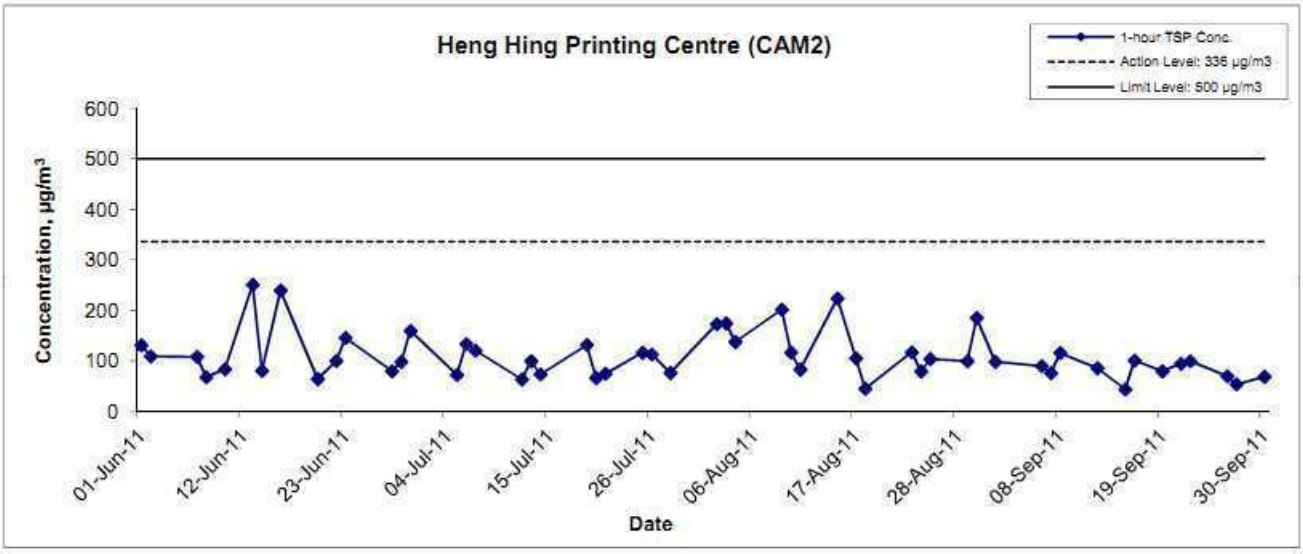
Appendix D - 1-hour TSP Monitoring Results

Station CAM3 **Talcon Industrial Ltd**

Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
1-Sep-11	9:00	Sunny	303.0	758.0	3.4313	3.4401	0.0088	18771.9	18772.9	1.0	1.22	1.22	1.22	73.0	120
6-Sep-11	11:00	Sunny	302.3	757.8	3.4171	3.4241	0.0070	18796.9	18797.9	1.0	1.22	1.22	1.22	73.1	96
7-Sep-11	9:00	Sunny	301.1	758.7	3.3740	3.3799	0.0059	18797.9	18798.9	1.0	1.22	1.22	1.22	73.3	81
8-Sep-11	9:00	Sunny	301.7	756.9	3.4441	3.4530	0.0089	18798.9	18799.9	1.0	1.22	1.22	1.22	73.1	122
12-Sep-11	10:00	Sunny	303.4	760.3	3.3901	3.3940	0.0039	18823.9	18824.9	1.0	1.22	1.22	1.22	73.1	53
15-Sep-11	11:00	Cloudy	304.1	755.0	3.3590	3.3649	0.0059	18848.9	18849.9	1.0	1.21	1.21	1.21	72.8	81
16-Sep-11	9:00	Cloudy	302.3	757.3	3.4190	3.4238	0.0048	18849.9	18850.9	1.0	1.22	1.22	1.22	73.1	66
19-Sep-11	9:00	Cloudy	296.5	762.7	3.3685	3.3727	0.0042	18850.9	18851.9	1.0	1.23	1.23	1.23	74.0	57
21-Sep-11	10:00	Sunny	297.9	761.8	3.4039	3.4122	0.0083	18875.9	18876.9	1.0	1.23	1.23	1.23	73.8	113
22-Sep-11	9:00	Cloudy	298.4	761.8	3.3364	3.3455	0.0091	18876.9	18877.9	1.0	1.21	1.21	1.21	72.8	125
26-Sep-11	9:00	Sunny	299.1	760.4	3.4001	3.4064	0.0063	18877.9	18878.9	1.0	1.21	1.21	1.21	72.7	87
27-Sep-11	13:00	Sunny	301.9	756.6	3.3398	3.3439	0.0041	18902.9	18903.9	1.0	1.20	1.20	1.20	72.2	57
30-Sep-11	14:00	Cloudy	301.3	759.2	3.3730	3.3810	0.0080	18904.9	18905.9	1.0	1.21	1.21	1.21	72.4	111
														Min	53
														Max	125
														Average	90

1-hr TSP Concentration Levels





Title	Scale	Project No.
Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B	N.T.S	MA10069
Graphical Presentation of 1-hour TSP Impact Monitoring Results	Date: Sep 11	Appendix: D

