Jardine Engineering Corporation Limited

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

Quarterly Environmental Monitoring and Audit Report (October to December 2012)

(Version 1.0)

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.

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

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

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY **1**

Introduction 1
Environmental Monitoring and Audit Works 2
Environmental Complaint and Prosecution 3
Environmental Licensing and Permitting 3
Future Key Issues 3

1. INTRODUCTION **4**

Background 4
Project Organizations 4
Table 1.1 Key Project Contacts 5
Construction Programme and Synopsis of Work 5
Summary of EM&A Requirements 6

2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS **7**

Monitoring Parameters and Monitoring Locations 7
Monitoring Methodology and Calibration Details 7
Environmental Quality Performance Limits (Action and Limit Levels) 7
Environmental Mitigation Measures 7

3. MONITORING RESULTS **8**

Weather Conditions 8
Air Quality 8
Construction Noise 8

4. AUDIT RESULTS **9**

Implementation Status of Environmental Mitigation Measures 9
Site Audit Summary 9
Table 4.1 Observations and Recommendations of Site Audit 9
Status of Environmental Licensing and Permitting 10
Advice on Waste Management Status 10

5. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS) **11**

Summary of Exceedances 11
Review of the Reasons for and the Implications of Non-compliance 11

6. ENVIRONMENTAL COMPLAINTS AND PROSECUTIONS **12**

7. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS **13**

Effectiveness of Mitigation Measures 13
Conclusion 13
Recommendations 14

LIST OF TABLE

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

LIST OF FIGURES

Figure 1.1 Site Layout Plan
Figure 1.2 Locations of Air Quality and Noise Monitoring Stations

LIST OF APPENDICES

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

EXECUTIVE SUMMARY

Introduction

1. This is the 6th Quarterly Environmental Monitoring and Audit (EM&A) Summary Report prepared by Cinotech Consultants Limited (the Environmental Team, ET) for DSD Contract no. DE/2009/09 "Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B". This summary report presents EM&A works performed in the period between October and December 2012.

2. The construction activities undertaken in the reporting quarter include:

- Bolt torque test for penstocks at Sludge Draw-off Chamber No. 4;
- Cable laying of incomer cables (by CLP) for the new switchboard at CBC G/F;
- Dismantling particular diffusers and associated pipeworks at SBR for the removal of accumulated sludge by civil contractor;
- Fabrication of bio-gas holder on site;
- FAT of PLC system M panel;
- Installation and T&C of new MCC at CBC G/F;
- Installation and T&C of new panel connecting to existing switchboard at Sludge Dewatering House;
- Installation of Biogas Burner and associated pipework at Stage IV;
- Installation of E&M equipment in Aeration Tank No. 5 & 6;
- Installation of MCC2A at CBC 1/F and Load Diversion of Existing E&M Equipment from MCC1 to MCC2A - Cabling Works;
- Installation of mechanical screen and shaftless conveyor at Stage IV Screening House;
- Installation of new centrifuge and associated pipework & electrical work and modification of SCADA system at SAS Thickening House;
- Installation of new sludge dewatering system, sludge feed pump and associated pipework & electrical work in Sludge Dewatering House Extension;
- Installation of optical fiber between PLC H and PLC E;
- Installation of outdoor AC units and extraction fan at Chemical House roof;
- Installation of pinch valve, flowmeter and associated pipework at Flowmeter Chamber No. 1B;
- Installation of PLC system K panel at Sludge Dewatering House Extension;
- Installation of submersible sludge pump and associated pipework at Sludge Draw-off Chamber No. 4;
- Leakage test for penstocks at Sludge Draw-off Chamber No. 4;
- Load Diversion of Existing E&M Equipment from MCC1 to MCC2A - Part 1 Cabling Works;
- Migration of Submersible Mixers from Existing MCC3 at RAS PS to New MCC4 at Chemical House;
- PLC interfacing work between existing PLC system C and new PLC system K.
- Process commissioning of Final Clarifier No. 11B (with sewage);
- Setup & Energization of Power Distribution Board for the Replacement of Existing SWB at IW 1F & GF;
- Testing and commissioning of Final Clarifier No. 11B & 12B, UPS at CBC and Chemical House and submersible sludge pump and associated pipework at Sludge Draw-off Chamber No. 4; and
- Process commissioning of Final Clarifier No. 11B (with sewage).

Environmental Monitoring and Audit Works

3. Environmental monitoring and audit works for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the events and action taken in the reporting quarter is tabulated in **Table I**.

