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 September 2013

(Version 2.0)

Certified By

(Environmental Team Leader)

REMARKS:

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 39th 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 September 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

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

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	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 2013)	Submitted to EPD on 30th September 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 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 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 39th monthly EM&A report summarizing the EM&A works for the Project in September 2013.

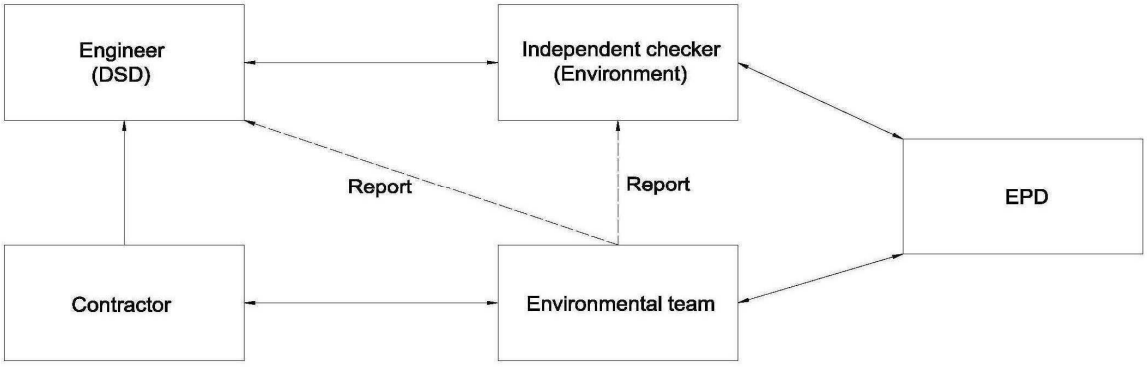
Project Organizations

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.

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	SP Division	Mr. LAI cheuk-ho	Chief Engineer	2594 7500	2827 8700
		Mr. IP Shu-kuen	Senior Engineer	2594 7502	
		Mr. TSANG Lap-kei	Engineer	2594 7459	
Cinotech	Environmental Team	Dr. Priscilla CHOY	ET Leader	2151 2089	3107 1388
		Mr. Kevin LAM	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. Ken LEE	Assistant to Independent Environmental Checker	2268 3573	
CHEC	Civil Contractor	Mr. TK CHEUNG	Project Manager	9863 2954	2603 6899
		Mr. Aaron AU	Site Agent	6345 0754	
		Mr. Jason TSE	Environmental Officer	9320 3608	

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.

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 13 occasions. 24-hr TSP monitoring was carried out as scheduled at each designated monitoring station on 5 occasions. The monitoring schedule was updated and is shown in **Appendix C**. The weather during the monitoring sessions was mainly sunny 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.

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)	55	204	108	315	500
24-hr TSP (CAM1)	31	103	60	171	260
1-hr TSP (CAM2)	74	236	133	336	500
24-hr TSP (CAM2)	42	110	69	177	260
1-hr TSP (CAM3)	91	244	140	344	500
24-hr TSP (CAM3)	51	122	77	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	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 3.3 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 L_{eq}(30min) dB(A)	Maximum L_{eq}(30min) dB(A)	Average L_{eq}(30min) dB (A)	Action Level	Limit Level
NM1	54.9	61.1	59.4	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 5th, 13th, 19th and 27th September 2013 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 13th September 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**.

Table 5.1 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
Consruction Noise Permit (CNP)				
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				
WT00007782-2010	25/10/10	31/10/15	Discharge of industrial trade effluent: *Water Control Zone*: Tolo Harbour and Channel *Discharge Points*: Communal drain for the carriage of surface drainage water	Valid
Waste Disposal (Chemical Waste)				
WPN : 5213-727-C2397-16	09/07/10	End of Project	Disposal of Chemical Waste including spent oil, lubricating oil, diesel oil and methanol, surplus paint, thinner	Valid

Status of Waste Management

5.5 The Construction and Demolition (C&D) materials generated in the reporting month were mainly 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**.

Table 5.2 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	5 September 2013	Reminder: Clear the stand water in the tanks no. 4, 5 and 6.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 September 2013.
	5 September 2013	Reminder: Clear the sand and mud on the haul road near FAS to avoid it from entering the drainage.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 September 2013.
	19 September 2013	Reminder: Clear the sand and mud near the car washing bay.	Follow up action will be reported in next reporting period.
	27 September 2013	Reminder: Clear the sand and mud near the car washing bay.	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 / Chemical Management	27 September 2013	Reminder: Clear the scrap metal near the haul road.	Follow up action will be reported in next reporting period.
	27 September 2013	Reminder: Remove the empty chemical containers and properly dispose of the chemical waste.	Follow up action will be reported in next reporting period.
Permit/ Licenses	N/A	N/A	N/A

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**.

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:

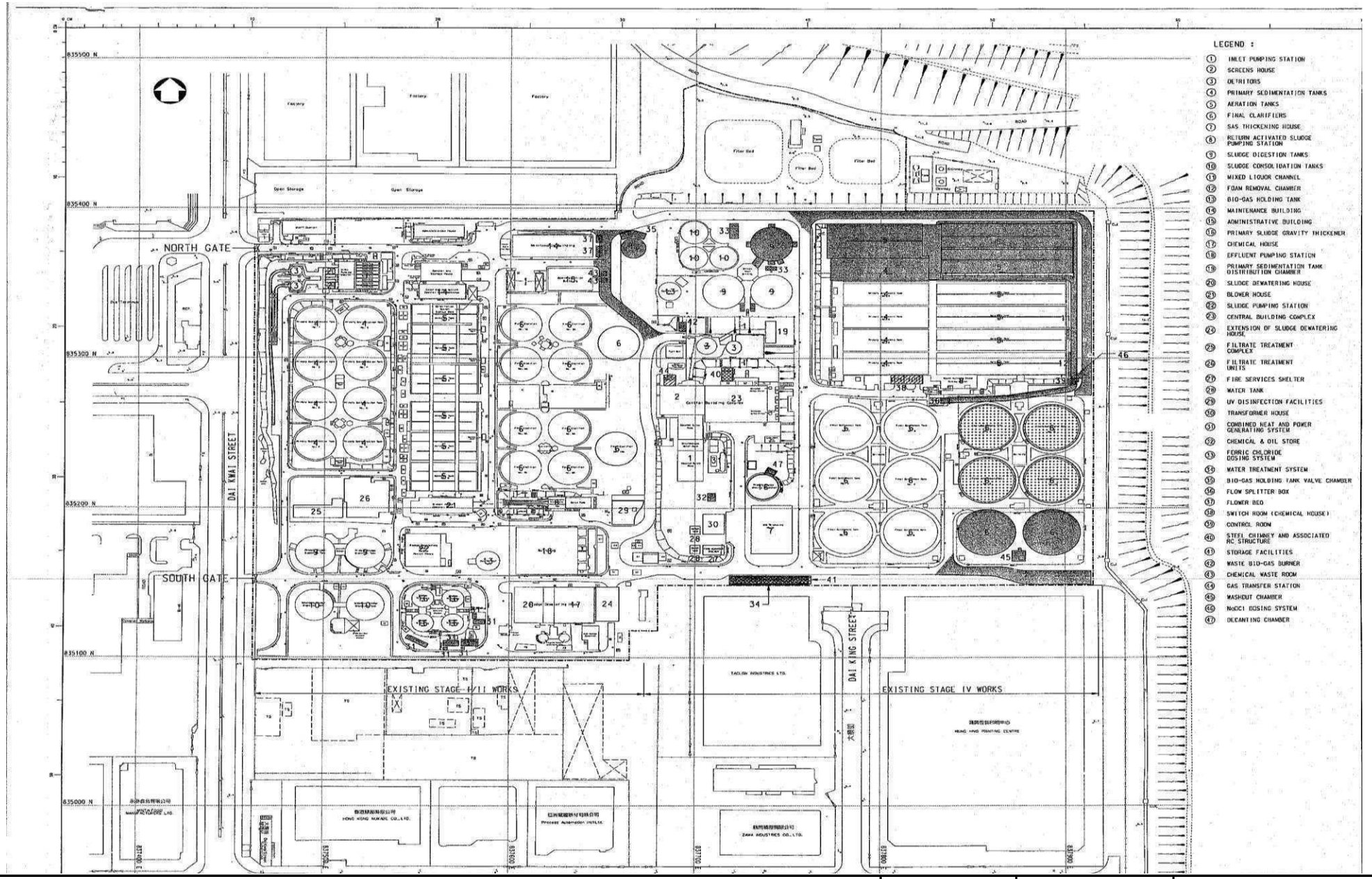
Water Impact

- 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 during rainy season.

Waste / Chemical Management

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

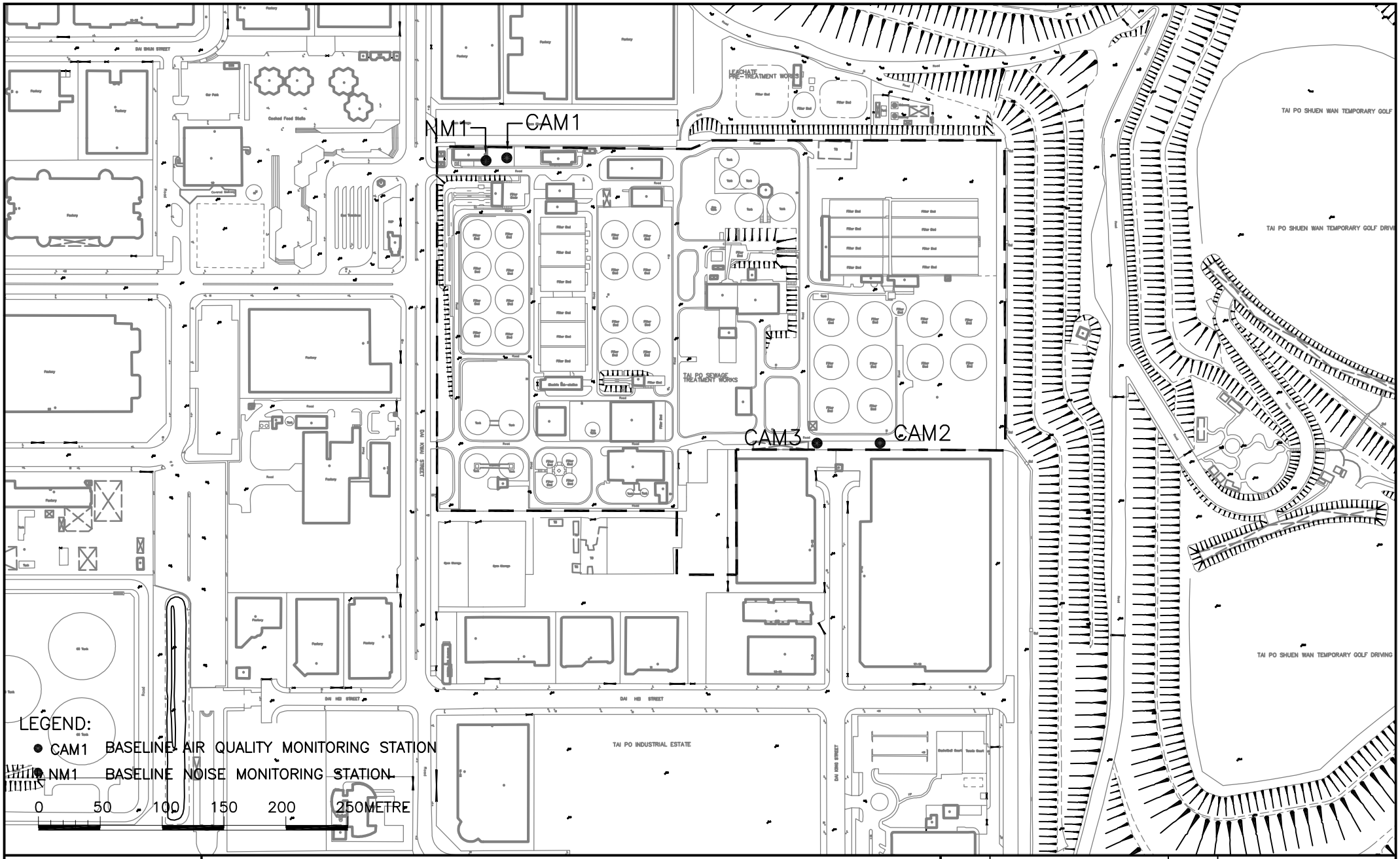


TAI PO SEWAGE TREATMENT WORKS, STAGE V, PHASE IIB

PROJECT SITE LAYOUT PLAN (TPSTW)

Scale N.T.S	Project No. MA0010
Date Jul-10	Figure 1.1

CINOTECH



CINOTECH
Cinotech Consultants Limited

Tai Po Sewage Treatment Work, Stage V, Phase IIB

LOCATIONS OF AIR QUALITY AND NOISE MONITORING STATIONS

SCALE	A4 1:4000	DATE	2010
CHECK	IT	DRAWN	SL
JOB No.	MA0010	DRAWING No.	1.2
		REV	–

F:\MA0010\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.