CINOTECH

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 Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Sep-11	Sunny	304.7	755.9	3.3807	3.4823	0.1016	16332.1	16356.1	24.0	1.21	1.21	1.21	1745.4	58
8-Sep-11	Sunny	302.2	761.6	3.3720	3.4664	0.0944	16359.1	16383.1	24.0	1.22	1.22	1.22	1757.3	54
14-Sep-11	Cloudy	300.3	755.3	3.3472	3.3986	0.0514	16384.1	16408.1	24.0	1.22	1.22	1.22	1755.7	29
20-Sep-11	Sunny	298.7	761.1	3.3961	3.4629	0.0668	16411.1	16435.1	24.0	1.23	1.23	1.23	1765.5	38
26-Sep-11	Sunny	299.5	760.1	3.4438	3.4764	0.0326	16439.1	16463.1	24.0	1.21	1.21	1.21	1747.5	19
													Min	19
													Max	58
													Average	40

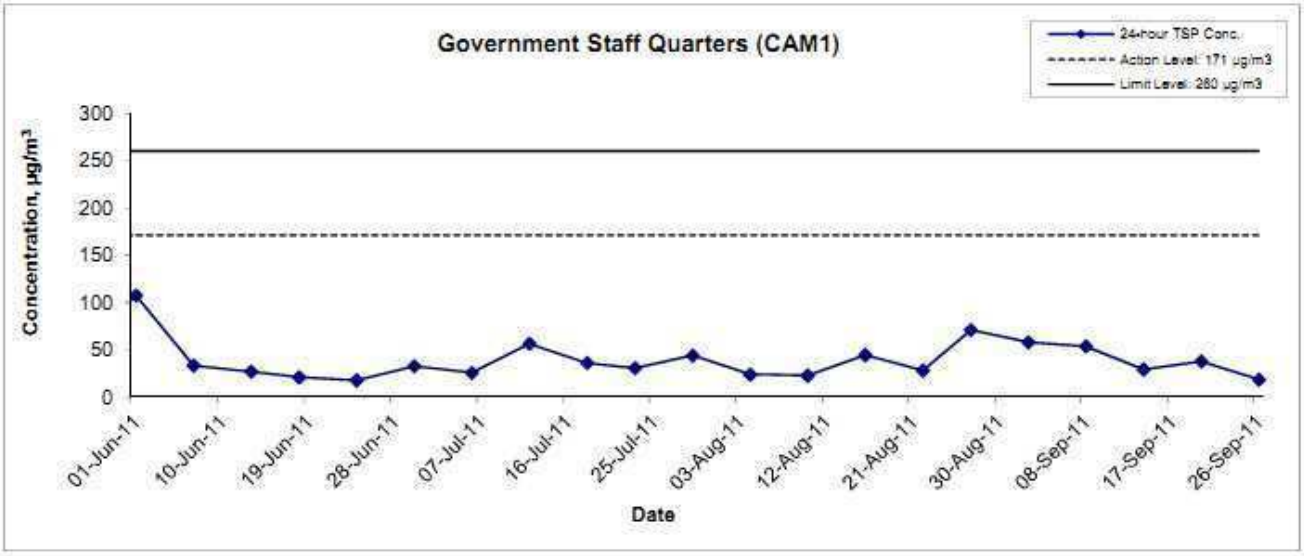
Station CAM2 **Heng Hing Printing Centre**

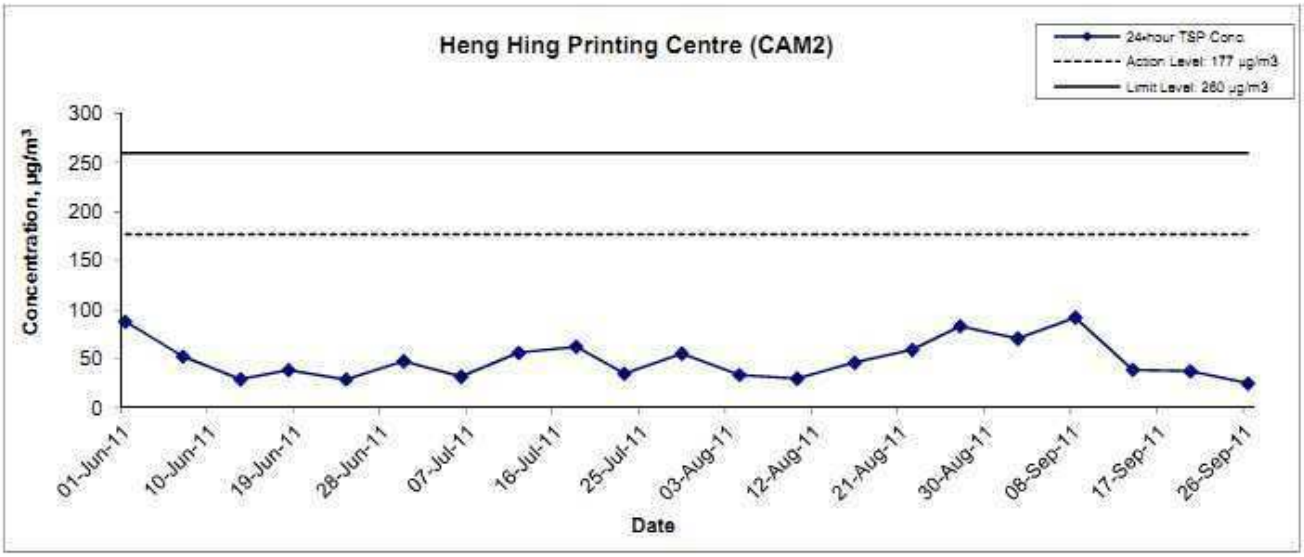
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Sep-11	Sunny	304.7	755.9	3.4525	3.5762	0.1237	25507.2	25531.2	24.0	1.22	1.22	1.22	1752.8	71
8-Sep-11	Sunny	302.2	761.6	3.3804	3.5427	0.1623	25534.2	25558.2	24.0	1.23	1.23	1.23	1764.7	92
14-Sep-11	Cloudy	300.3	755.3	3.3304	3.3986	0.0682	25559.2	25583.2	24.0	1.22	1.22	1.22	1763.2	39
20-Sep-11	Sunny	298.7	761.1	3.3953	3.4613	0.0660	25586.2	25610.2	24.0	1.23	1.23	1.23	1773.1	37
26-Sep-11	Sunny	299.5	760.1	3.4229	3.4662	0.0433	25613.2	25637.2	24.0	1.22	1.22	1.22	1751.3	25
													Min	25
													Max	92
													Average	53