Table I Summary Table for Events Recorded in the Reporting Quarter

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

Construction Noise

5. All construction noise monitoring was conducted as scheduled in the reporting quarter. No Action Level (public complaint) / Limit Level exceedance was recorded in the reporting quarter.

Air Quality

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

Environmental Complaint and Prosecution

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

Environmental Licensing and Permitting

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

Future Key Issues

9. The anticipated environmental impacts will be mainly on ponding water and surface runoff after rain as well as the noise nuisance and dust emission from the major construction activities will be undertaken in the coming quarter, including:

- Process commissioning of Final Clarifier No. 12B (with sewage);
- Installation of E&M equipment in Aeration Tank No. 5 & 6;
- Installation of mechanical screen and shaftless conveyor at Stage IV Screening House;
- Fabrication of bio-gas holder on site;
- T&C of new sludge dewatering system and sludge feed pump in Sludge Dewatering House Extension;
- Installation of new centrifuge and associated pipework & electrical work at SAS Thickening House;
- T&C/ of Biogas Burner and associated pipework at Stage IV;
- Dismantling the remaining existing diffusers and associated pipeworks and installation of new E&M equipment at SBR;
- Delivery of new screw pumps (for Stage IV Inlet Works) to site;
- T&C of FS and BS equipment at Chemical House;
- Installation and T&C of lightning protection pole L4 at Chemical House;
- Checking the electricity meter (in HV side) and energization of switchboard (by CLP) at CBC G/F;
- Cable laying for E&M equipment at SAS Thickening House;
- Setup & Energization of Power Distribution Board for the Replacement of Existing SWB at IW 1F & GF;
- SAT of MCC2A and Load Diversion of Existing E&M Equipment from MCC1 to MCC2A;
- Modification of SCADA system at SAS thickening house;
- PLC interfacing work between existing PLC system C and new PLC system K; and
- PLC works for new filter press at Sludge Dewatering House Extension.

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/day and 130,000 m^3/day respectively. An Environmental Permit (EP) No. EP-265/2007 was issued on 22 March 2007 for the TPSTW Stage V Phase II to the Drainage Services Department (DSD) as the Permit Holder. The project "Tai Po Sewage Treatment Works – Stage V Phase IIB" formed part of the Phase II works, includes additional secondary treatment process units (1 primary clarifier; 3 bioreactors and 2 final clarifiers) in TPSTW for its future extended plant design capacity of 120,000 m^3/day. A master construction programme of the Project is provided in **Appendix M**. A site layout plan is provided in **Figure 1.1**. The construction activities of the Project commenced on 16 May 2011.

1.4 Cinotech Consultants Ltd. was commissioned by the Contractor as the Environmental Team (ET) to undertake the EM&A works for the Project. Dr. Priscilla CHOY of Cinotech Consultants Ltd. was appointed as the ET Leader as per the Condition 2.1 of the EP. Ove Arup and Partners Hong Kong Limited. was appointed as the IEC under Condition 2.2 of the EP. This is the 6th quarterly EM&A summary report summarizing the EM&A works for the Project between October and December 2012.