Landfill Gas

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

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/37/0052

Station: CAM1 - Government Staff Quarter
Operator: WK
Date: 26-Aug-13
Next Due Date: 25-Oct-13
Equipment No.: A-01-37
Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	301.4	Pressure, Pa (mmHg)	757.6

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0574	Intercept, bc	-0.0478
Last Calibration Date:	3-Oct-12	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	2-Oct-13	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	3.41	60.25	8.1	2.83
2	9.7	3.09	54.70	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

By Linear Regression of Y on X

Slope , mw = 0.0490 **Intercept, bw =** -0.1376

Correlation coefficient* = 0.9993

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.93**

Remarks:

Conducted by: wk.Tang Signature: Kwan Date: 26/8/2013

Checked by: [illegible] Signature: [illegible] Date: 26 August 2013

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/A40/0052

Station: CAM2 - Hung Hing Printing Centre Operator: WK

Date: 26-Aug-13 Next Due Date: 25-Oct-13

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

Ambient Condition			
Temperature, Ta (K)	301.2	Pressure, Pa (mmHg)	757.9

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0574	Intercept, bc	-0.0478
Last Calibration Date:	3-Oct-12	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	2-Oct-13	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	3.40	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 Regression of Y on X

Slope , mw = 0.0491 **Intercept, bw :** -0.1528

Correlation coefficient* = 0.9994

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.88**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 26/8/2013

Checked by: [illegible] Signature: Date: 26 August 2013

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0010/35/0052

Station: CAM3 - Talcon Industrial Ltd
Operator: WK
Date: 26-Aug-13
Next Due Date: 25-Oct-13
Equipment No.: A-01-35
Serial No. 0810

Ambient Condition			
Temperature, Ta (K)	301.3	Pressure, Pa (mmHg)	757.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0574	Intercept, bc	-0.0478
Last Calibration Date:	3-Oct-12	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	2-Oct-13	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	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

By Linear Regression of Y on X

Slope , mw = 0.0445 **Intercept, bw :** -0.0054

Correlation coefficient* = 0.9995

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.69**

Remarks:

Conducted by: wk Tang Signature: Kwan Date: 26/8/2013

Checked by: [illegible] Signature: Date: 26 August 2013

WELLAB 匯力
Testing & Research

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

TEST REPORT

Description	Calibration Orifice	**Manufacturer**	TISCH
Serial No.	0993	**Temperature,Ta (K)**	298
Model No.	TE-5025A	**Pressure, Pa (mmHg)**	759.2
Date	3 October 2012		

Plate	Diff.Vol (m^3)	Diff.Time (min)	Diff.Hg (mm)	Diff.H_2O (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[H_2O(Pa/760)(298/Ta)]

Qstd Slope (m) = 2.02751
Intercept (b) = -0.04785
Coefficient (r) = 0.99999

Va	(X axis) Qa	(Y axis)
0.9958	0.7205	0.8861
0.9918	1.0121	1.2531
0.9897	1.1285	1.4010
0.9885	1.1796	1.4694
0.9833	1.4189	1.7721

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

Qa Slope (m) = 1.26959
Intercept (b) = -0.03000
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(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

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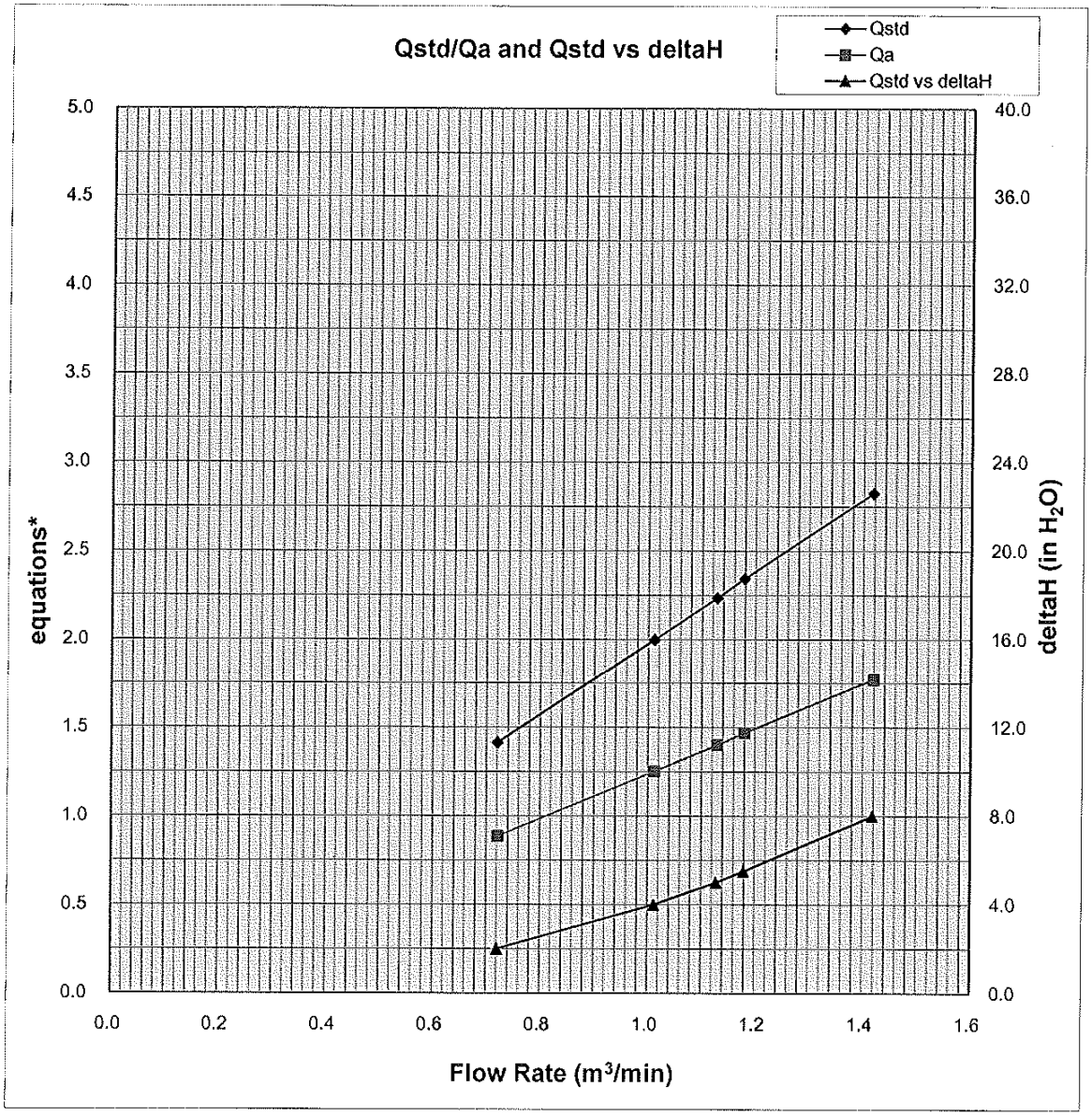
Website: www.wellab.com.hk

TEST REPORT



Y-axis equations:

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

Qa series: SQRT[ΔH(Ta/Pa)]

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TEST REPORT

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

ATTN: **Mr. W.K Tang**

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

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	: 21 degree Celsius
Relative Humidity	: 66%
Pressure	: 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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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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/N/130104
Date of Issue:	2013-01-05
Date Received:	2013-01-04
Date Tested:	2013-01-04
Date Completed:	2013-01-05
Next Due Date:	2014-01-04
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.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 59%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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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.:	C/N/121005/1
Date of Issue:	2012-10-07
Date Received:	2012-10-05
Date Tested:	2012-10-05
Date Completed:	2012-10-07
Next Due Date:	2013-10-06

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 64%

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. DC/2009/09 - Construction of Tai Po Sewage Treatment Works - Stage 5 Phase 2B
Tentative Impact Air Quality and Noise Monitoring Schedule for September 2013

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

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 October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Oct	2-Oct	3-Oct	4-Oct	5-Oct
			1 hr TSP	1 hr TSP 24 hr TSP		
6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct
	1 hr TSP Noise	1 hr TSP	24 hr TSP		1 hr TSP	
13-Oct	**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	
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1 hr TSP Noise 24 hr TSP	1 hr TSP	1 hr TSP			24 hr TSP
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
	1 hr TSP Noise		1 hr TSP	1 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	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			
2-Sep-13	09:00	Sunny	301.3	760.9	3.7520	3.7560	0.0040	19750.1	19751.1	1.0	1.21	1.21	1.21	72.9	55
3-Sep-13	09:00	Cloudy	300.7	759.4	3.7704	3.7841	0.0137	19751.1	19752.1	1.0	1.21	1.21	1.21	72.9	188
6-Sep-13	10:00	Sunny	299.1	763.0	3.0763	3.0818	0.0055	19776.1	19777.1	1.0	1.22	1.22	1.22	73.2	75
9-Sep-13	09:00	Sunny	301.4	762.7	3.0826	3.0891	0.0065	19777.1	19778.1	1.0	1.22	1.22	1.22	72.9	89
12-Sep-13	09:00	Sunny	301.9	761.3	3.6078	3.6150	0.0072	19802.1	19803.1	1.0	1.21	1.21	1.21	72.8	99
13-Sep-13	09:00	Sunny	301.8	760.6	3.5640	3.5693	0.0053	19803.1	19804.1	1.0	1.21	1.21	1.21	72.8	73
16-Sep-13	09:00	Sunny	301.5	758.5	3.5800	3.5861	0.0061	19804.1	19805.1	1.0	1.21	1.21	1.21	72.7	84
17-Sep-13	15:25	Sunny	302.0	757.4	3.6968	3.7105	0.0137	19829.1	19830.1	1.0	1.21	1.21	1.21	72.6	189
19-Sep-13	09:00	Sunny	298.9	758.4	3.6956	3.7105	0.0149	19830.1	19831.1	1.0	1.22	1.22	1.22	73.0	204
23-Sep-13	13:00	Cloudy	298.3	751.2	3.5812	3.5882	0.0070	19855.1	19856.1	1.0	1.21	1.21	1.21	72.8	96
26-Sep-13	09:00	Sunny	300.2	762.2	3.5957	3.6040	0.0083	19856.1	19857.1	1.0	1.22	1.22	1.22	73.0	114
27-Sep-13	09:00	Sunny	299.1	761.8	3.6105	3.6150	0.0045	19857.1	19858.1	1.0	1.22	1.22	1.22	73.2	62
30-Sep-13	16:55	Cloudy	300.1	759.9	3.6117	3.6171	0.0054	19882.1	19883.1	1.0	1.22	1.22	1.22	73.0	74
														Min	55
														Max	204
														Average	108

Station CAM2 **Heng Hing Printing Centre**

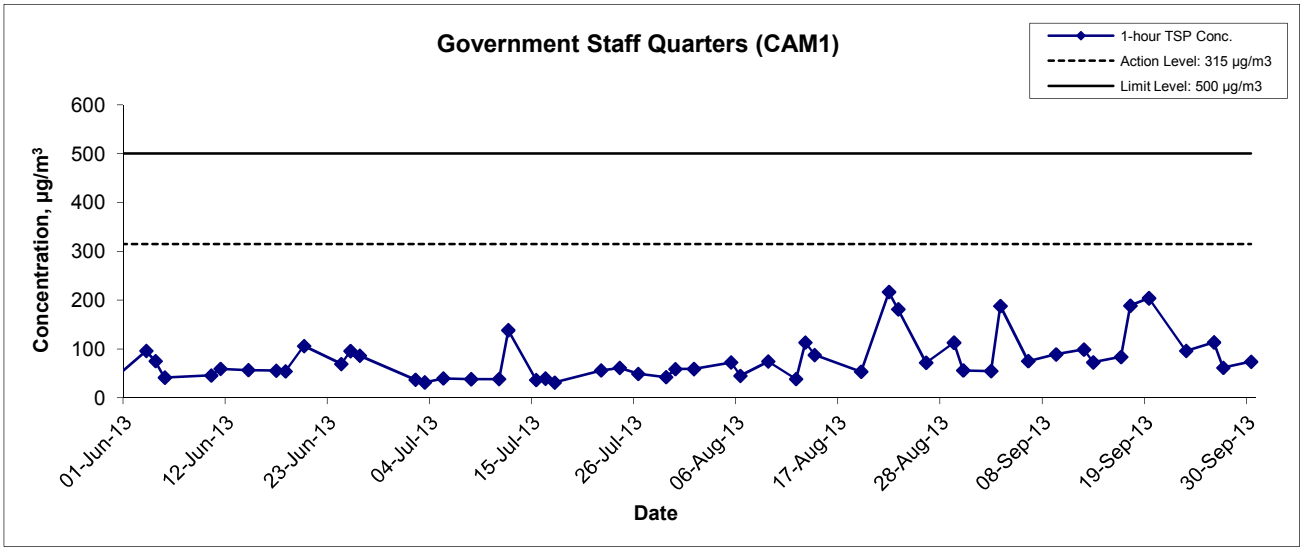
Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
2-Sep-13	09:00	Sunny	301.3	760.9	3.7447	3.7501	0.0054	28924.3	28925.3	1.0	1.22	1.22	1.22	73.2	74
3-Sep-13	09:00	Cloudy	300.7	759.4	3.7089	3.7262	0.0173	28925.3	28926.3	1.0	1.22	1.22	1.22	73.2	236
6-Sep-13	10:00	Sunny	299.1	763.0	3.7574	3.7645	0.0071	28950.3	28951.3	1.0	1.23	1.23	1.23	73.6	96
9-Sep-13	09:00	Sunny	301.4	762.7	3.6384	3.6456	0.0072	28951.3	28952.3	1.0	1.22	1.22	1.22	73.3	98
12-Sep-13	09:00	Sunny	301.9	761.3	3.0619	3.0704	0.0085	28977.3	28978.3	1.0	1.22	1.22	1.22	73.2	116
13-Sep-13	09:00	Sunny	301.8	760.6	3.5986	3.6065	0.0079	28978.3	28979.3	1.0	1.22	1.22	1.22	73.2	108
16-Sep-13	09:00	Sunny	301.5	758.5	3.5924	3.6002	0.0078	28979.3	28980.3	1.0	1.22	1.22	1.22	73.1	107
17-Sep-13	15:30	Sunny	302.0	757.4	3.6175	3.6324	0.0149	29004.3	29005.3	1.0	1.22	1.22	1.22	73.0	204
19-Sep-13	09:00	Sunny	298.9	758.4	3.6610	3.6778	0.0168	29005.3	29006.3	1.0	1.22	1.22	1.22	73.4	229
23-Sep-13	13:00	Cloudy	298.3	751.2	3.6413	3.6477	0.0064	29030.3	29031.3	1.0	1.22	1.22	1.22	73.1	87
26-Sep-13	09:00	Sunny	300.2	762.2	3.7341	3.7466	0.0125	29031.3	29032.3	1.0	1.22	1.22	1.22	73.4	170
27-Sep-13	09:00	Sunny	299.1	761.8	3.7577	3.7642	0.0065	29032.3	29033.3	1.0	1.23	1.23	1.23	73.5	88
30-Sep-13	16:30	Cloudy	300.1	759.9	3.5618	3.5699	0.0081	29057.3	29058.3	1.0	1.22	1.22	1.22	73.3	110
														Min	74
														Max	236
														Average	133