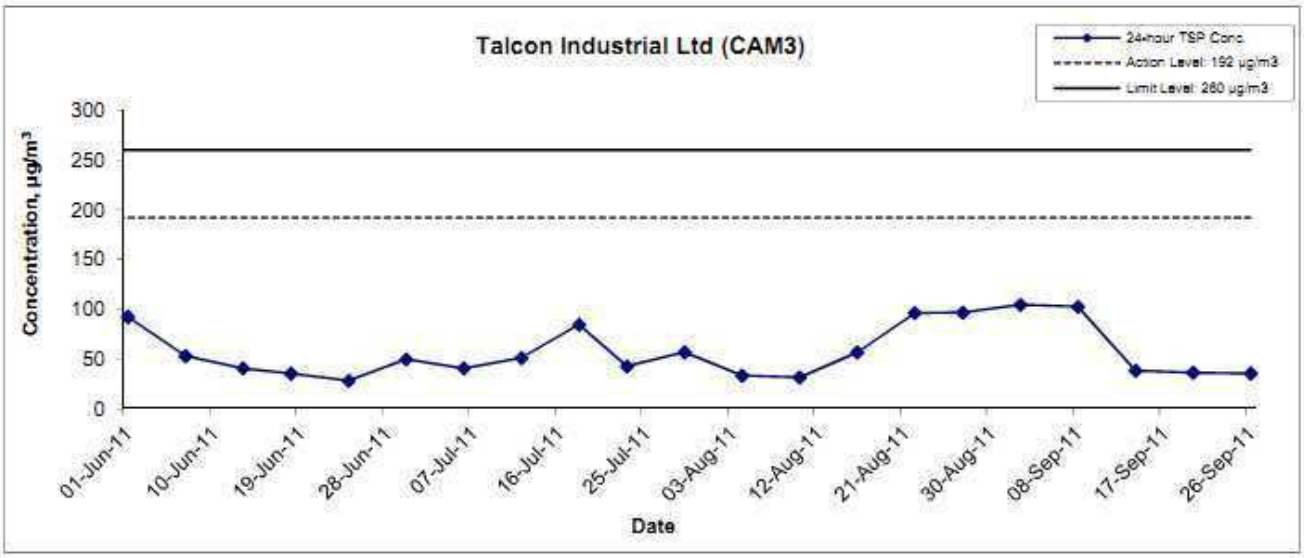
Station CAM3 **Talcon Industrial Ltd**

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Sep-11	Sunny	304.7	755.9	3.4013	3.5838	0.1825	18772.9	18796.9	24.0	1.21	1.21	1.21	1746.7	104
8-Sep-11	Sunny	302.2	761.6	3.3304	3.5107	0.1803	18799.9	18823.9	24.0	1.22	1.22	1.22	1759.0	103
14-Sep-11	Cloudy	300.3	755.3	3.3561	3.4234	0.0673	18824.9	18848.9	24.0	1.22	1.22	1.22	1757.3	38
20-Sep-11	Sunny	298.7	761.1	3.3641	3.4285	0.0644	18851.9	18875.9	24.0	1.23	1.23	1.23	1767.5	36
26-Sep-11	Sunny	299.5	760.1	3.3981	3.4601	0.0620	18878.9	18902.9	24.0	1.21	1.21	1.21	1742.7	36
													Min	36
													Max	104
													Average	63

24-hr TSP Concentration Levels







Title	Scale	Project No.
Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B	N.T.S	MA10069
Graphical Presentation of 24-hour TSP Impact Monitoring Results	Date: Sep 11	Appendix: E