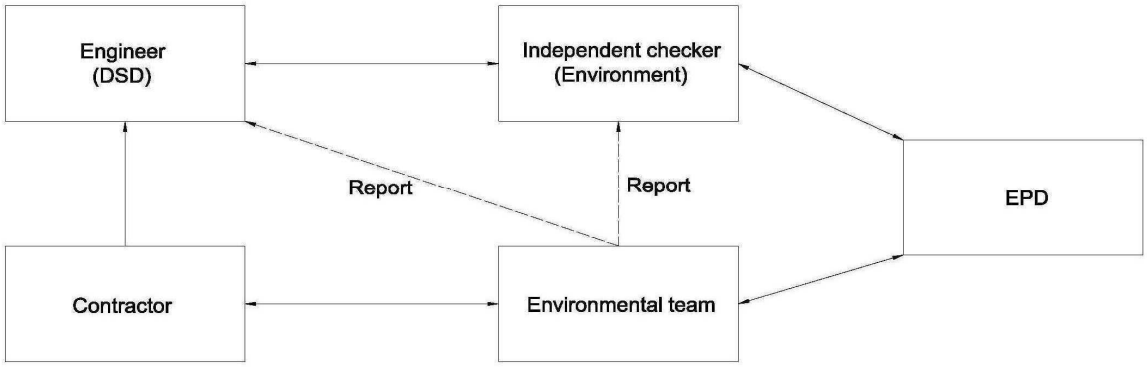
Project Organizations

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

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

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

1.7 The Project Organization during Construction Phase



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

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
DSD	E&M Branch	Mr. TONG Sau Kit	Senior Engineer	2594 7304	2827 8532
		Mr. TSE Ho	Engineer	2660 7638	
Cinotech	Environmental Team	Dr. Priscilla CHOY	ET Leader	2151 2089	3107 1388
		Mr. Ken CHENG	Project Coordinator and Audit Team Leader	2151 2077	
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087	
Arup	Independent Environmental Checker	Mr. Coleman NG	Independent Environmental Checker	2268 3097	2865 6493
		Mr. Lawrence KAN	Assistant to Independent Environmental Checker	2268 3212	
JEC	E&M Contractor	Mr. Alex Law	Project Manager	9312 8659	2887 9090
		Mr. Dexter Chan	Site Agent	6391 2499	
		Mr. Brendan Chan	Environmental Officer	6393 2904	

Construction Programme and Synopsis of Work

1.9 The construction programme is presented in **Appendix A**. The site activities undertaken during the reporting quarter included:

- Bolt torque test for penstocks at Sludge Draw-off Chamber No. 4;
- Cable laying of incomer cables (by CLP) for the new switchboard at CBC G/F;
- Dismantling particular diffusers and associated pipeworks at SBR for the removal of accumulated sludge by civil contractor;
- Fabrication of bio-gas holder on site;
- FAT of PLC system M panel;
- Installation and T&C of new MCC at CBC G/F;
- Installation and T&C of new panel connecting to existing switchboard at Sludge Dewatering House;
- Installation of Biogas Burner and associated pipework at Stage IV;
- Installation of E&M equipment in Aeration Tank No. 5 & 6;
- Installation of MCC2A at CBC 1/F and Load Diversion of Existing E&M Equipment from MCC1 to MCC2A - Cabling Works;
- Installation of mechanical screen and shaftless conveyor at Stage IV Screening House;
- Installation of new centrifuge and associated pipework & electrical work and modification

of SCADA system at SAS Thickening House;
- Installation of new sludge dewatering system, sludge feed pump and associated pipework & electrical work in Sludge Dewatering House Extension;
- Installation of optical fiber between PLC H and PLC E;
- Installation of outdoor AC units and extraction fan at Chemical House roof;
- Installation of pinch valve, flowmeter and associated pipework at Flowmeter Chamber No. 1B;
- Installation of PLC system K panel at Sludge Dewatering House Extension;
- Installation of submersible sludge pump and associated pipework at Sludge Draw-off Chamber No. 4;
- Leakage test for penstocks at Sludge Draw-off Chamber No. 4;
- Load Diversion of Existing E&M Equipment from MCC1 to MCC2A - Part 1 Cabling Works;
- Migration of Submersible Mixers from Existing MCC3 at RAS PS to New MCC4 at Chemical House;
- PLC interfacing work between existing PLC system C and new PLC system K.
- Process commissioning of Final Clarifier No. 11B (with sewage);
- Setup & Energization of Power Distribution Board for the Replacement of Existing SWB at IW 1F & GF;
- Testing and commissioning of Final Clarifier No. 11B & 12B, UPS at CBC and Chemical House and submersible sludge pump and associated pipework at Sludge Draw-off Chamber No. 4; and
- Process commissioning of Final Clarifier No. 11B (with sewage).

Summary of EM&A Requirements

1.10 The EM&A programme requires construction phase air quality, noise monitoring and landfill gas monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of this report.

1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality and noise as well as audit works for the Project in the reporting period.

2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

2.1 The EM&A Manual designate locations for the ET to monitor environmental impacts in terms of noise and air quality due to the Project. The Project area and monitoring locations are depicted in **Figure 1.2**. **Appendix B** gives details of monitoring requirements.

2.2 In accordance with clause 8.8 of the EM&A Manual, the number and location of the monitoring stations and parameters can be referred to Monthly EM&A reports in order to cater for any changes in the surrounding environmental and the nature of works in progress. In this reporting period, there is no alteration made on changing the location of the monitoring stations.

Monitoring Methodology and Calibration Details

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

Environmental Quality Performance Limits (Action and Limit Levels)

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

Environmental Mitigation Measures

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

3. MONITORING RESULTS

Weather Conditions

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

Air Quality

3.2 Air quality monitoring was conducted as scheduled in the reporting period.

3.3 Graphical presentations of 1-hour TSP and 24-hour TSP monitoring results are shown in **Appendices D** and **E**, respectively.