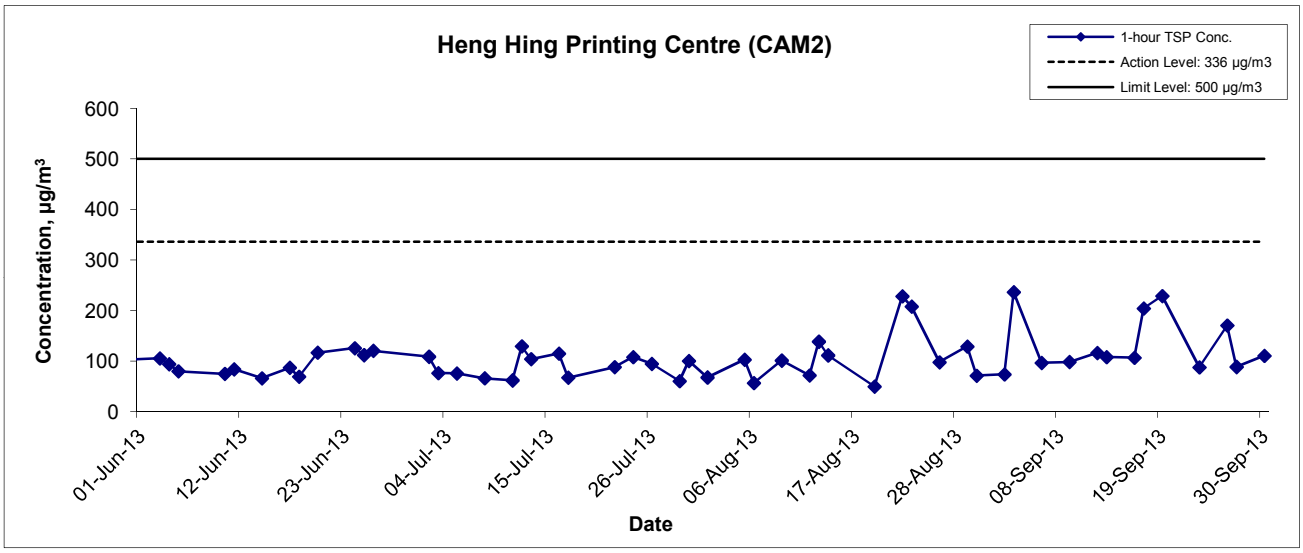
Appendix D - 1-hour TSP Monitoring Results

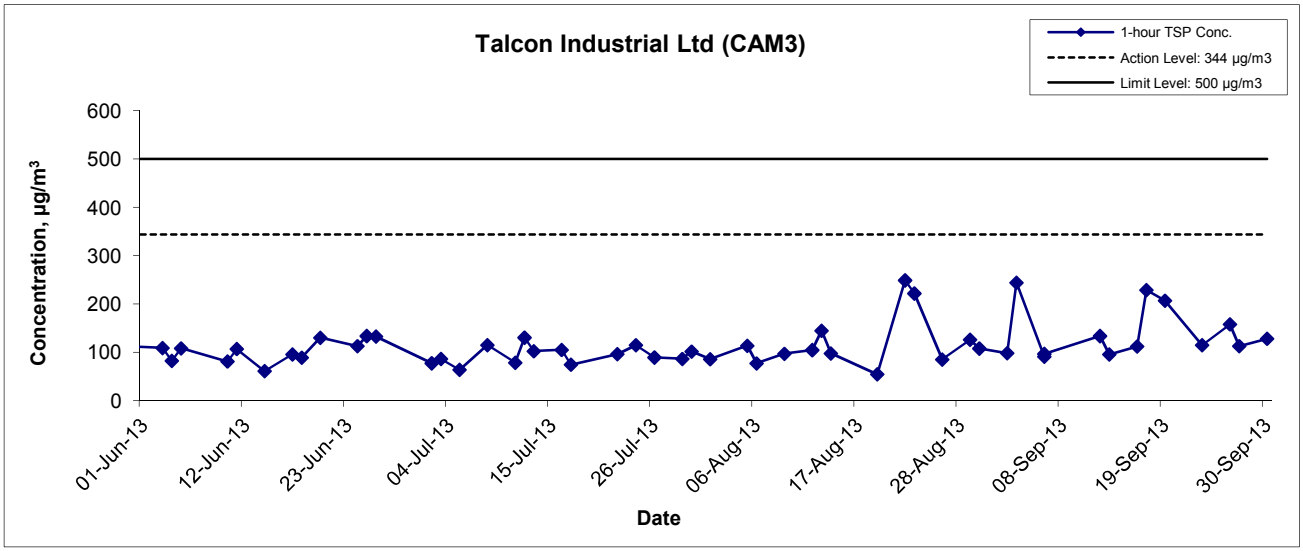
Station CAM3 **Talcon Industrial Ltd**

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			
2-Sep-13	09:00	Sunny	301.3	760.9	3.7680	3.7752	0.0072	22159.9	22160.9	1.0	1.22	1.22	1.22	73.2	98
3-Sep-13	09:00	Cloudy	300.7	759.4	3.7555	3.7734	0.0179	22160.9	22161.9	1.0	1.22	1.22	1.22	73.2	244
6-Sep-13	10:00	Sunny	299.1	763.0	3.7464	3.7531	0.0067	22185.9	22186.9	1.0	1.23	1.23	1.23	73.6	91
6-Sep-13	09:00	Sunny	301.4	762.7	3.6152	3.6223	0.0071	22186.9	22187.9	1.0	1.22	1.22	1.22	73.3	97
12-Sep-13	09:00	Sunny	301.9	761.3	3.2163	3.2261	0.0098	22211.9	22212.9	1.0	1.22	1.22	1.22	73.2	134
13-Sep-13	09:00	Sunny	301.8	760.6	3.6070	3.6140	0.0070	22212.9	22213.9	1.0	1.22	1.22	1.22	73.2	96
16-Sep-13	09:00	Sunny	301.5	758.5	3.6018	3.6100	0.0082	22213.9	22214.9	1.0	1.22	1.22	1.22	73.1	112
17-Sep-13	15:30	Sunny	302.0	757.4	3.6193	3.6360	0.0167	22238.9	22239.9	1.0	1.22	1.22	1.22	73.0	229
19-Sep-13	09:00	Sunny	298.9	758.4	3.6421	3.6573	0.0152	22239.9	22240.9	1.0	1.22	1.22	1.22	73.4	207
23-Sep-13	13:00	Cloudy	298.3	751.2	3.6484	3.6568	0.0084	22264.9	22265.9	1.0	1.22	1.22	1.22	73.1	115
26-Sep-13	09:00	Sunny	300.2	762.2	3.7210	3.7326	0.0116	22265.9	22266.9	1.0	1.22	1.22	1.22	73.4	158
27-Sep-13	09:00	Sunny	299.1	761.8	3.7407	3.7490	0.0083	22266.9	22267.9	1.0	1.23	1.23	1.23	73.6	113
30-Sep-13	16:00	Cloudy	300.1	759.9	3.5608	3.5702	0.0094	22291.9	22292.9	1.0	1.22	1.22	1.22	73.3	128
														Min	91
														Max	244
														Average	140

1-hr TSP Concentration Levels







Title: Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B Graphical Presentation of 1-hour TSP Impact Monitoring Results	Scale: N.T.S Date: Sep 13	Project No.: MA0010 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			
4-Sep-13	Cloudy	297.7	759.2	3.0595	3.1146	0.0551	19752.1	19776.1	24.0	1.22	1.22	1.22	1756.8	31
10-Sep-13	Sunny	301.3	761.1	3.6191	3.6969	0.0778	19778.1	19802.1	24.0	1.21	1.21	1.21	1749.0	44
16-Sep-13	Sunny	302.9	757.1	3.5717	3.6623	0.0906	19805.1	19829.1	24.0	1.21	1.21	1.21	1740.4	52
21-Sep-13	Sunny	302.9	753.9	3.6218	3.8011	0.1793	19831.1	19855.1	24.0	1.21	1.21	1.21	1737.0	103
27-Sep-13	Sunny	299.9	761.3	3.5678	3.6904	0.1226	19858.1	19882.1	24.0	1.22	1.22	1.22	1753.1	70
													Min	31
													Max	103
													Average	60

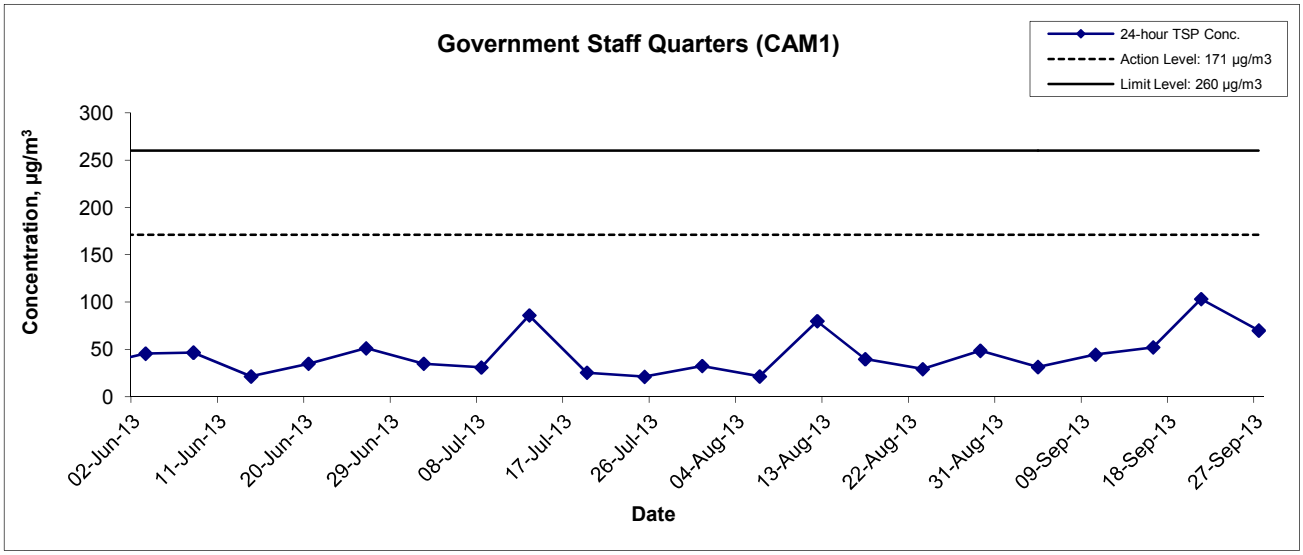
Station CAM2 **Heng Hing Printing Centre**

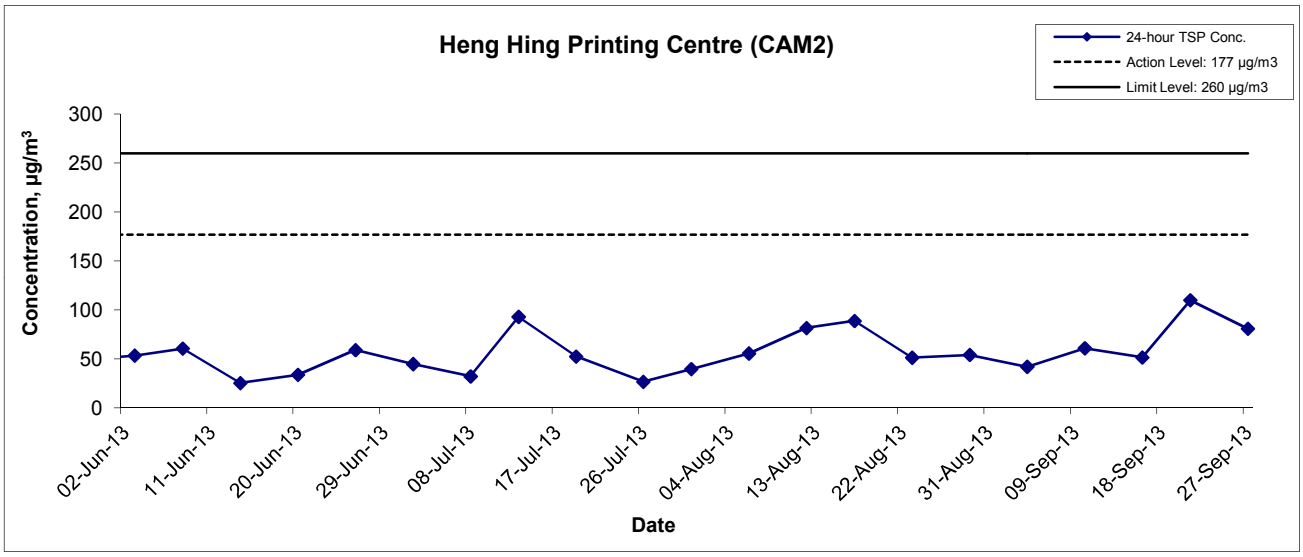
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
4-Sep-13	Cloudy	297.7	759.2	3.7341	3.8081	0.0740	28926.3	28950.3	24.0	1.23	1.23	1.23	1765.8	42
10-Sep-13	Sunny	301.3	761.1	3.2674	3.3745	0.1071	28952.3	28976.3	24.0	1.22	1.22	1.22	1758.0	61
16-Sep-13	Sunny	302.9	757.1	3.6190	3.7091	0.0901	28980.3	29004.3	24.0	1.22	1.21	1.21	1749.5	52
21-Sep-13	Sunny	302.9	753.9	3.6542	3.8462	0.1920	29006.3	29030.3	24.0	1.21	1.21	1.21	1746.1	110
27-Sep-13	Sunny	299.9	761.3	3.2229	3.3654	0.1425	29033.3	29057.3	24.0	1.22	1.22	1.22	1762.1	81
													Min	42
													Max	110
													Average	69