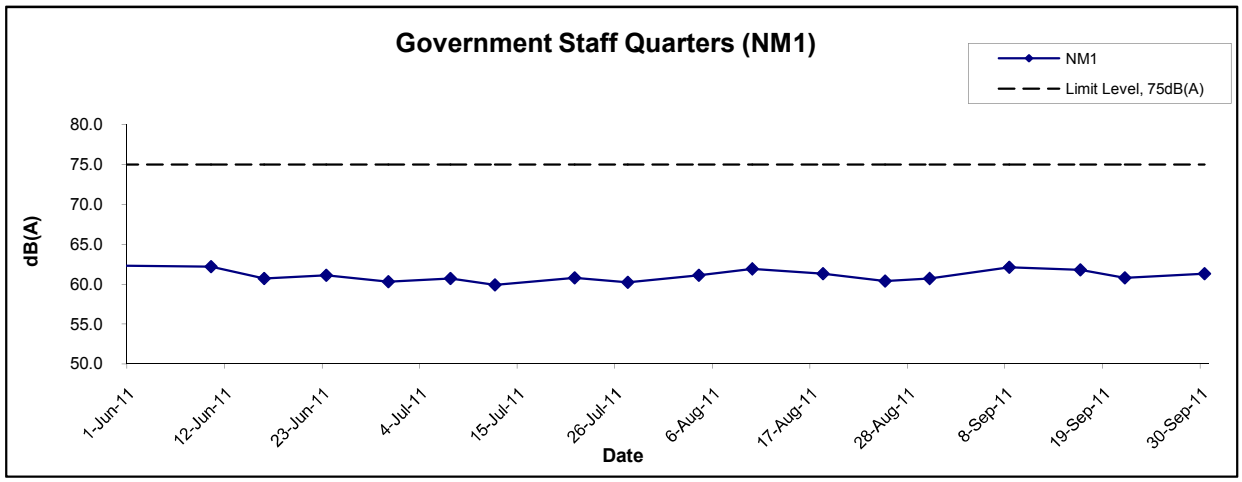
CINOTECH

APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - Noise Monitoring Results

Location NM1 - Government Staff Quarters					
Date	Time	Weather	dB (A) (30-min)		
			L_{eq}	L_{10}	L_{90}
8-Sep-11	13:00	Fine	62.1	63.9	56.6
16-Sep-11	16:00	Fine	61.8	63.3	56.4
21-Sep-11	17:00	Fine	60.8	62.4	55.7
30-Sep-11	14:10	Cloudy	61.3	62.9	60.4
		Average	61.5	63.1	57.3
		Minimum	60.8	62.4	55.7
		Maximum	62.1	63.9	60.4

Noise Levels



Title	Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S Date Sep 11	Project No. MA10069 Appendix F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: September 2011

a) Exceedance Report for 1-hr TSP (NIL)

b) Exceedance Report for 24-hr TSP (NIL)

c) Exceedance Report for Construction Noise (NIL)

APPENDIX H
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	110901
Date	1st September 2011 (Thursday)
Time	11:00-12:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Noise*** • No environmental deficiency was identified during the site inspection. ***Part F - Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Reminder***	
110901-R01	• All work area should be cleaned regularly to remove any litter and general refuse near FST.	F1iii.
110901-R02	• To dispose of or store properly the C&D materials at Sodium Hypochlorite room	F4ii.
	Others • Follow-up on the previous audit sessions (Ref. No.110825), all environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Mr. William Lai		2 September 2011
Checked by	Dr. Priscilla Choy		2 September 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	110909
Date	9th September 2011 (Friday)
Time	10:30-11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Noise*** • No environmental deficiency was identified during the site inspection. ***Part F - Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Reminder*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on the previous audit sessions (Ref. No.110901), all environmental deficiencies were improved/ rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Mr. TY Yeung		9 September 2011
Checked by	Dr. Priscilla Choy		9 September 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	110915
Date	15th September 2011 (Thursday)
Time	11:05-11:50

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

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Noise*** • No environmental deficiency was identified during the site inspection. ***Part F - Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Reminder*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on the previous audit sessions (Ref. No.110909), no environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Mr. William Lai		15 September 2011
Checked by	Dr. Priscilla Choy		15 September 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	110922
Date	22nd September 2011 (Thursday)
Time	11:05-11:50

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

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Noise*** • No environmental deficiency was identified during the site inspection. ***Part F - Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Reminder*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on the previous audit sessions (Ref. No.110915), no environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Mr. TY Yeung		22 September 2011
Checked by	Dr. Priscilla Choy		22 September 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	110930
Date	30th September 2011 (Friday)
Time	11:05-11:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Noise*** • No environmental deficiency was identified during the site inspection. ***Part F - Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Reminder*** • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on the previous audit sessions (Ref. No.110922), no environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Mr. William Lai		30 September 2011
Checked by	Dr. Priscilla Choy		30 September 2011

APPENDIX I
EVENT ACTION PLANS

APPENDIX I (1) – Event Action Plan for Air Quality Monitoring (Construction Phase)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IC(E) and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. 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.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. 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	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analyzed results submitted by the ET; 2. Review the propose d remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analyzed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
LIMIT LEVEL	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. 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.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

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

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	√
Noise	Use of quiet PME	N/A
	Good Site Practice • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	√
Water Quality	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted to minimize the potential water quality impacts from construction site runoff and various construction activities. The recommendation to install perimeter drains to collect site runoff and to properly treat the runoff by settlement tank/treatment system shall apply to all sites including those for mainlaying works. Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the existing WSD saltwater intake at Tai Po.	√
	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.	√
	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.	√
	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.	√

Type of Impact	Recommended Mitigation Measures	Status
	It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should not be less than 30 m from any watercourse. A licensed waste collector should be deployed to clean the chemical toilets on a regular basis. The construction workers can also make use of the existing toilet facilities within the TPSTW as necessary.	√
	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project. Implementation of environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site.	√
	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.	√
	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.	√
	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.	√
	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.	√
	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.	√
	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.	√

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

Note:
√ – Compliance of mitigation measures
X – Non-compliance of mitigation measures
N/A – Not applicable

APPENDIX K
WASTE GENERATION IN THE REPORTING MONTH

APPENDIX K – WASTE GENERATION IN THE REPORTING MONTH

Monthly Summary Waste Flow Table September 2011 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastic (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m3)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July	0	0	0	0	0	0	0	0	0	0	1.4
Aug	0	0	0	0	0	0	0	0	0	0	0
Sept	0	0	0	0	0	0	0	0	0	0	0
Oct											
Nov											
Dec											
Total											

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(3) Broken concrete for recycling into aggregates.