3.4 All measured 1-hour and 24-hour TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.

Construction Noise

3.5 All construction noise monitoring was conducted as scheduled in the reporting period.

3.6 Graphical representations of the monitoring results are shown in **Appendix F**. No Action Level (public complaint) / Limit Level exceedance was recorded in the reporting period.

4. AUDIT RESULTS

Implementation Status of Environmental Mitigation Measures

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

Site Audit Summary

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

Table 4.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	26 Sep 2012	Reminder: Soil water accumulated at FC11B should be pumped out.	The observation was observed improved/rectified by the Contractor during the audit session on 4 Oct 2012.
	9 Nov 2012	Reminder: Remove the rainwater on ground near JEC site office.	The observation was observed improved/rectified by the Contractor during the audit session on 15 Nov 2012.
	15 Nov 2012	Reminder: General clearance of debris and litter on area near JEC site office and Bio-gas holder.	The observation was observed improved/rectified by the Contractor during the audit session on 23 Nov 2012.
	29 Nov 2012	Reminder: Rainwater accumulated near JEC site office should be cleared up after rainstorm.	The identified observation was observed improved/rectified by the Contractor during the audit session on 6 Dec 2012.
Air Quality	N/A	N/A	N/A
Noise	4 Oct 2012	Reminder: Noise emission label should be labelled properly on the air compressor.	The observation was observed improved/rectified by the Contractor during the audit session on 12 Oct 2012.
Waste / Chemical Management	20 Sep 2012	Reminder: Cover the cement bags near FC11B and FC12B by tarpaulin.	The observation was observed improved/rectified by the Contractor during the audit session on 4 Oct 2012.
	26 Sep 2012	Reminder: Debris and litter near FC11B should be removed.	The observation was observed improved/rectified by the Contractor during the audit session on 4 Oct 2012.
	4 Oct 2012	Reminder: Cement bags and dusty materials near FC11B should be removed and disposed properly.	The observation was observed improved/rectified by the Contractor during the audit session on 12 Oct 2012.
	1 Nov 2012	Reminder: Oil stain near refuse storage area near JEC site office should be removed.	The identified observation was observed improved by the Contractor during the audit session on 9 Nov 2012.

Parameters	Date	Observations and Recommendations	Follow-up
	1 Nov 2012	Reminder: Rainwater accumulated in the drip-tray for chemical storage at Bio-gas holder should be cleared.	The observation was observed improved/rectified by the Contractor during the audit session on 9 Nov 2012.
	29 Nov 2012	Reminder: The general refuse and litter at the receptor near JEC site office should be removed.	The identified observation was observed improved/rectified by the Contractor during the audit session on 6 Dec 2012.

Status of Environmental Licensing and Permitting

4.3 Environmental licenses and permits including the Environmental Permit (EP), the Construction Noise Permit and Waste Disposal (Chemical Waste) License were in place and valid during the reporting quarter. A summary of environmental licensing and permit status is given in **Appendix I**.

Advice on Waste Management Status

4.4 No inert C&D waste was disposed in the reporting period. 4.6 tonne of general refuse was disposed in the reporting period. No chemical waste was generated in the reporting period. The amount of wastes generated by the activities of the Project in the reporting period fulfills the requirement of estimated volume of excavated material in EIA Report. The amount of wastes generated by the activities of the Project in the reporting period was attached in the appendices of the Monthly Reports for October to December 2012. Waste flow table please refer to **Appendix J**.

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

Summary of Exceedances

5.1 Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. A summary of exceedance is attached in **Appendix K**.

5.2 All measured 1-hour and 24-hour TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting period.

5.3 No Action/Limit Level exceedance for the construction noise was recorded in the reporting period.

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

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

6. ENVIRONMENTAL COMPLAINTS AND PROSECUTIONS

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

7. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

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

Effectiveness of Mitigation Measures

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

Conclusion

7.3 All measured 1-hour and 24-hour TSP levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.

7.4 All measured noise levels were below the Action/Limit Levels. No exceedance was recorded in the reporting quarter.

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

7.6 The anticipated environmental impacts will be mainly on dust emission and accumulation of waste construction materials. The major construction activities will be undertaken in the coming quarter, including:

- Process commissioning of Final Clarifier No. 12B (with sewage);
- Installation of E&M equipment in Aeration Tank No. 5 & 6;
- Installation of mechanical screen and shaftless conveyor at Stage IV Screening House;
- Fabrication of bio-gas holder on site;
- T&C of new sludge dewatering system and sludge feed pump in Sludge Dewatering House Extension;
- Installation of new centrifuge and associated pipework & electrical work at SAS Thickening House;
- T&C/ of Biogas Burner and associated pipework at Stage IV;
- Dismantling the remaining existing diffusers and associated pipeworks and installation of new E&M equipment at SBR;
- Delivery of new screw pumps (for Stage IV Inlet Works) to site;
- T&C of FS and BS equipment at Chemical House;
- Installation and T&C of lightning protection pole L4 at Chemical House;
- Checking the electricity meter (in HV side) and energization of switchboard (by CLP) at CBC G/F;
- Cable laying for E&M equipment at SAS Thickening House;
- Setup & Energization of Power Distribution Board for the Replacement of Existing SWB at IW 1F & GF;
- SAT of MCC2A and Load Diversion of Existing E&M Equipment from MCC1 to MCC2A;
- Modification of SCADA system at SAS thickening house;
- PLC interfacing work between existing PLC system C and new PLC system K; and
- PLC works for new filter press at Sludge Dewatering House Extension.

Recommendations

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

Water Impact

- Avoid accumulation of stagnant water on site after rainstorm.