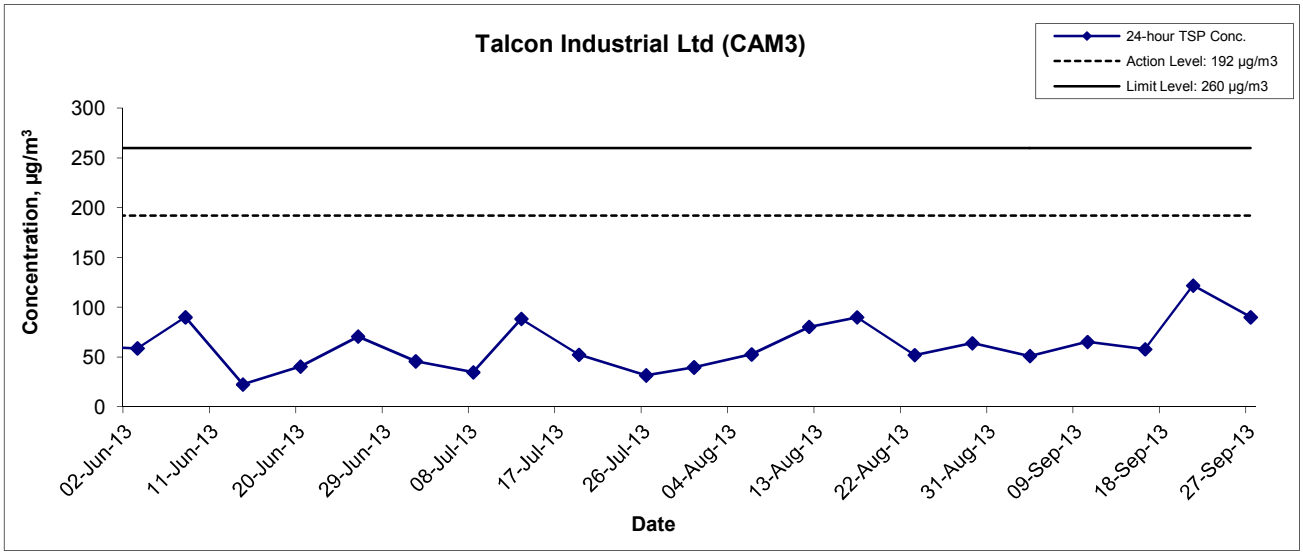
Station CAM3 **Talcon Industrial Ltd**

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			
4-Sep-13	Cloudy	297.7	759.2	3.7495	3.8395	0.0900	22161.9	22185.9	24.0	1.23	1.23	1.23	1766.4	51
10-Sep-13	Sunny	301.3	761.1	3.0870	3.2017	0.1147	22187.9	22211.9	24.0	1.22	1.22	1.22	1758.0	65
16-Sep-13	Sunny	302.9	757.1	3.6202	3.7213	0.1011	22214.9	22238.9	24.0	1.21	1.21	1.21	1748.8	58
21-Sep-13	Sunny	302.9	753.9	3.6274	3.8401	0.2127	22240.9	22264.9	24.0	1.21	1.21	1.21	1745.1	122
27-Sep-13	Sunny	299.9	761.3	3.7367	3.8953	0.1586	22267.9	22291.9	24.0	1.22	1.22	1.22	1762.4	90
													Min	51
													Max	122
													Average	77

24-hr TSP Concentration Levels







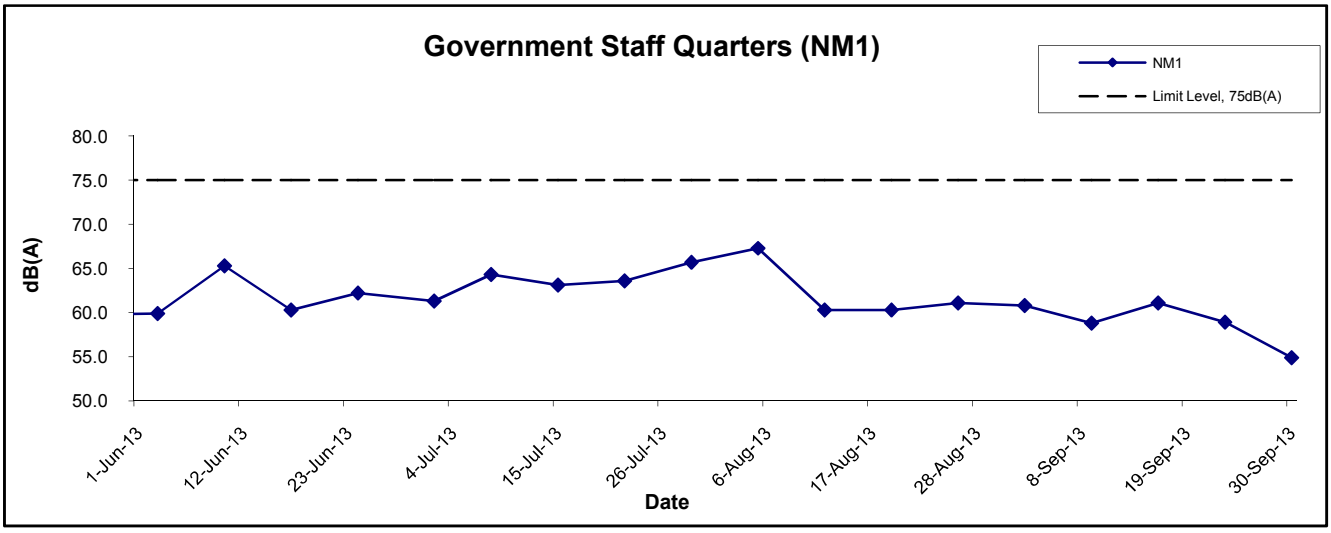
Title: Contract No. DC/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B Graphical Presentation of 24-hour TSP Impact Monitoring Results	Scale: N.T.S Date: Sep 13	Project No.: MA0010 Appendix: E	CINOTECH

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}
2-Sep-13	14:00	Sunny	60.8	62.2	57.1
9-Sep-13	13:20	Sunny	58.8	61.4	56.2
16-Sep-13	13:00	Sunny	61.1	62.8	58.3
23-Sep-13	13:00	Cloudy	58.9	60.4	55.4
30-Sep-13	17:00	Cloudy	54.9	56.2	50.6
		Average	59.4	60.6	55.5
		Minimum	54.9	56.2	50.6
		Maximum	61.1	62.8	58.3

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	Project No.: MA0010	CINOTECH
	Date: Sep 13	Appendix: F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX H – SUMMARY OF EXCEEDANCE

Reporting Month: September 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

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	130905
Date	5 September 2013 (Thursday)
Time	10:10-11:00

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

Ref. No.	Remarks/Observations	Related Item No.
130905-R01 130905-R02	***Part B - Water Quality*** • Clear the stand water in the tanks no. 4, 5 and 6. • Clear the sand and mud on the haul road near FAS to avoid it from entering the drainage. ***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.:130829), all environmental deficiencies were observed to be improved/rectified by the Contractor.	B 12 B 7

	Name	Signature	Date
Recorded by	Kevin Lam		5 September 2013
Checked by	Dr. Priscilla Choy		5 September 2013

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	130913
Date	13 September 2013 (Friday)
Time	10:00-10:45

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • 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.:130905), all environmental deficiencies were observed to be improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam		13 September 2013
Checked by	Dr. Priscilla Choy		13 September 2013

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	130919
Date	19 September 2013 (Thursday)
Time	10:00-11:00

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

Ref. No.	Remarks/Observations	Related Item No.
130919-R01	***Part B - Water Quality*** • Clear the sand and mud near the car washing bay. ***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.:130913), all environmental deficiencies were observed to be improved/rectified by the Contractor.	B 14iii

	Name	Signature	Date
Recorded by	Kevin Lam		19 September 2013
Checked by	Dr. Priscilla Choy		19 September 2013

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	130927
Date	27 September 2013 (Friday)
Time	10:00-11:00

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

Ref. No.	Remarks/Observations	Related Item No.
130927-R03	***Part B - Water Quality*** • Clear the sand and mud near the car washing bay. ***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.	B 14iii
130927-R01 130927-R02	***Part E - Waste / Chemical Management*** • Clear the scrap metal near the haul road. • Remove the empty chemical containers and properly dispose of the chemical waste. ***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.:130919), outstanding item 130919-R01 was remarked as 130927-R03 and review shall be carried out during next site inspection.	E 4i E 2ii

	Name	Signature	Date
Recorded by	Kevin Lam		27 September 2013
Checked by	Dr. Priscilla Choy		27 September 2013

APPENDIX I
EVENT ACTION PLANS

APPENDIX J (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 J (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 (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

APPENDIX K – 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
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.	√
	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.	√
	Precautionary measures to minimize landfill gas hazard during excavation: • No smoking or burning shall be allowed • No worker shall work alone at any time in the confined space or any excavation trenches • Construction equipment shall be equipped with a vertical exhaust at least 0.6 m above ground level and /or with a park arrestors • Electrical motors and electrical extension cords shall be explosive-proof or intrinsically safe • Permit to Work procedures to be adopted for welding, flame cutting or other hot works in trenches or confined spaces • Forced ventilation if working in a trench deeper than 1 m • Close all valves immediately after piping assembly or conduiting construction. For the large diameter pipes, pipe end shall be capped on one side. Forced ventilation shall also be provided before commissioning of the pipeline and staff entering and working in it • Routine monitoring shall be conducted in all excavations to ensure the works area to be free of landfill gas before any man enters the area. • Landfill gas precautionary measures involved with excavation and piping works shall be included in the Safety Plan • Monitoring shall be conducted at the cracks on the ground floor during ground-works construction	√
	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	√

Note:
√ – 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)

Waste Flow Table

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	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											
Oct											
Nov											
Dec											
Total	4.910	0	0	0	4.910	0	0.8	0	0	0.03	0.09