APPENDIX L
COMPLAINT LOG

APPENDIX L – COMPLAINT LOG

Reporting Month: September 2011

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

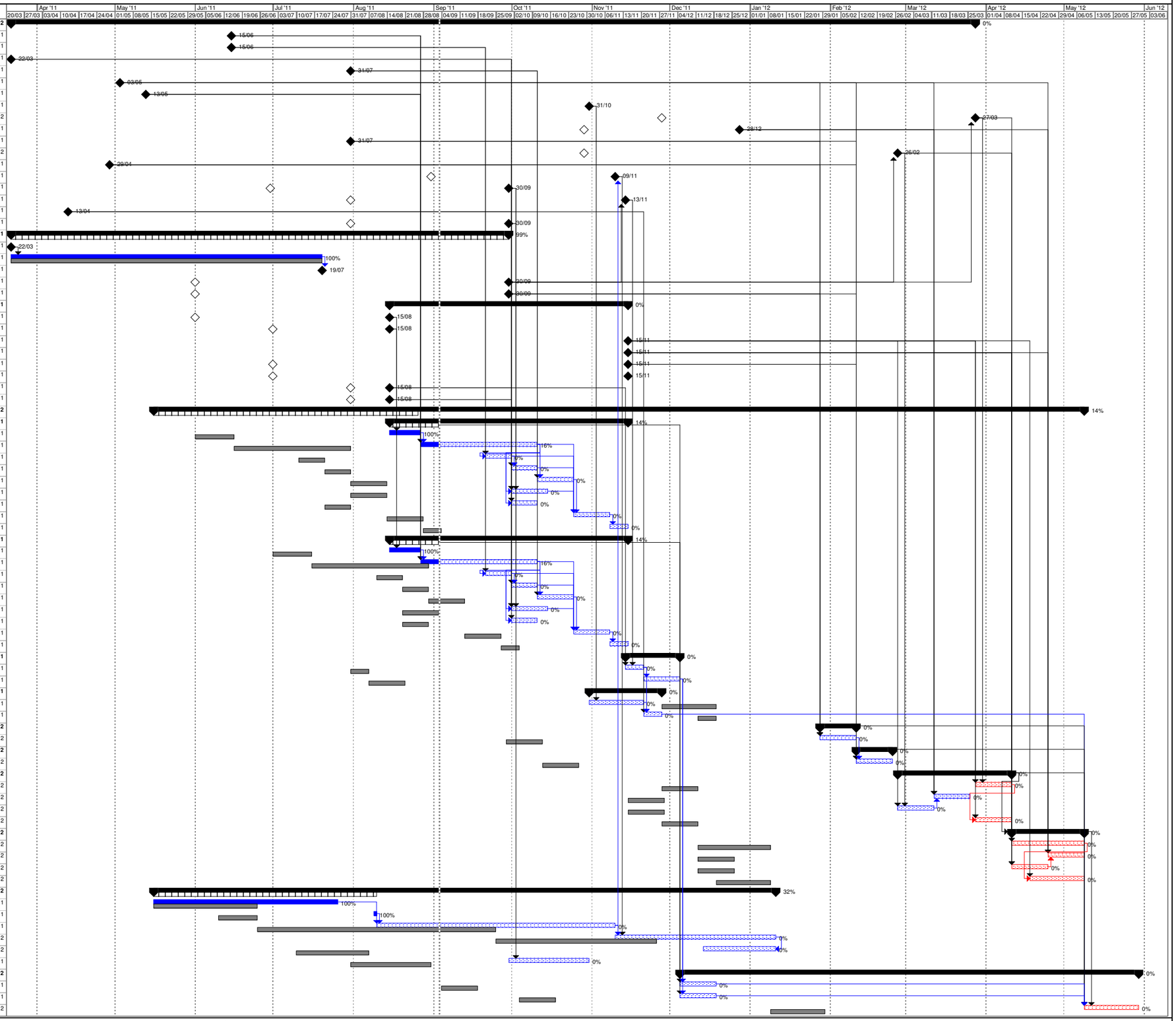
Remarks: No environmental complaint was received in the reporting month.