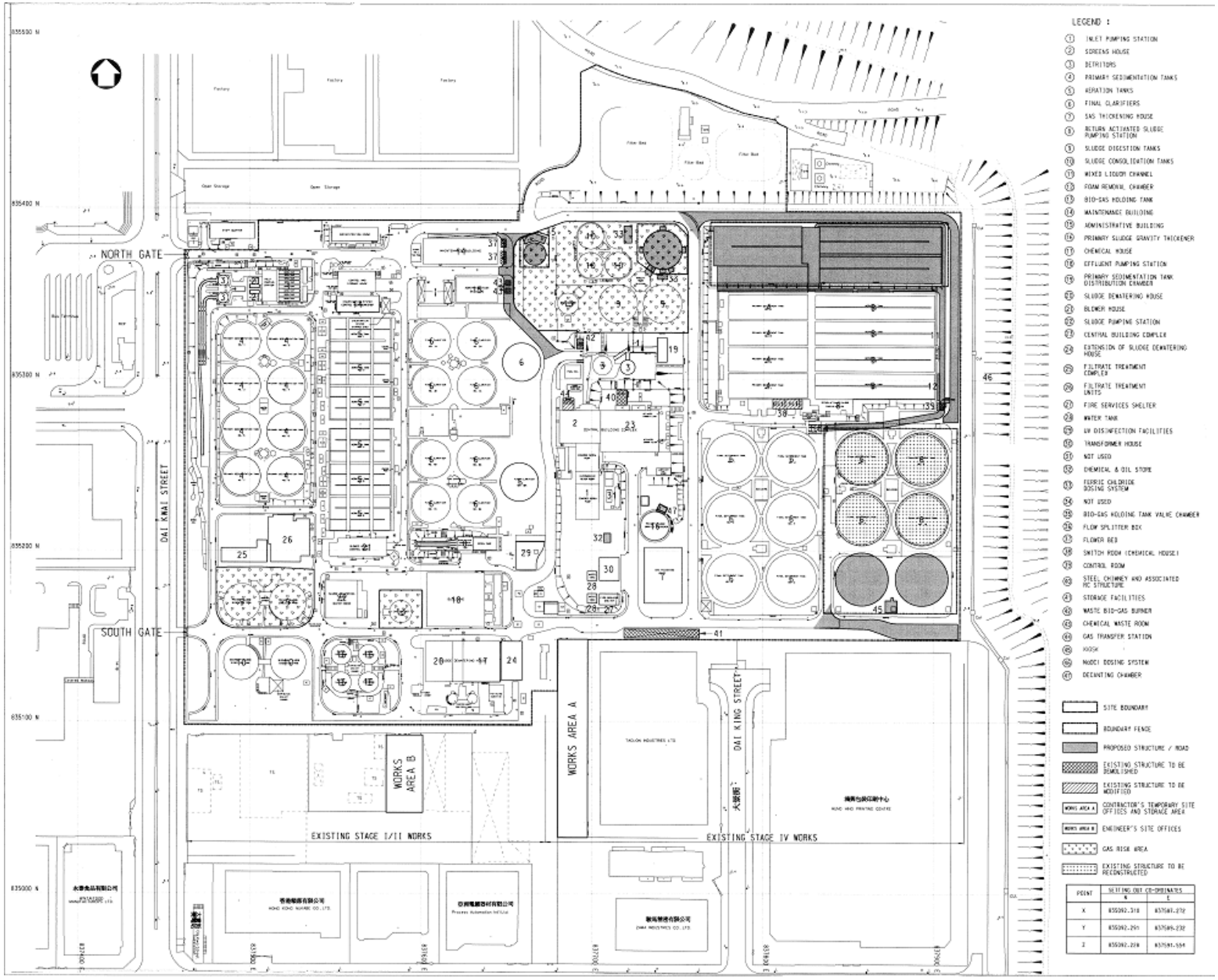
Dust Impact

- Excavated dusty materials or stockpile of dusty materials should be covered by impervious sheeting, or sprayed with water so as to maintain entire surface wet, if necessary.
- Remove fugitive dusty material on the haul road periodically.
- Spray with water on dry dust haul road.

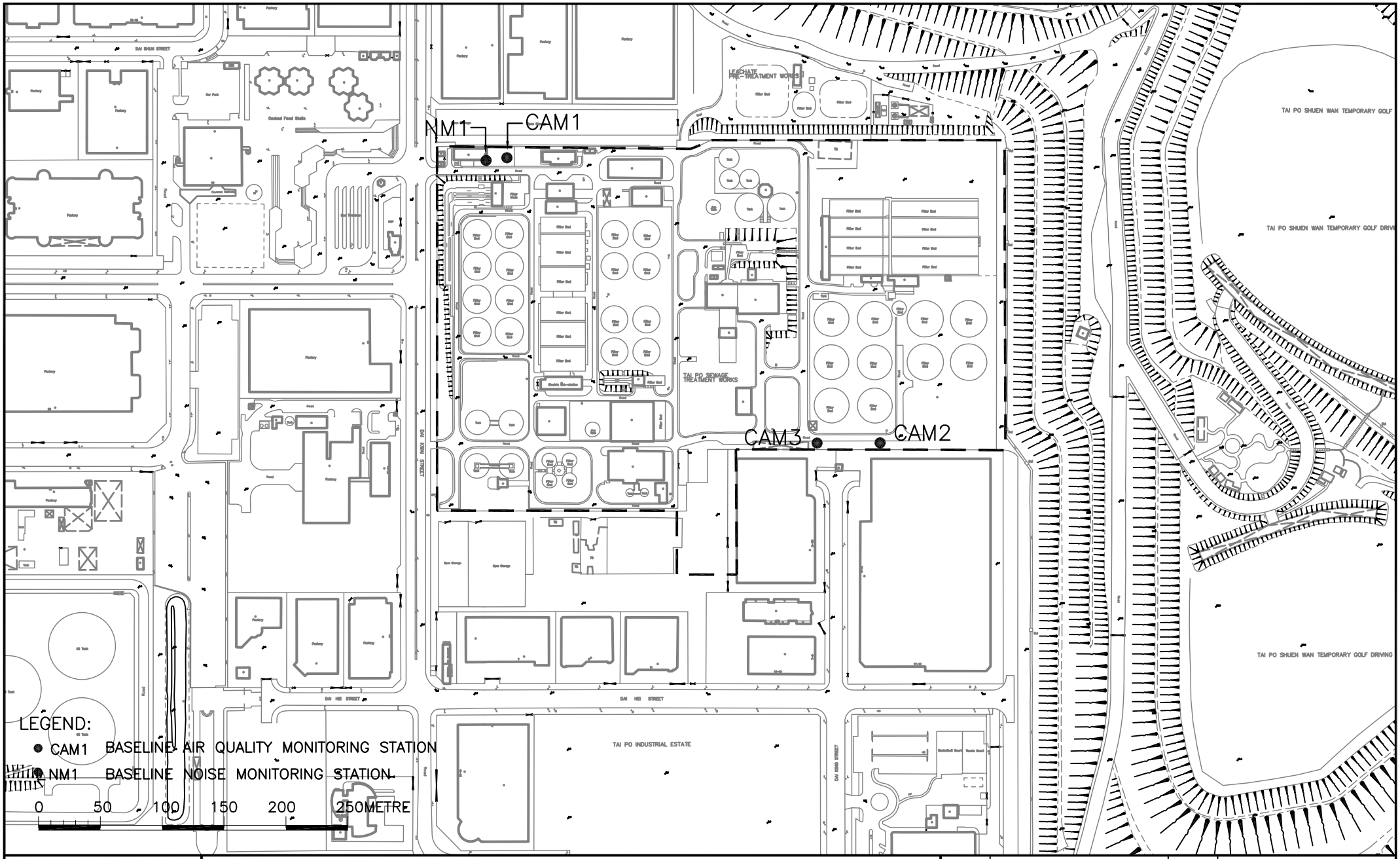
Waste / Chemical Management

- Avoid and check for any accumulation of waste materials on site and dispose waste materials at designated areas.
- Provide bunded containers for the storage of chemical wastes at the waste storage area.