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 M – COMPLAINT LOG

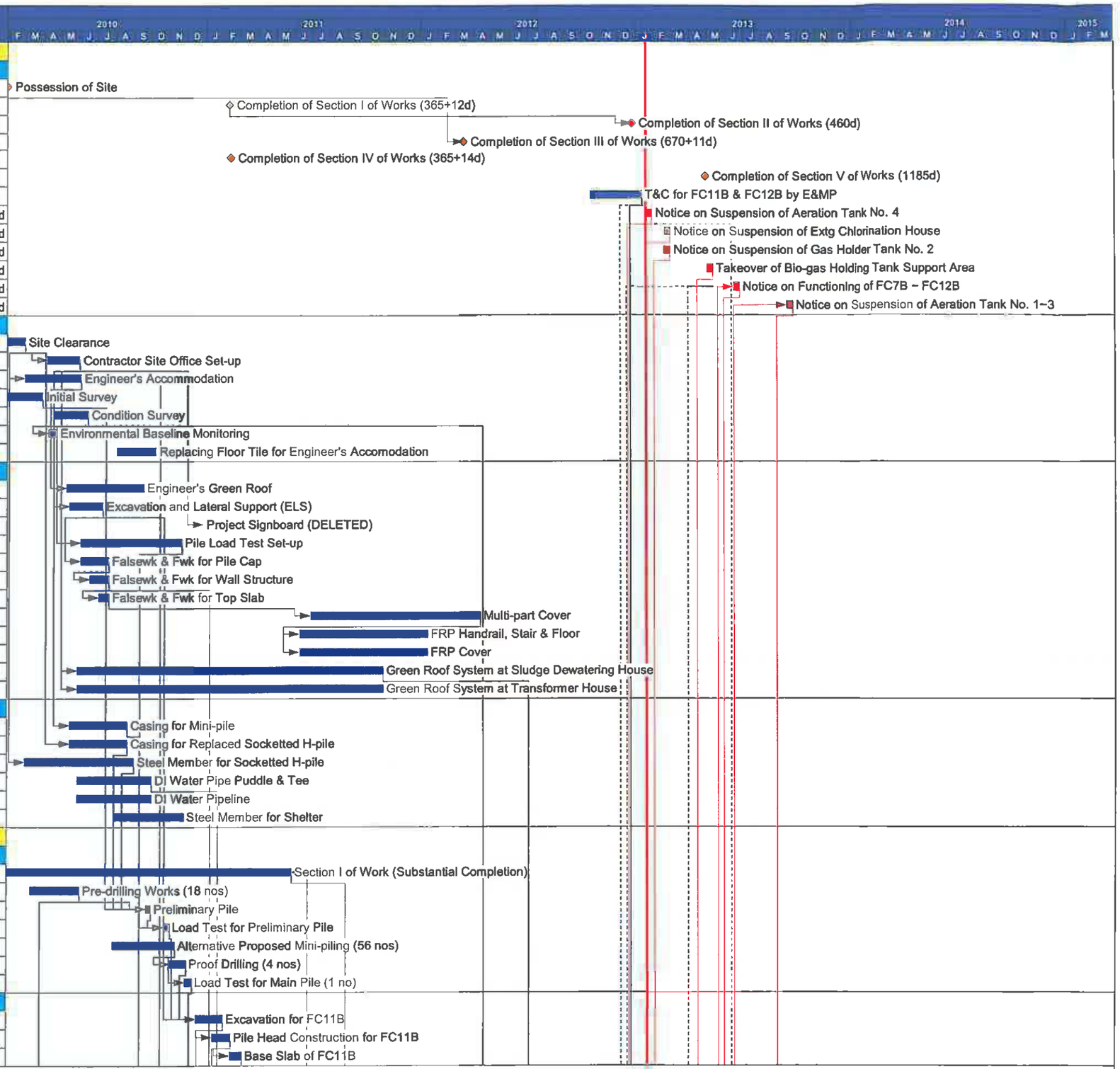
Reporting Month: September 2013

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
General					
1000	Possession of Site	0		26JAN10	
10000	Completion of Section I of Works (365+12d)	0		09FEB11	
20000	Completion of Section II of Works (460d)	0		24DEC12	
30000	Completion of Section III of Works (670+11d)	0		13MAR12	
40000	Completion of Section IV of Works (365+14d)	0		11FEB11	
50000	Completion of Section V of Works (1185d)	0		27APR13	
60000	T&C for FC11B & FC12B by E&MP	60	15OCT12	10JAN13	
60010	Notice on Suspension of Aeration Tank No. 4	10	18JAN13	27JAN13	-595d
60020	Notice on Suspension of Extg Chlorination House	10	18FEB13	27FEB13	-1d
60030	Notice on Suspension of Gas Holder Tank No. 2	10	18FEB13	27FEB13	-1d
60040	Takeover of Bio-gas Holding Tank Support Area	10	01MAY13	10MAY13	-58d
60050	Notice on Functioning of FC7B ~ FC12B	10	15JUN13	24JUN13	-528d
60060	Notice on Suspension of Aeration Tank No. 1~3	10	13SEP13	22SEP13	-618d
1010	Site Clearance	30	29JAN10	27FEB10	
1020	Contractor Site Office Set-up	60	07APR10	31MAY10	
1030	Engineer's Accommodation	60	28FEB10	02JUN10	
1040	Initial Survey	60	29JAN10	29MAR10	
1050	Condition Survey	60	19APR10	14JUN10	
1060	Environmental Baseline Monitoring	14	09APR10	22APR10	
1070	Replacing Floor Tile for Engineer's Accomodation	30	03AUG10	07OCT10	
2010	Engineer's Green Roof	60	10MAY10	17SEP10	
2020	Excavation and Lateral Support (ELS)	30	15MAY10	09JUL10	
2030	Project Signboard (DELETED)	30	28DEC10	27DEC10	
2040	Pile Load Test Set-up	30	03JUN10	20NOV10	
2050	Falsewk & Fwk for Pile Cap	30	03JUN10	19JUL10	
2060	Falsewk & Fwk for Wall Structure	30	18JUN10	19JUL10	
2070	Falsewk & Fwk for Top Slab	30	03JUL10	19JUL10	
2080	Multi-part Cover	45	28JUN11	10APR12	
2090	FRP Handrail, Stair & Floor	45	09JUN11	11JAN12	
2100	FRP Cover	30	09JUN11	11JAN12	
2120	Green Roof System at Sludge Dewatering House	60	28MAY10	27OCT11	
2130	Green Roof System at Transformer House	60	28MAY10	27OCT11	
3010	Casing for Mini-pile	55	15MAY10	19AUG10	
3020	Casing for Replaced Socketted H-pile	55	15MAY10	19AUG10	
3030	Steel Member for Socketted H-pile	55	28FEB10	30AUG10	
3040	DI Water Pipe Puddle & Tee	180	28MAY10	29SEP10	
3050	DI Water Pipeline	180	28MAY10	29SEP10	
3060	Steel Member for Shelter	60	29JUL10	23NOV10	
Section I of Works					
10001	Section I of Work (Substantial Completion)	365	29JAN10	25MAY11	
10010	Pre-drilling Works (18 nos)	45	10MAR10	31MAY10	
10020	Preliminary Pile	7	21SEP10	28SEP10	
10030	Load Test for Preliminary Pile	14	21OCT10	30OCT10	
10040	Alternative Proposed Mini-piling (56 nos)	70	27JUL10	08NOV10	
10050	Proof Drilling (4 nos)	14	01NOV10	27NOV10	
10060	Load Test for Main Pile (1 no)	14	26NOV10	07DEC10	
10110	Excavation for FC11B	15	15DEC10	29JAN11	
10120	Pile Head Construction for FC11B	15	12JAN11	11FEB11	
10130	Base Slab of FC11B	20	11FEB11	02MAR11	



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TPSTW Stage 5 Phase 2B

Master Program

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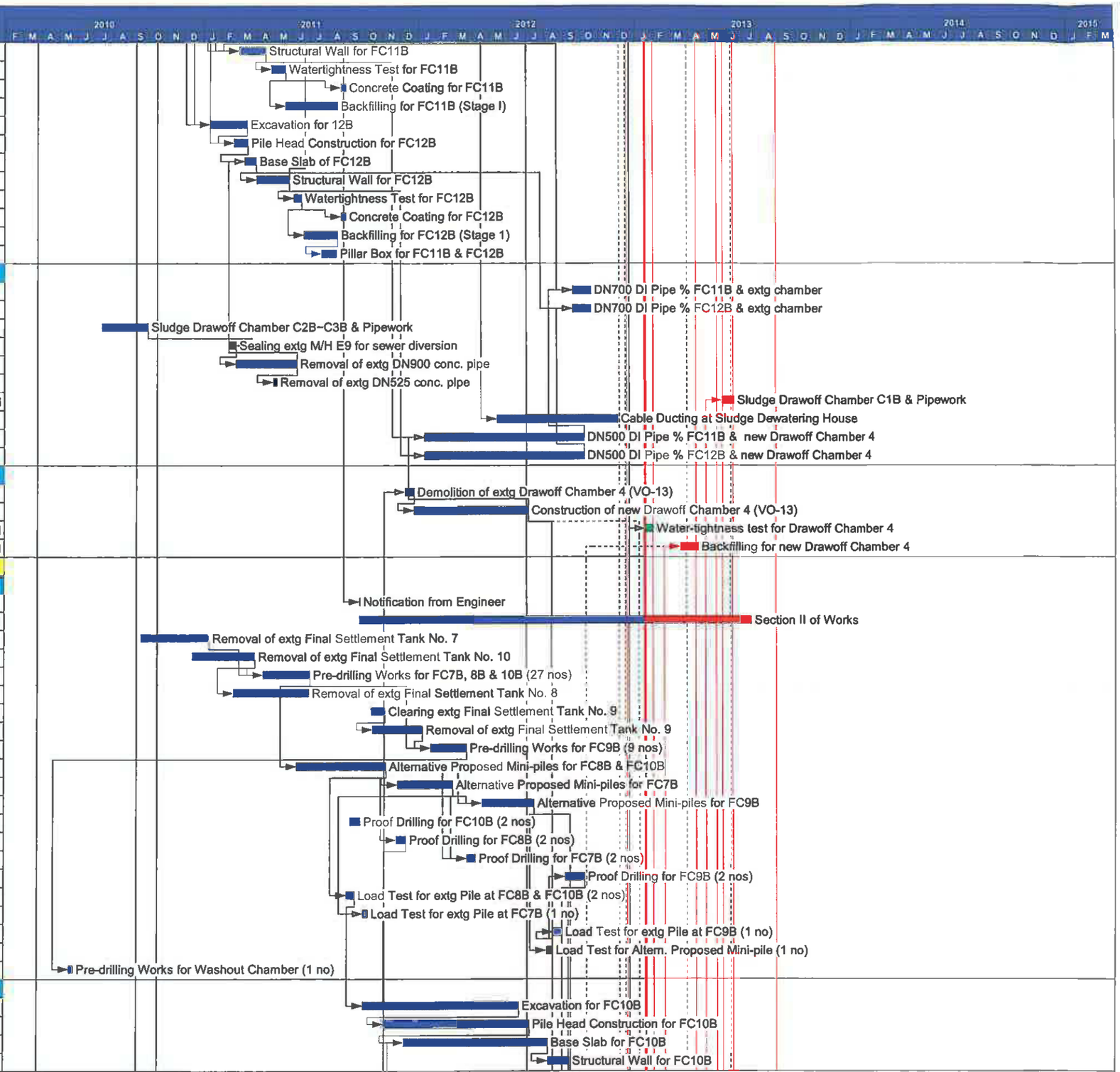
Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
10140	Structural Wall for FC11B	30	03MAR11	15APR11	
10150	Watertightness Test for FC11B	20	26APR11	19MAY11	
10160	Concrete Coating for FC11B	7	22AUG11	29AUG11	
10170	Backfilling for FC11B (Stage I)	20	20MAY11	15AUG11	
10180	Excavation for 12B	15	13JAN11	15MAR11	
10190	Pile Head Construction for FC12B	15	22FEB11	16MAR11	
10200	Base Slab of FC12B	20	12MAR11	30MAR11	
10210	Structural Wall for FC12B	20	01APR11	25MAY11	
10220	Watertightness Test for FC12B	20	03JUN11	15JUN11	
10230	Concrete Coating for FC12B	7	22AUG11	29AUG11	
10240	Backfilling for FC12B (Stage 1)	20	20JUN11	15AUG11	
10250	Pillar Box for FC11B & FC12B	30	20JUL11	13AUG11	
11010	DN700 DI Pipe % FC11B & extg chamber	50	17SEP12	17OCT12	
11020	DN700 DI Pipe % FC12B & extg chamber	50	17SEP12	17OCT12	
11030	Sludge Drawoff Chamber C2B~C3B & Pipework	30	13JUL10	28SEP10	
11040	Sealing extg M/H E9 for sewer diversion	10	15FEB11	24FEB11	
11050	Removal of extg DN900 conc. pipe	20	25FEB11	07JUN11	
11060	Removal of extg DN525 conc. pipe	20	29APR11	04MAY11	
11070	Sludge Drawoff Chamber C1B & Pipework	20	28MAY13	16JUN13	-493d
11080	Cable Ducting at Sludge Dewatering House	150	12MAY12	01DEC12	
11090	DN500 DI Pipe % FC11B & new Drawoff Chamber 4	30	10JAN12	05OCT12	
11100	DN500 DI Pipe % FC12B & new Drawoff Chamber 4	30	10JAN12	05OCT12	
12010	Demolition of extg Drawoff Chamber 4 (VO-13)	20	08DEC11	22DEC11	
12020	Construction of new Drawoff Chamber 4 (VO-13)	90	23DEC11	03JUL12	
12025	Water-tightness test for Drawoff Chamber 4	14	18JAN13	31JAN13	86d
12030	Backfilling for new Drawoff Chamber 4	30	19MAR13	17APR13	-433d
Section II of Works					
20001	Notification from Engineer	90	22SEP11	22SEP11	
20010	Section II of Works	460	22SEP11	15JUL13	-203d
20020	Removal of extg Final Settlement Tank No. 7	90	18SEP10	10JAN11	
20030	Removal of extg Final Settlement Tank No. 10	90	14DEC10	28MAR11	
20040	Pre-drilling Works for FC7B, 8B & 10B (27 nos)	45	12APR11	29JUN11	
20050	Removal of extg Final Settlement Tank No. 8	90	21FEB11	27JUN11	
20060	Clearing extg Final Settlement Tank No. 9	7	12OCT11	03NOV11	
20070	Removal of extg Final Settlement Tank No. 9	90	14OCT11	05JAN12	
20080	Pre-drilling Works for FC9B (9 nos)	45	20JAN12	20MAR12	
20090	Alternative Proposed Mini-piles for FC8B & FC10B	75	07JUN11	04NOV11	
20100	Alternative Proposed Mini-piles for FC7B	40	25NOV11	25FEB12	
20110	Alternative Proposed Mini-piles for FC9B	40	16APR12	12JUL12	
20120	Proof Drilling for FC10B (2 nos)	14	06SEP11	22SEP11	
20130	Proof Drilling for FC8B (2 nos)	20	23NOV11	08DEC11	
20140	Proof Drilling for FC7B (2 nos)	14	21MAR12	04APR12	
20150	Proof Drilling for FC9B (2 nos)	14	03SEP12	05OCT12	
20160	Load Test for extg Pile at FC8B & FC10B (2 nos)	20	30AUG11	12SEP11	
20170	Load Test for extg Pile at FC7B (1 no)	20	27SEP11	04OCT11	
20180	Load Test for extg Pile at FC9B (1 no)	10	13AUG12	28AUG12	
20190	Load Test for Altern. Proposed Mini-pile (1 no)	10	02AUG12	12AUG12	
20200	Pre-drilling Works for Washout Chamber (1 no)	14	19MAY10	25MAY10	
21010	Excavation for FC10B	30	27SEP11	15JUN12	
21020	Pile Head Construction for FC10B	35	01NOV11	03JUL12	
21030	Base Slab for FC10B	20	05DEC11	03AUG12	
21040	Structural Wall for FC10B	30	04AUG12	08SEP12	