APPENDIX M
CONSTRUCTION PROGRAMME

Contract No. DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section I of the Works

ID	Task Name	Duration	Start	Finish
1	**Equipment & Material Delivery to Site**	**372 days**	**Tue 22/03/11**	**Tue 27/03/12**
2	Tripods, Bridges & Scrapers	0 days	Wed 15/06/11	Wed 15/06/11
3	Weir Plates	0 days	Wed 15/06/11	Wed 15/06/11
4	Density Current Baffles	0 days	Tue 22/03/11	Tue 22/03/11
5	FCW & FEDB	0 days	Sun 31/07/11	Sun 31/07/11
6	D.I. Pipes, Fittings & Accessories	0 days	Tue 03/05/11	Tue 03/05/11
7	Water Spray Pumps & Associated Pipework	0 days	Fri 13/05/11	Fri 13/05/11
8	Penstocks & Electric Actuators in Existing Distribution Chamber	0 days	Mon 31/10/11	Mon 31/10/11
9	Penstocks & Electric Actuators in Sludge Draw-off Chambers (V.O.)	0 days	Tue 27/03/12	Tue 27/03/12
10	Submersible Drain Pumps (V.O.)	0 days	Wed 28/12/11	Wed 28/12/11
11	Valves & Electric Actuators	0 days	Sun 31/07/11	Sun 31/07/11
12	Lifting Appliances (V.O.)	0 days	Sun 26/02/12	Sun 26/02/12
13	Instrumentation (Ultrasonic Level Sensors, EM Flowmeters & Sludge Blanket Sensors)	0 days	Fri 29/04/11	Fri 29/04/11
14	L.V. Switchboard (MCC4)	0 days	Wed 09/11/11	Wed 09/11/11
15	LCP for Scraper Bridges	0 days	Fri 30/09/11	Fri 30/09/11
16	Control Panels inside Pillar Box	0 days	Sun 13/11/11	Sun 13/11/11
17	Cables, Cable Trays & Accessories	0 days	Wed 13/04/11	Wed 13/04/11
18	B.S. & F.S. Equipment & Accessories	0 days	Fri 30/09/11	Fri 30/09/11
19	**Section I of the Works**	**192 days**	**Tue 22/03/11**	**Fri 30/09/11**
20	Contractual Commencement Date (Notified by the Engineer)	0 days	Tue 22/03/11	Tue 22/03/11
21	Section I of the Works	120 days	Tue 22/03/11	Tue 19/07/11
22	Contractual Completion Date	0 days	Tue 19/07/11	Tue 19/07/11
23	V.O. / Instruction for new arrangement of Sluge Draw-off Chamber No.3 & 4 (by DSD)	0 days	Fri 30/09/11	Fri 30/09/11
24	V.O. / Instruction for new arrangment of FMC1B & FMC2B (by DSD)	0 days	Fri 30/09/11	Fri 30/09/11
25	**Possession/Availability of Site**	**92 days**	**Mon 15/08/11**	**Tue 15/11/11**
26	FC11B	0 days	Mon 15/08/11	Mon 15/08/11
27	FC12B	0 days	Mon 15/08/11	Mon 15/08/11
28	Sludge Draw-off Chamber No.3 (Re-constructed)	0 days	Tue 15/11/11	Tue 15/11/11
29	Sludge Draw-off Chamber No.4 (Re-constructed)	0 days	Tue 15/11/11	Tue 15/11/11
30	FMC1B	0 days	Tue 15/11/11	Tue 15/11/11
31	FMC2B	0 days	Tue 15/11/11	Tue 15/11/11
32	Pillar Box for FC11B & 12B	0 days	Mon 15/08/11	Mon 15/08/11
33	Cable Drawpits and Ducts	0 days	Mon 15/08/11	Mon 15/08/11
34	**E&M Installation**	**359 days**	**Mon 16/05/11**	**Tue 08/05/12**
35	**FC11B**	**92 days**	**Mon 15/08/11**	**Mon 14/11/11**
36	Site Preparation Works	12 days	Mon 15/08/11	Fri 26/08/11
37	Tripods, Bridges & Scrapers	45 days	Sat 27/08/11	Mon 10/10/11
38	Weir Plates	10 days	Wed 21/09/11	Fri 30/09/11
39	Density Current Baffles	10 days	Sat 01/10/11	Mon 10/10/11
40	FCW & FEDB	14 days	Tue 11/10/11	Mon 24/10/11
41	LCP and Electrical Installation	14 days	Sat 01/10/11	Fri 14/10/11
42	Instrumentation	10 days	Sat 01/10/11	Mon 10/10/11