FIGURES



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



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	2011
CHECK	IT	DRAWN	TY
JOB No.	MA10069	DRAWING No. 1.2	REV —

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

APPENDIX A
CONSTRUCTION PROGRAMME

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

Section I of the Works

ID	Task Name	Duration	Start	Finish
1	**Equipment & Material Delivery to Site**	**559 days**	**Tue 22/03/11**	**Mon 01/10/12**
2	Tripods, Bridges & Scrapers	0 days	Wed 15/06/11	Wed 15/06/11
3	Weir Plates	0 days	Wed 15/06/11	Wed 15/06/11
4	Density Current Baffles	0 days	Tue 22/03/11	Tue 22/03/11
5	FCW & FEDB	0 days	Sun 31/07/11	Sun 31/07/11
6	D.I. Pipes, Fittings & Accessories	0 days	Tue 03/05/11	Tue 03/05/11
7	Water Spray Pumps & Associated Pipework	0 days	Fri 13/05/11	Fri 13/05/11
8	Penstocks & Electric Actuators in Existing Distribution Chamber	0 days	Mon 31/10/11	Mon 31/10/11
9	Penstocks & Electric Actuators in Sludge Draw-off Chambers (V.O.)	0 days	Tue 27/03/12	Tue 27/03/12
10	Submersible Drain Pumps (V.O.)	0 days	Wed 28/12/11	Wed 28/12/11
11	Valves & Electric Actuators	0 days	Sun 31/07/11	Sun 31/07/11
12	Lifting Appliances (V.O.)	0 days	Mon 01/10/12	Mon 01/10/12
13	Instrumentation (Ultrasonic Level Sensors, EM Flowmeters & Sludge Blanket Sensors)	0 days	Fri 29/04/11	Fri 29/04/11
14	L.V. Switchboard (MCC4)	0 days	Mon 28/11/11	Mon 28/11/11
15	LCP for Scraper Bridges	0 days	Fri 30/09/11	Fri 30/09/11
16	Control Panels inside Pillar Box	0 days	Sun 13/11/11	Sun 13/11/11
17	Cables, Cable Trays & Accessories	0 days	Wed 13/04/11	Wed 13/04/11
18	B.S. & F.S. Equipment & Accessories	0 days	Fri 30/09/11	Fri 30/09/11
19	**Section I of the Works**	**192 days**	**Tue 22/03/11**	**Fri 30/09/11**
20	Contractual Commencement Date (Notified by the Engineer)	0 days	Tue 22/03/11	Tue 22/03/11
21	Section I of the Works	120 days	Tue 22/03/11	Tue 19/07/11
22	Contractual Completion Date	0 days	Tue 19/07/11	Tue 19/07/11
23	V.O. / Instruction for new arrangement of Sluge Draw-off Chamber No.3 & 4 (by DSD)	0 days	Fri 30/09/11	Fri 30/09/11
24	V.O. / Instruction for new arrangment of FMC1B & FMC2B (by DSD)	0 days	Fri 30/09/11	Fri 30/09/11
25	**Possession/Availability of Site**	**473 days**	**Mon 15/08/11**	**Fri 30/11/12**
26	FC11B	0 days	Mon 15/08/11	Mon 15/08/11
27	FC12B	0 days	Mon 15/08/11	Mon 15/08/11
28	Sludge Draw-off Chamber No.3 (Re-constructed)	0 days	Mon 01/10/12	Mon 01/10/12
29	Sludge Draw-off Chamber No.4 (Re-constructed)	0 days	Fri 30/11/12	Fri 30/11/12
30	FMC1B	0 days	Sat 30/06/12	Sat 30/06/12
31	FMC2B	0 days	Sat 30/06/12	Sat 30/06/12
32	Pillar Box for FC11B & 12B	0 days	Mon 15/08/11	Mon 15/08/11
33	Cable Drawpits and Ducts	0 days	Fri 06/04/12	Fri 06/04/12
34	**E&M Installation**	**592 days**	**Mon 16/05/11**	**Thu 27/12/12**
35	**FC11B**	**312 days**	**Mon 15/08/11**	**Thu 21/06/12**