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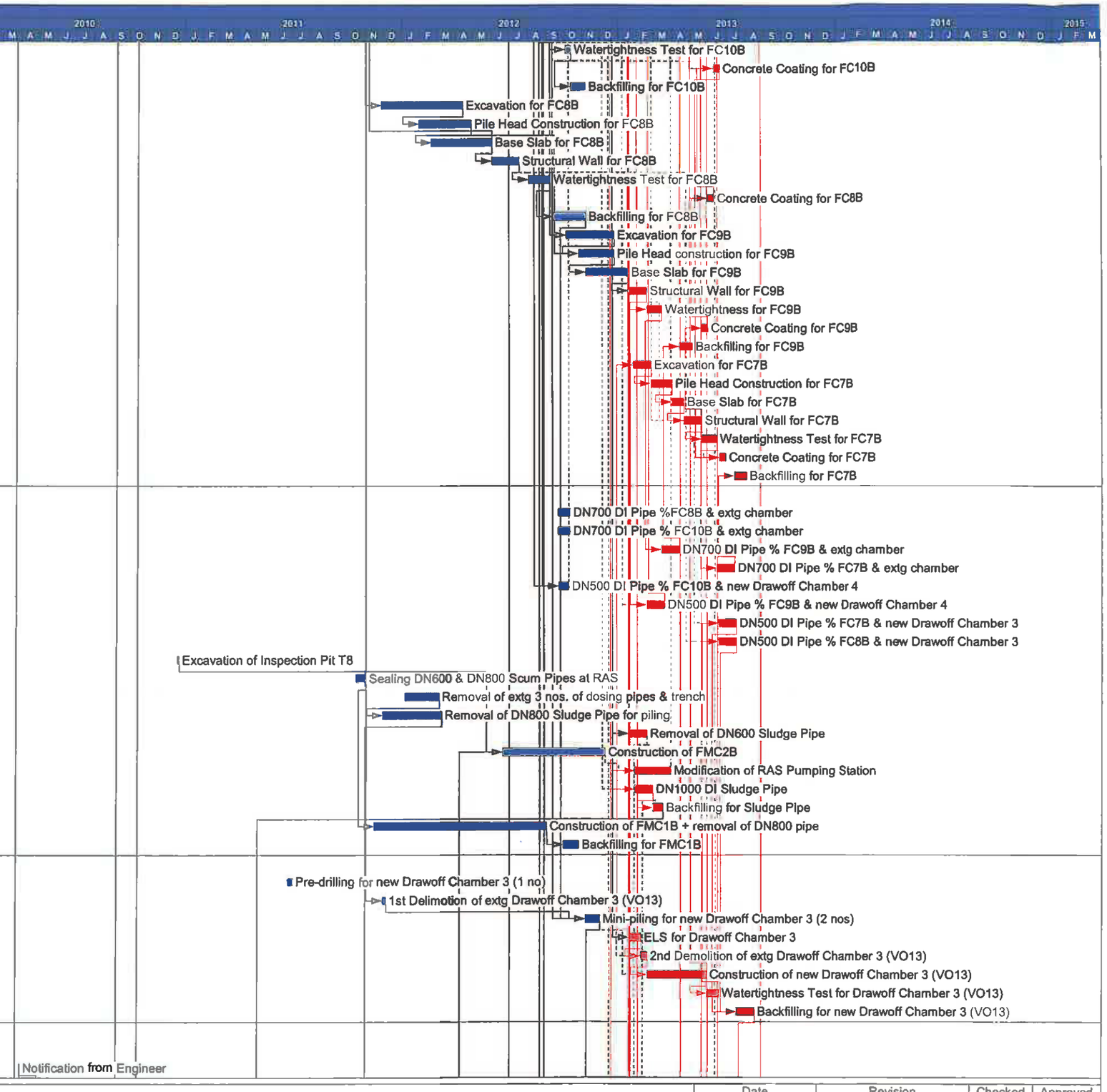
Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
21050	Watertightness Test for FC10B	25	04OCT12	12OCT12	
21060	Concrete Coating for FC10B	10	09JUN13	18JUN13	-186d
21070	Backfilling for FC10B	20	13OCT12	06NOV12	
21080	Excavation for FC8B	30	28NOV11	13APR12	
21090	Pile Head Construction for FC8B	35	30JAN12	27APR12	
21100	Base Slab for FC8B	20	20FEB12	01JUN12	
21110	Structural Wall for FC8B	45	02JUN12	17JUL12	
21120	Watertightness Test for FC8B	25	03AUG12	07SEP12	
21130	Concrete Coating for FC8B	10	30MAY13	08JUN13	-186d
21140	Backfilling for FC8B	20	13SEP12	06NOV12	
21150	Excavation for FC9B	20	05OCT12	24DEC12	
21160	Pile Head construction for FC9B	30	26OCT12	24DEC12	
21170	Base Slab for FC9B	20	07NOV12	16JAN13	
21180	Structural Wall for FC9B	30	17JAN13	16FEB13	-433d
21190	Watertightness for FC9B	25	17FEB13	13MAR13	-130d
21200	Concrete Coating for FC9B	10	20MAY13	29MAY13	-186d
21210	Backfilling for FC9B	21	13APR13	03MAY13	-130d
21220	Excavation for FC7B	30	25JAN13	23FEB13	-221d
21230	Pile Head Construction for FC7B	35	24FEB13	30MAR13	-221d
21240	Base Slab for FC7B	20	31MAR13	19APR13	-221d
21250	Structural Wall for FC7B	30	20APR13	19MAY13	-221d
21260	Watertightness Test for FC7B	25	20MAY13	13JUN13	-221d
21270	Concrete Coating for FC7B	10	19JUN13	28JUN13	-186d
21280	Backfilling for FC7B	20	14JUL13	02AUG13	-221d
22002	DN700 DI Pipe %FC8B & extg chamber	30	21SEP12	10OCT12	
22004	DN700 DI Pipe % FC10B & extg chamber	30	21SEP12	10OCT12	
22006	DN700 DI Pipe % FC9B & extg chamber	30	14MAR13	12APR13	-130d
22008	DN700 DI Pipe % FC7B & extg chamber	30	14JUN13	13JUL13	-221d
22010	DN500 DI Pipe % FC10B & new Drawoff Chamber 4	30	22SEP12	08OCT12	
22020	DN500 DI Pipe % FC9B & new Drawoff Chamber 4	30	17FEB13	18MAR13	-433d
22030	DN500 DI Pipe % FC7B & new Drawoff Chamber 3	30	17JUN13	16JUL13	-234d
22040	DN500 DI Pipe % FC8B & new Drawoff Chamber 3	30	17JUN13	16JUL13	-234d
22050	Excavation of Inspection Pit T8	20	21DEC10	23DEC10	
22060	Sealing DN600 & DN800 Scum Pipes at RAS	10	18OCT11	01NOV11	
22070	Removal of extg 3 nos. of dosing pipes & trench	15	07JAN12	03MAR12	
22080	Removal of DN800 Sludge Pipe for piling	15	01DEC11	08MAR12	
22090	Removal of DN600 Sludge Pipe	30	18JAN13	16FEB13	-585d
22100	Construction of FMC2B	60	20JUN12	08DEC12	
22110	Modification of RAS Pumping Station	60	28JAN13	28MAR13	-450d
22120	DN1000 DI Sludge Pipe	30	28JAN13	26FEB13	-595d
22130	Backfilling for Sludge Pipe	17	27FEB13	15MAR13	-81d
22140	Construction of FMC1B + removal of DN800 pipe	45	17NOV11	31AUG12	
22150	Backfilling for FMC1B	25	29SEP12	24OCT12	
23010	Pre-drilling for new Drawoff Chamber 3 (1 no)	7	25JUN11	02JUL11	
23020	1st Delimotion of extg Drawoff Chamber 3 (VO13)	20	30NOV11	05DEC11	
23030	Mini-piling for new Drawoff Chamber 3 (2 nos)	30	05NOV12	29NOV12	
23032	ELS for Drawoff Chamber 3	20	18JAN13	06FEB13	-493d
23035	2nd Demolition of extg Drawoff Chamber 3 (VO13)	10	07FEB13	16FEB13	-493d
23040	Construction of new Drawoff Chamber 3 (VO13)	100	17FEB13	27MAY13	-493d
23045	Watertightness Test for Drawoff Chamber 3 (VO13)	20	28MAY13	16JUN13	-234d
23050	Backfilling for new Drawoff Chamber 3 (VO13)	30	17JUL13	15AUG13	-234d
30001	Notification from Engineer	30	02APR10	02APR10	

Section III of Works



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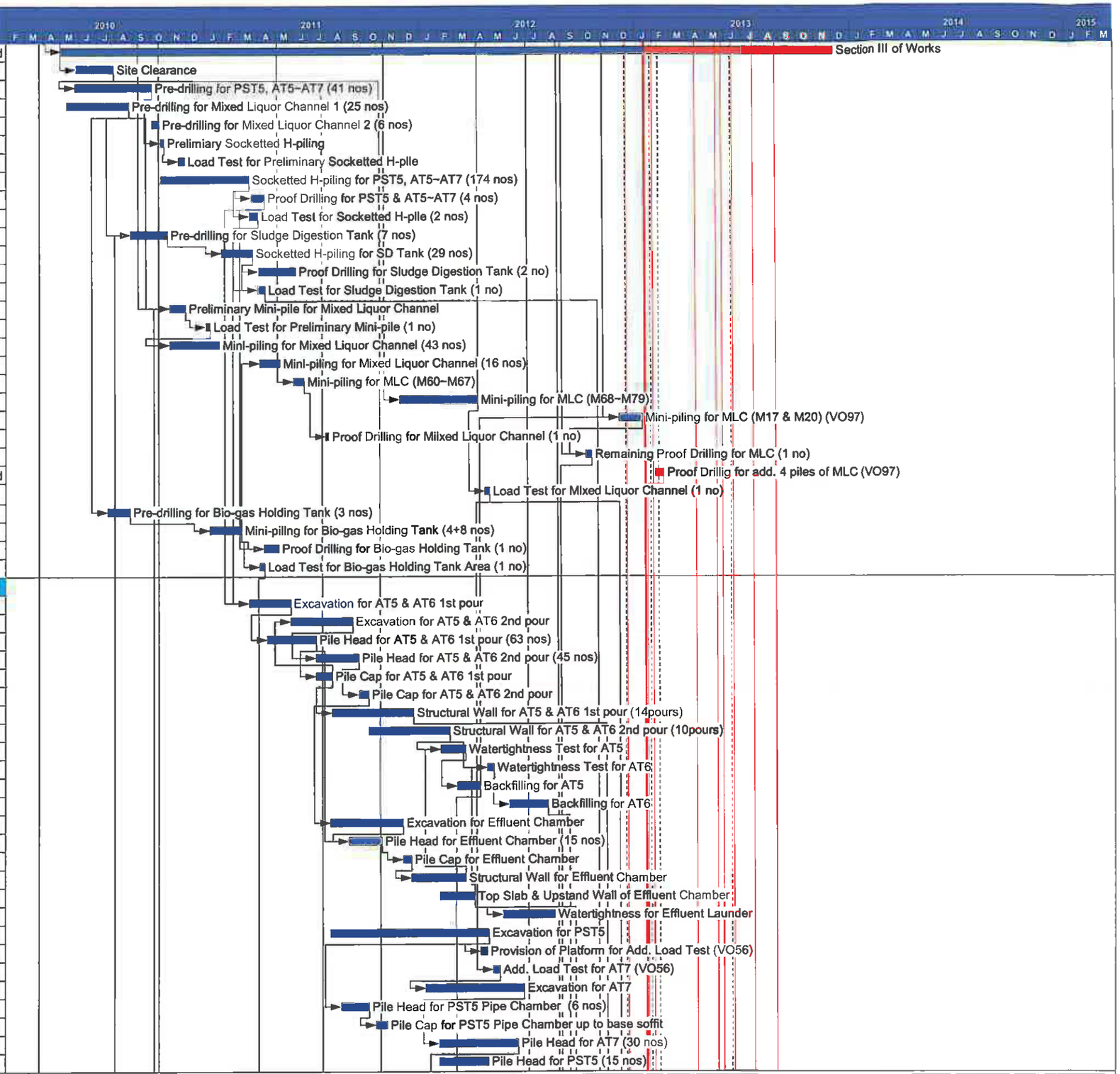
18JAN13	E	AA	TKC

Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
30010	Section III of Works	670	03MAY10	02DEC13	-640d
30020	Site Clearance	10	28MAY10	29JUL10	
30030	Pre-drilling for PST5, AT5~AT7 (41 nos)	106	26MAY10	02OCT10	
30040	Pre-drilling for Mixed Liquor Channel 1 (25 nos)	20	12MAY10	24AUG10	
30050	Pre-drilling for Mixed Liquor Channel 2 (6 nos)	20	04OCT10	15OCT10	
30060	Prelimiary Socketted H-piling	7	18OCT10	23OCT10	
30070	Load Test for Preliminary Socketted H-pile	14	18NOV10	27NOV10	
30080	Socketted H-piling for PST5, AT5~AT7 (174 nos)	263	19OCT10	16MAR11	
30090	Proof Drilling for PST5 & AT5~AT7 (4 nos)	14	21MAR11	11APR11	
30100	Load Test for Socketted H-pile (2 nos)	14	18MAR11	31MAR11	
30110	Pre-drilling for Sludge Digestion Tank (7 nos)	18	28AUG10	29OCT10	
30120	Socketted H-piling for SD Tank (29 nos)	90	30JAN11	22MAR11	
30130	Proof Drilling for Sludge Digestion Tank (2 no)	14	02APR11	03JUN11	
30140	Load Test for Sludge Digestion Tank (1 no)	7	01APR11	12APR11	
30150	Preliminary Mini-pile for Mixed Liquor Channel	7	03NOV10	29NOV10	
30160	Load Test for Prelimlnary Mini-pile (1 no)	14	03JAN11	10JAN11	
30170	Mini-piling for Mixed Liquor Channel (43 nos)	200	03NOV10	25JAN11	
30180	Mini-piling for Mixed Liquor Channel (16 nos)	41	04APR11	07MAY11	
30190	Mini-piling for MLC (M60~M67)	55	31MAY11	17JUN11	
30200	Mini-piling for MLC (M68~M79)	42	28NOV11	07APR12	
30210	Mini-piling for MLC (M17 & M20) (VO97)	45	04DEC12	11JAN13	
30220	Proof Drilling for Miixed Liquor Channel (1 no)	7	25JUL11	29JUL11	
30230	Remaining Proof Drilling for MLC (1 no)	14	08OCT12	17OCT12	
30235	Proof Drillig for add. 4 plles of MLC (VO97)	14	04FEB13	17FEB13	-341d
30240	Load Test for Mixed Liquor Channel (1 no)	14	20APR12	27APR12	
30250	Pre-drilling for Blo-gas Holding Tank (3 nos)	10	20JUL10	26AUG10	
30260	Mini-pilng for Blo-gas Holding Tank (4+8 nos)	52	10JAN11	03MAR11	
30270	Proof Drilling for Bio-gas Holding Tank (1 no)	7	11APR11	05MAY11	
30300	Load Test for Bio-gas Holding Tank Area (1 no)	14	04APR11	11APR11	
	Primary Sedimentation Tank & Aeration Tank				
31000	Excavation for AT5 & AT6 1st pour	30	17MAR11	25MAY11	
31010	Excavation for AT5 & AT6 2nd pour	20	26MAY11	07SEP11	
31020	Pile Head for AT5 & AT6 1st pour (63 nos)	14	16APR11	07JUL11	
31030	Pile Head for AT5 & AT6 2nd pour (45 nos)	53	08JUL11	17SEP11	
31040	Pile Cap for AT5 & AT6 1st pour	30	08JUL11	03AUG11	
31050	Pile Cap for AT5 & AT6 2nd pour	30	18SEP11	04OCT11	
31060	Structural Wall for AT5 & AT6 1st pour (14pours)	63	04AUG11	19DEC11	
31070	Structural Wall for AT5 & AT6 2nd pour (10pours)	50	05OCT11	18FEB12	
31080	Watertightness Test for AT5	30	04FEB12	16MAR12	
31085	Watertightness Test for AT6	30	23APR12	03MAY12	
31090	Backfilling for AT5	30	03MAR12	10APR12	
31095	Backfilling for AT6	30	30MAY12	02AUG12	
31100	Excavation for Effluent Chamber	10	01AUG11	01DEC11	
31110	Pile Head for Effluent Chamber (15 nos)	10	01SEP11	26OCT11	
31120	Pile Cap for Effluent Chamber	20	02DEC11	15DEC11	
31130	Structural Wall for Effluent Chamber	40	16DEC11	16MAR12	
31160	Top Slab & Upstand Wall of Effluent Chamber	30	02FEB12	31MAR12	
31170	Watertightness for Effluent Launder	15	19MAY12	13AUG12	
31200	Excavation for PST5	20	01AUG11	24APR12	
31210	Provision of Platform for Add. Load Test (VO56)	15	11APR12	21APR12	
31215	Add. Load Test for AT7 (VO56)	11	02MAY12	12MAY12	
31218	Excavation for AT7	15	09JAN12	22JUN12	
31220	Pile Head for PST5 Pipe Chamber (6 nos)	14	19AUG11	04OCT11	
31230	Pile Cap for PST5 Pipe Chamber up to base soffit	30	17OCT11	04NOV11	
31240	Plle Head for AT7 (30 nos)	20	01FEB12	12JUN12	
31245	Pile Head for PST5 (15 nos)	28	01FEB12	23APR12	



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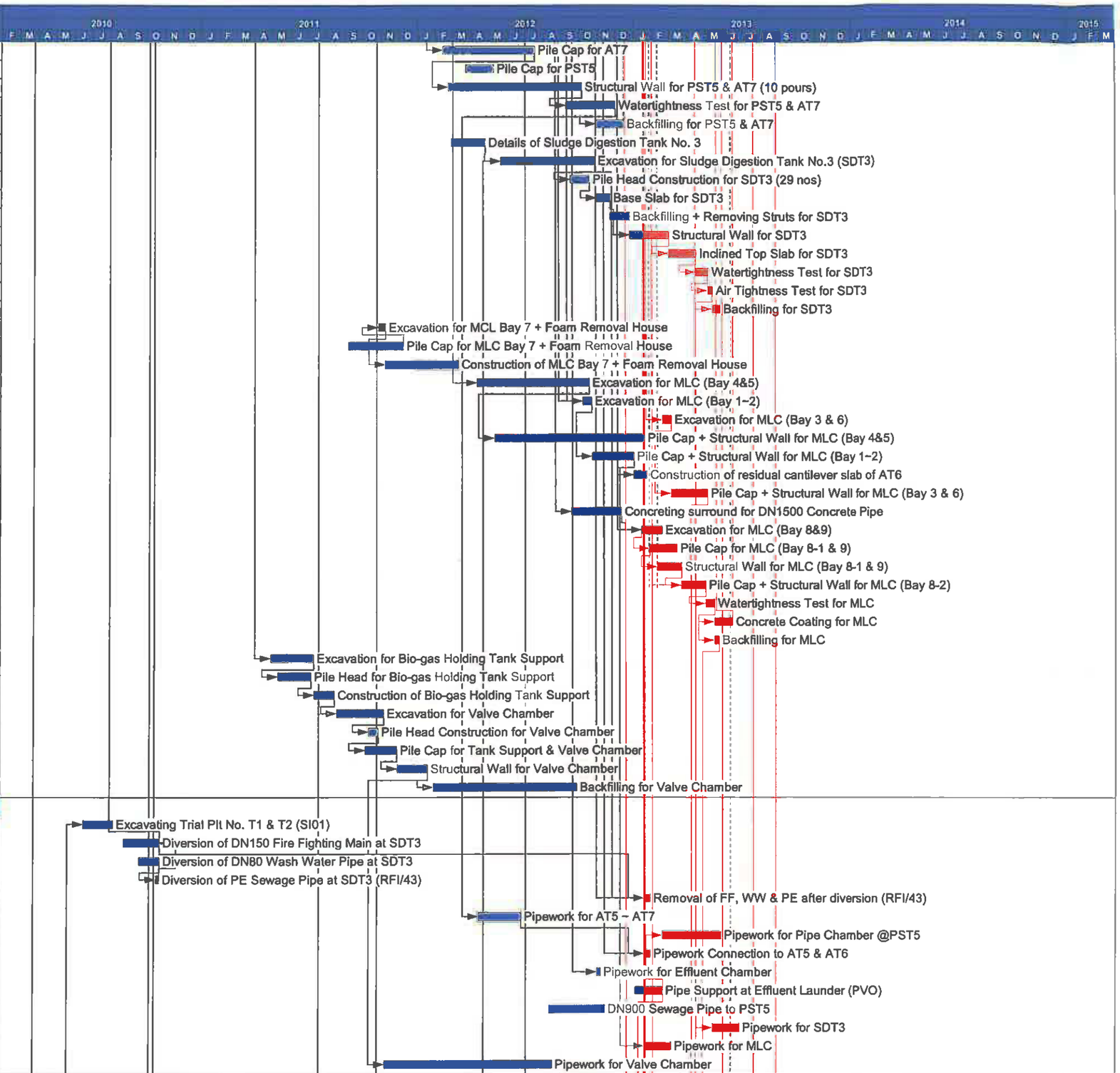
Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
31250	Pile Cap for AT7	30	13FEB12	16JUL12	
31255	Pile Cap for PST5	30	23MAR12	08MAY12	
31260	Structural Wall for PST5 & AT7 (10 pours)	60	22FEB12	04OCT12	
31270	Watertightness Test for PST5 & AT7	21	08SEP12	30NOV12	
31280	Backfilling for PST5 & AT7	15	29OCT12	14DEC12	
31290	Details of Sludge Digestion Tank No. 3	30	28FEB12	24APR12	
31300	Excavation for Sludge Digestion Tank No.3 (SDT3)	35	21MAY12	26OCT12	
31310	Pile Head Construction for SDT3 (29 nos)	20	15SEP12	17OCT12	
31320	Base Slab for SDT3	30	30OCT12	21NOV12	
31325	Backfilling + Removing Struts for SDT3	30	22NOV12	24DEC12	
31330	Structural Wall for SDT3	50	25DEC12	28FEB13	-469d
31340	Inclined Top Slab for SDT3	45	01MAR13	14APR13	-469d
31350	Watertightness Test for SDT3	20	15APR13	04MAY13	-469d
31360	Air Tightness Test for SDT3	7	05MAY13	11MAY13	-469d
31370	Backfilling for SDT3	13	12MAY13	24MAY13	-437d
31400	Excavation for MCL Bay 7 + Foam Removal House	10	27OCT11	07NOV11	
31410	Pile Cap for MLC Bay 7 + Foam Removal House	30	07SEP11	07DEC11	
31420	Construction of MLC Bay 7 + Foam Removal House	60	08NOV11	09MAR12	
31500	Excavation for MLC (Bay 4&5)	15	11APR12	16OCT12	
31505	Excavation for MLC (Bay 1~2)	15	06OCT12	20OCT12	
31508	Excavation for MLC (Bay 3 & 6)	15	18FEB13	04MAR13	-171d
31510	Pile Cap + Structural Wall for MLC (Bay 4&5)	60	11MAY12	18JAN13	
31520	Pile Cap + Structural Wall for MLC (Bay 1~2)	60	22OCT12	31DEC12	
31525	Construction of residual cantilever slab of AT6	30	01JAN13	22JAN13	
31530	Pile Cap + Structural Wall for MLC (Bay 3 & 6)	60	05MAR13	03MAY13	-171d
31550	Concreting surround for DN1500 Concrete Pipe	30	17SEP12	10DEC12	
31600	Excavation for MLC (Bay 8&9)	30	14JAN13	16FEB13	-618d
31610	Pile Cap for MLC (Bay 8-1 & 9)	45	28JAN13	13MAR13	-618d
31620	Structural Wall for MLC (Bay 8-1 & 9)	40	10FEB13	21MAR13	-618d
31625	Pile Cap + Structural Wall for MLC (Bay 8-2)	40	22MAR13	30APR13	-618d
31630	Watertightness Test for MLC	15	01MAY13	15MAY13	-618d
31635	Concrete Coating for MLC	30	16MAY13	14JUN13	-618d
31640	Backfilling for MLC	7	16MAY13	22MAY13	-510d
31700	Excavation for Bio-gas Holding Tank Support	10	29APR11	09JUL11	
31710	Pile Head for Bio-gas Holding Tank Support	15	11MAY11	05JUL11	
31720	Construction of Bio-gas Holding Tank Support	20	11JUL11	13AUG11	
31800	Excavation for Valve Chamber	20	18AUG11	04NOV11	
31810	Pile Head Construction for Valve Chamber	15	11OCT11	26OCT11	
31820	Pile Cap for Tank Support & Valve Chamber	30	05OCT11	26NOV11	
31830	Structural Wall for Valve Chamber	40	28NOV11	17JAN12	
31840	Backfilling for Valve Chamber	30	28JAN12	24SEP12	
	Pipeline Works				
32000	Excavating Trial Pit No. T1 & T2 (SI01)	20	18JUN10	06AUG10	
32001	Diversion of DN150 Fire Fighting Main at SDT3	30	25AUG10	23OCT10	
32002	Diversion of DN80 Wash Water Pipe at SDT3	30	20SEP10	23OCT10	
32003	Diversion of PE Sewage Pipe at SDT3 (RFI/43)	30	18OCT10	22OCT10	
32004	Removal of FF, WW & PE after diversion (RFI/43)	10	18JAN13	27JAN13	-320d
32005	Pipework for AT5 ~ AT7	98	13APR12	22JUN12	
32006	Pipework for Pipe Chamber @PST5	98	17FEB13	25MAY13	-438d
32010	Pipework Connection to AT5 & AT6	10	18JAN13	27JAN13	-320d
32020	Pipework for Effluent Chamber	19	29OCT12	03NOV12	
32025	Pipe Support at Effluent Launder (PVO)	30	02JAN13	16FEB13	-438d
32030	DN900 Sewage Pipe to PST5	90	09AUG12	10NOV12	
32040	Pipework for SDT3	45	12MAY13	25JUN13	-469d
32060	Pipework for MLC	45	18JAN13	03MAR13	-355d
32070	Pipework for Valve Chamber	29	07NOV11	13AUG12	