43	Final Screeding	14 days	Tue 25/10/11	Mon 07/11/11
44	Painting of Civil Structure (by Civil Contractor)	7 days	Tue 08/11/11	Mon 14/11/11
45	**FC12B**	**92 days**	**Mon 15/08/11**	**Mon 14/11/11**
46	Site Preparation Works	12 days	Mon 15/08/11	Fri 26/08/11
47	Tripods, Bridges & Scrapers	45 days	Sat 27/08/11	Mon 10/10/11
48	Weir Plates	10 days	Wed 21/09/11	Fri 30/09/11
49	Density Current Baffles	10 days	Sat 01/10/11	Mon 10/10/11
50	FCW & FEDB	14 days	Tue 11/10/11	Mon 24/10/11
51	LCP and Electrical Installation	14 days	Sat 01/10/11	Fri 14/10/11
52	Instrumentation	10 days	Sat 01/10/11	Mon 10/10/11
53	Final Screeding	14 days	Tue 25/10/11	Mon 07/11/11
54	Painting of Civil Structure (by Civil Contractor)	7 days	Tue 08/11/11	Mon 14/11/11
55	**Pillar Box for FC11B & 12B**	**21 days**	**Mon 14/11/11**	**Sun 04/12/11**
56	Control Panels	7 days	Mon 14/11/11	Sun 20/11/11
57	Electrical Insatallation	14 days	Mon 21/11/11	Sun 04/12/11
58	**Existing Distribution Chamber**	**28 days**	**Mon 31/10/11**	**Sun 27/11/11**
59	Penstock Installation	21 days	Mon 31/10/11	Sun 20/11/11
60	Electrical Installation	7 days	Mon 21/11/11	Sun 27/11/11
61	**FMC1B**	**14 days**	**Sat 28/01/12**	**Fri 10/02/12**
62	Pinch Valve, EM Flowmeter & Pipework Installation	14 days	Sat 28/01/12	Fri 10/02/12
63	**FMC2B**	**14 days**	**Sat 11/02/12**	**Fri 24/02/12**
64	Pinch Valve, EM Flowmeter & Pipework Installation	14 days	Sat 11/02/12	Fri 24/02/12
65	**Sludge Draw-off Chamber No.3 (Re-constructed)**	**44 days**	**Mon 27/02/12**	**Tue 10/04/12**
66	Penstock Installation	14 days	Wed 28/03/12	Tue 10/04/12
67	Submersible Drain Pumps and Pipework	14 days	Mon 12/03/12	Sun 25/03/12
68	Lifting Appliance	14 days	Mon 27/02/12	Sun 11/03/12
69	Instrumentation and Electrical Installation	14 days	Wed 28/03/12	Tue 10/04/12
70	**Sludge Draw-off Chamber No.4 (Re-constructed)**	**28 days**	**Wed 11/04/12**	**Tue 08/05/12**
71	Penstock Installation	28 days	Wed 11/04/12	Tue 08/05/12
72	Submersible Drain Pumps and Pipework	14 days	Wed 25/04/12	Tue 08/05/12
73	Lifting Appliance	14 days	Wed 11/04/12	Tue 24/04/12
74	Instrumentation and Electrical Installation	21 days	Wed 18/04/12	Tue 08/05/12
75	**Upgrade of L.V. Switchboard (MCC4) at Chemical House**	**240 days**	**Mon 16/05/11**	**Tue 10/01/12**
76	Temporary Control Panels for Existing MCC	71 days	Mon 16/05/11	Mon 25/07/11
77	Temporary Relocation of NaOCl Dosing System	1 day	Tue 09/08/11	Tue 09/08/11
78	Modification of Chemical House (by Civil Contractor)	92 days	Wed 10/08/11	Wed 09/11/11
79	L.V. Switchboard (MCC4) Installation and Testing	62 days	Thu 10/11/11	Tue 10/01/12
80	Modification of Existing SCADA/PLC System E at Aeration Tank Control Kiosk	28 days	Wed 14/12/11	Tue 10/01/12
81	B.S. & F.S. Installation	31 days	Fri 30/09/11	Sun 30/10/11
82	**Testing & Commissioning**	**177 days**	**Mon 05/12/11**	**Tue 29/05/12**
83	Functional Test of FC11B	14 days	Mon 05/12/11	Sun 18/12/11
84	Functional Test of FC12B	14 days	Mon 05/12/11	Sun 18/12/11
85	System Commissioning	21 days	Wed 09/05/12	Tue 29/05/12