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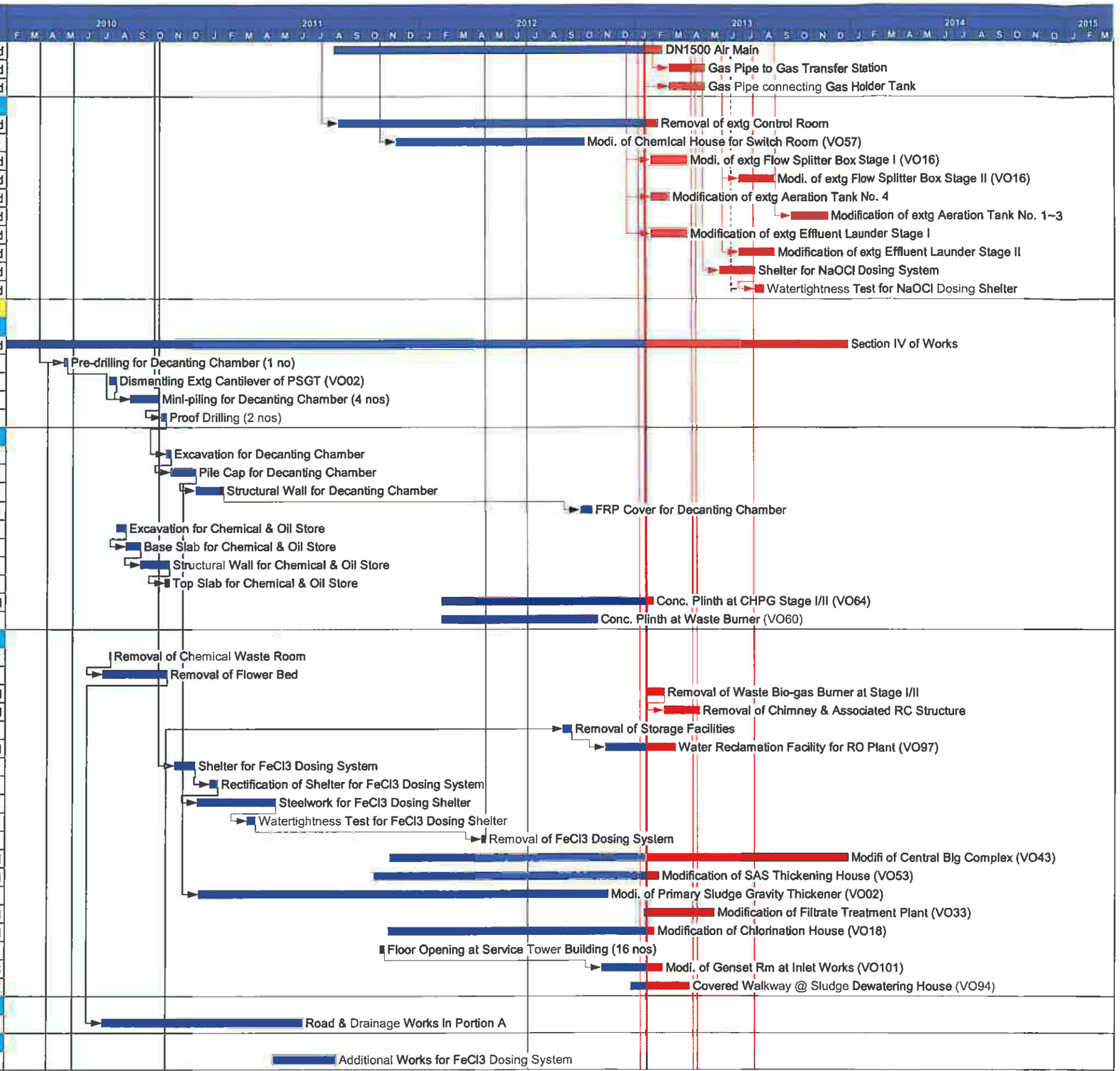
Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float
32080	DN1500 Air Main	90	08AUG11	15FEB13	-339d
32090	Gas Pipe to Gas Transfer Station	60	28FEB13	28APR13	-1d
32100	Gas Pipe connecting Gas Holder Tank	60	28FEB13	28APR13	-1d
	Extg Control Room Works				
33010	Removal of extg Control Room	30	15AUG11	07FEB13	-331d
33020	Modi. of Chemical House for Switch Room (VO57)	90	21NOV11	05OCT12	
33030	Modi. of extg Flow Splitter Box Stage I (VO16)	60	28JAN13	28MAR13	-380d
33040	Modi. of extg Flow Splitter Box Stage II (VO16)	60	25JUN13	23AUG13	-528d
33050	Modification of extg Aeration Tank No. 4	30	28JAN13	26FEB13	-350d
33060	Modification of extg Aeration Tank No. 1~3	60	23SEP13	21NOV13	-618d
33070	Modification of extg Effluent Launder Stage I	60	28JAN13	28MAR13	-380d
33075	Modification of extg Effluent Launder Stage II	60	25JUN13	23AUG13	-118d
33080	Shelter for NaOCl Dosing System	60	23MAY13	21JUL13	-510d
33090	Watertightness Test for NaOCl Dosing Shelter	15	22JUL13	05AUG13	-510d
	Section IV of Works				
	Section IV Works				
40010	Section IV of Works	365	29JAN10	25DEC13	-1048d
40020	Pre-drilling for Decanting Chamber (1 no)	7	06MAY10	11MAY10	
40030	Dismantling Extg Cantilever of PSGT (VO02)	14	22JUL10	02AUG10	
40040	Mini-piling for Decanting Chamber (4 nos)	28	27AUG10	13OCT10	
40050	Proof Drilling (2 nos)	28	19OCT10	26OCT10	
	Decanting Chamber				
41010	Excavation for Decanting Chamber	10	27OCT10	03NOV10	
41020	Pile Cap for Decanting Chamber	20	04NOV10	15DEC10	
41030	Structural Wall for Decanting Chamber	30	16DEC10	31JAN11	
41040	FRP Cover for Decanting Chamber	20	28SEP12	17OCT12	
41050	Excavation for Chemical & Oil Store	15	04AUG10	19AUG10	
41060	Base Slab for Chemical & Oil Store	20	20AUG10	13SEP10	
41070	Structural Wall for Chemical & Oil Store	40	14SEP10	01NOV10	
41080	Top Slab for Chemical & Oil Store	20	25OCT10	01NOV10	
41090	Conc. Plinth at CHPG Stage I/II (VO64)	120	07FEB12	29JAN13	-718d
41100	Conc. Plinth at Waste Burner (VO60)	120	07FEB12	26OCT12	
	Modification Removal Works				
42010	Removal of Chemical Waste Room	30	23JUL10	24JUL10	
42020	Removal of Flower Bed	20	12JUL10	28OCT10	
42030	Removal of Waste Bio-gas Burner at Stage I/II	30	18JAN13	16FEB13	-796d
42040	Removal of Chimney & Associated RC Structure	60	17FEB13	17APR13	-796d
42050	Removal of Storage Facilities	30	29AUG12	12SEP12	
42060	Water Reclamation Facility for RO Plant (VO97)	120	09NOV12	07MAR13	-755d
42070	Shelter for FeCl3 Dosing System	60	11NOV10	15DEC10	
42080	Rectification of Shelter for FeCl3 Dosing System	15	10JAN11	22JAN11	
42090	Steelwork for FeCl3 Dosing Shelter	30	20DEC10	30APR11	
42100	Watertightness Test for FeCl3 Dosing Shelter	16	14MAR11	27MAR11	
42110	Removal of FeCl3 Dosing System	60	14APR12	20APR12	
42120	Modifi of Central Blg Complex (VO43)	770	10NOV11	25DEC13	-1048d
42130	Modification of SAS Thickening House (VO53)	120	14OCT11	07FEB13	-727d
42140	Modi. of Primary Sludge Gravity Thickener (VO02)	60	22DEC10	12NOV12	
42150	Modification of Filtrate Treatment Plant (VO33)	120	14JAN13	12MAY13	-821d
42160	Modification of Chlorination House (VO18)	150	07NOV11	30JAN13	-719d
42170	Floor Opening at Service Tower Building (16 nos)	30	24OCT11	31OCT11	
42180	Modi. of Genset Rm at Inlet Works (VO101)	90	02NOV12	13FEB13	-733d
42190	Covered Walkway @ Sludge Dewatering House (VO94)	100	22DEC12	31MAR13	-779d
	Road & Drainage Works				
43010	Road & Drainage Works in Portion A	120	12JUL10	15JUN11	
	Variation Order				
44010	Additional Works for FeCl3 Dosing System	100	28APR11	10AUG11	



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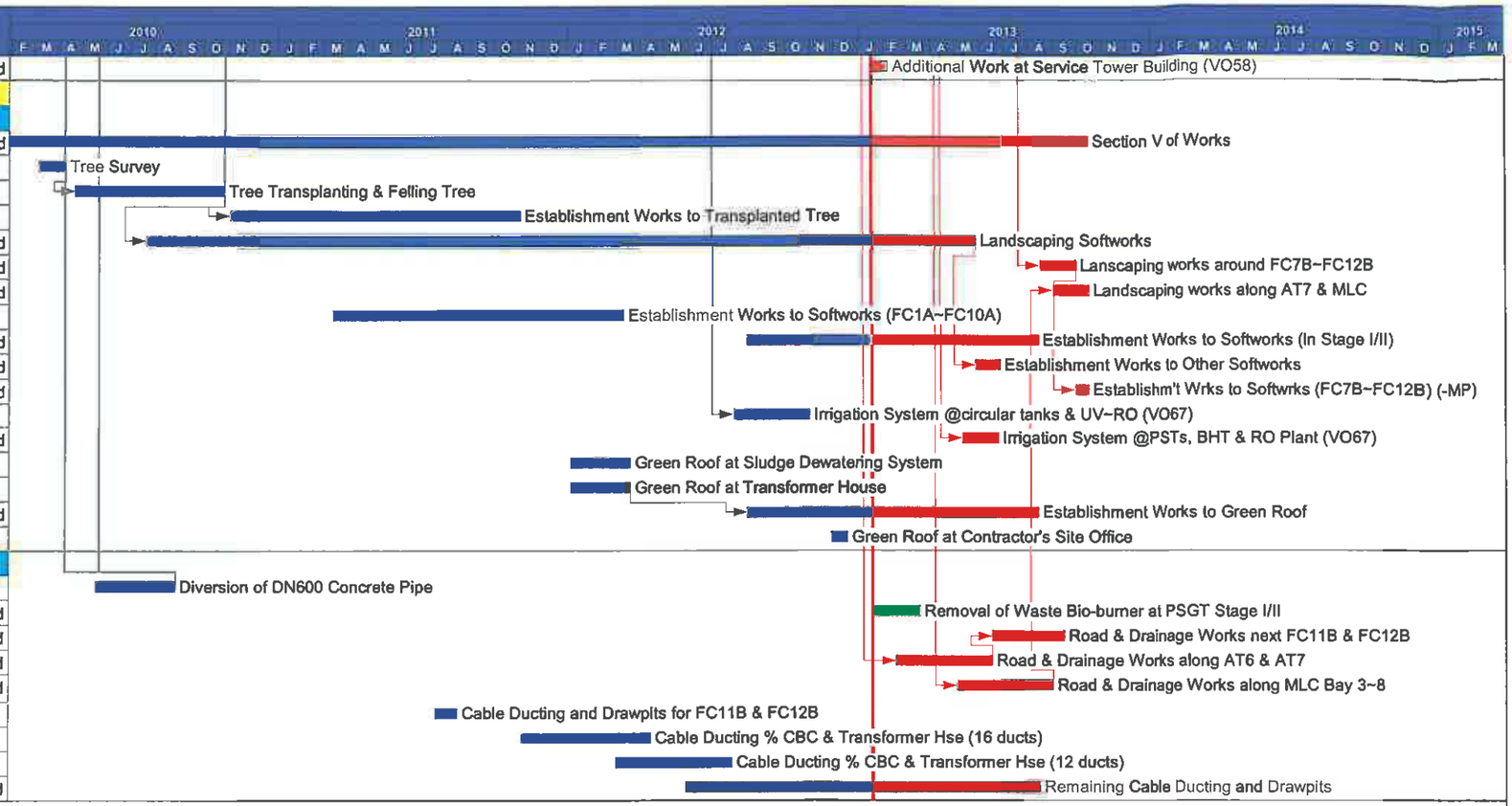
44020	Additional Work at Service Tower Building (VO58)	20	18JAN13	06FEB13	-726d
Section V of Works					
50010	Section V of Works	1185	29JAN10	14OCT13	-170d
50020	Tree Survey	60	08MAR10	09APR10	
50030	Tree Transplanting & Felling Tree	90	22APR10	26OCT10	
50040	Establishment Works to Transplanted Tree	365	03NOV10	02NOV11	
50050	Landscaping Softworks	650	21JUL10	27MAY13	-60d
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	
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	15OCT13	-171d
50080	Irrigation System @circular tanks & UV~RO (VO67)	120	28JUL12	31OCT12	
50085	Irrigation System @PSTs, BHT & RO Plant (VO67)	45	11MAY13	24JUN13	-58d
50090	Green Roof at Sludge Dewatering System	120	05JAN12	19MAR12	
50100	Green Roof at Transformer House	120	05JAN12	19MAR12	
50110	Establishment Works to Green Roof	365	14AUG12	13AUG13	-108d
50120	Green Roof at Contractor's Site Office	20	28NOV12	17DEC12	
51010	Diversion of DN600 Concrete Pipe	45	18MAY10	25AUG10	
51020	Removal of Waste Bio-burner at PSGT Stage I/II	60	18JAN13	18MAR13	40d
51030	Road & Drainage Works next FC11B & FC12B	90	17JUN13	14SEP13	-140d
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	
51070	Cable Ducting % CBC & Transformer Hse (16 ducts)	60	03NOV11	13APR12	
51080	Cable Ducting % CBC & Transformer Hse (12 ducts)	60	01MAR12	24JUL12	
51100	Remaining Cable Ducting and Drawpits	350	28MAY12	15AUG13	-110d



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