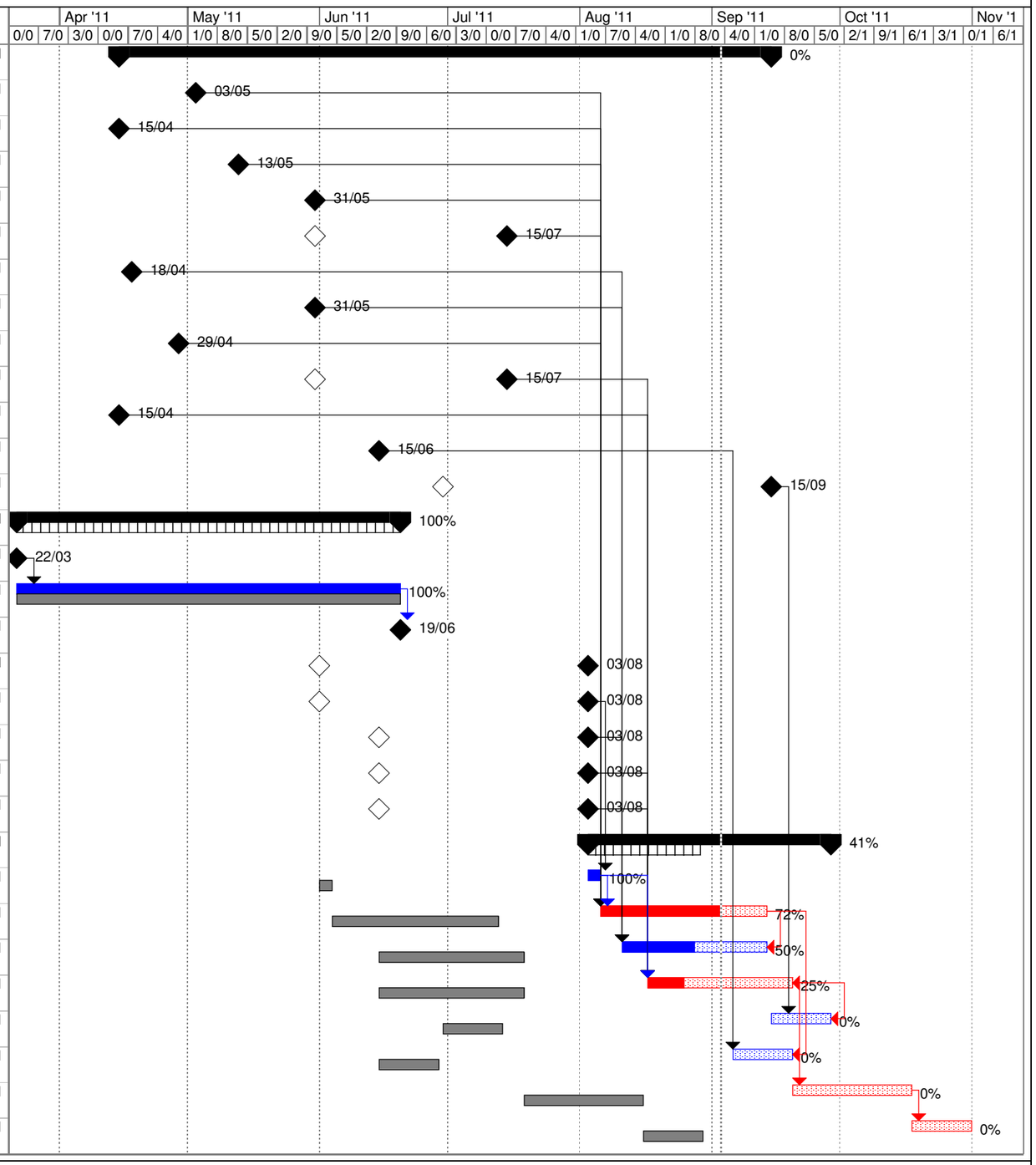
Revision: D
Date: 2 September 2011

Critical · Critical Split · Critical Progress · Task · Split · Task Progress · Baseline · Baseline Split · Baseline Milestone · Milestone · Summary Progress · Summary · Project Summary · External Tasks · External Milestone · Deadline

Contract No. DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section IV of the Works

ID	Task Name	Duration	Start	Finish
1	**Equipment & Material Delivery to Site**	**153 days**	**Fri 15/04/11**	**Thu 15/09/11**
2	FeCl3 Storage Tanks	0 days	Tue 03/05/11	Tue 03/05/11
3	FeCl3 Dosing Pumps & Accessories	0 days	Fri 15/04/11	Fri 15/04/11
4	Chemical Sump Pump	0 days	Fri 13/05/11	Fri 13/05/11
5	PVC Pipes, Fittings & Accessories	0 days	Tue 31/05/11	Tue 31/05/11
6	PVC Ball Valves & Check Valves	0 days	Fri 15/07/11	Fri 15/07/11
7	Double Containment Pipes, Fittings & Accessories	0 days	Mon 18/04/11	Mon 18/04/11
8	PVC Motorized Ball Valves	0 days	Tue 31/05/11	Tue 31/05/11
9	Instrumentation (Ultrasonic Level Sensors & EM Flowmeters)	0 days	Fri 29/04/11	Fri 29/04/11
10	Local Control Panels	0 days	Fri 15/07/11	Fri 15/07/11
11	Cables, Cable Trays & Accessories	0 days	Fri 15/04/11	Fri 15/04/11
12	B.S. Equipment & Accessories	0 days	Wed 15/06/11	Wed 15/06/11
13	PLC Panel (System J)	0 days	Thu 15/09/11	Thu 15/09/11
14	**Section IV of the Works**	**90 days**	**Tue 22/03/11**	**Sun 19/06/11**
15	Contractual Commencement Date (Notified by the Engineer)	0 days	Tue 22/03/11	Tue 22/03/11
16	Section IV of the Works	90 days	Tue 22/03/11	Sun 19/06/11
17	Contractual Completion Date	0 days	Sun 19/06/11	Sun 19/06/11
18	**Possession/Availability of Site**	**0 days**	**Wed 03/08/11**	**Wed 03/08/11**
19	FeCl3 Dosing Compound	0 days	Wed 03/08/11	Wed 03/08/11
20	Permanent Pipe Trench	0 days	Wed 03/08/11	Wed 03/08/11
21	Cable Drawpits and Ducts	0 days	Wed 03/08/11	Wed 03/08/11
22	Wall Openings for Cable Run in Existing Pipe Gallery	0 days	Wed 03/08/11	Wed 03/08/11
23	**E&M Installation**	**57 days**	**Wed 03/08/11**	**Wed 28/09/11**
24	Site Preparation Works	3 days	Wed 03/08/11	Fri 05/08/11
25	FeCl3 Storage & Dosing Equipment Installation inside FeCl3 Dosing Compound	39 days	Sat 06/08/11	Tue 13/09/11
26	Pipework Installation at Pipe Trench, STB & Existing Digestion Tanks	34 days	Thu 11/08/11	Tue 13/09/11
27	LCP & Electrical Installation	34 days	Wed 17/08/11	Mon 19/09/11
28	SCADA/PLC Panel (System J) Installation at CBC Control Room	14 days	Thu 15/09/11	Wed 28/09/11
29	B.S. Equipment Installation	14 days	Tue 06/09/11	Mon 19/09/11
30	Testing & Commissioning	28 days	Tue 20/09/11	Mon 17/10/11
31	Decommissioning of Existing FeCl3 Dosing System	14 days	Tue 18/10/11	Mon 31/10/11



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Critical
Critical Split
Critical Progress
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Task Progress
Baseline
Baseline Split
Baseline Milestone
Milestone
Summary Progress
Summary
Project Summary
External Tasks
External Milestone
Deadline