36	Site Preparation Works	12 days	Mon 15/08/11	Fri 26/08/11
37	Tripods, Bridges & Scrapers	210 days	Fri 04/11/11	Thu 31/05/12
38	Weir Plates	6 days	Sat 27/08/11	Thu 01/09/11
39	Density Current Baffles	14 days	Fri 02/09/11	Thu 15/09/11
40	FCW & FEDB	5 days	Fri 21/10/11	Tue 25/10/11
41	LCP and Electrical Installation	25 days	Fri 06/04/12	Mon 30/04/12
42	Instrumentation	10 days	Tue 10/04/12	Thu 19/04/12
43	Final Screeding	14 days	Fri 01/06/12	Thu 14/06/12
44	Painting of Civil Structure (by Civil Contractor)	7 days	Fri 15/06/12	Thu 21/06/12
45	**FC12B**	**312 days**	**Mon 15/08/11**	**Thu 21/06/12**
46	Site Preparation Works	12 days	Mon 15/08/11	Fri 26/08/11
47	Tripods, Bridges & Scrapers	45 days	Tue 17/04/12	Thu 31/05/12
48	Weir Plates	14 days	Fri 16/09/11	Thu 29/09/11
49	Density Current Baffles	10 days	Sat 15/10/11	Mon 24/10/11
50	FCW & FEDB	5 days	Fri 21/10/11	Tue 25/10/11
51	LCP and Electrical Installation	25 days	Fri 06/04/12	Mon 30/04/12
52	Instrumentation	10 days	Tue 10/04/12	Thu 19/04/12
53	Final Screeding	14 days	Fri 01/06/12	Thu 14/06/12
54	Painting of Civil Structure (by Civil Contractor)	7 days	Fri 15/06/12	Thu 21/06/12
55	**Pillar Box for FC11B & 12B**	**106 days**	**Mon 16/01/12**	**Mon 30/04/12**
56	Control Panels	7 days	Mon 16/01/12	Sun 22/01/12
57	Electrical Installation	48 days	Wed 14/03/12	Mon 30/04/12
58	**Existing Distribution Chamber**	**30 days**	**Mon 14/05/12**	**Tue 12/06/12**
59	Penstock Installation	30 days	Mon 14/05/12	Tue 12/06/12
60	Electrical Installation	7 days	Wed 06/06/12	Tue 12/06/12
61	**FMC1B**	**14 days**	**Sat 30/06/12**	**Fri 13/07/12**
62	Pinch Valve, EM Flowmeter & Pipework Installation	14 days	Sat 30/06/12	Fri 13/07/12
63	**FMC2B**	**14 days**	**Sat 14/07/12**	**Fri 27/07/12**
64	Pinch Valve, EM Flowmeter & Pipework Installation	14 days	Sat 14/07/12	Fri 27/07/12
65	**Sludge Draw-off Chamber No.3 (Re-constructed)**	**28 days**	**Mon 01/10/12**	**Sun 28/10/12**
66	Penstock Installation	14 days	Mon 01/10/12	Sun 14/10/12
67	Submersible Drain Pumps and Pipework	14 days	Mon 15/10/12	Sun 28/10/12
68	Lifting Appliance	14 days	Mon 01/10/12	Sun 14/10/12
69	Instrumentation and Electrical Installation	14 days	Mon 15/10/12	Sun 28/10/12
70	**Sludge Draw-off Chamber No.4 (Re-constructed)**	**28 days**	**Fri 30/11/12**	**Thu 27/12/12**
71	Penstock Installation	28 days	Fri 30/11/12	Thu 27/12/12
72	Submersible Drain Pumps and Pipework	14 days	Fri 14/12/12	Thu 27/12/12
73	Lifting Appliance	14 days	Fri 30/11/12	Thu 13/12/12
74	Instrumentation and Electrical Installation	21 days	Fri 07/12/12	Thu 27/12/12
75	**Upgrade of L.V. Switchboard (MCC4) at Chemical House**	**444 days**	**Mon 16/05/11**	**Wed 01/08/12**
76	Temporary Control Panels for Existing MCC	71 days	Mon 16/05/11	Mon 25/07/11
77	Temporary Relocation of NaOCl Dosing System	1 day	Tue 09/08/11	Tue 09/08/11
78	Modification of Chemical House (by Civil Contractor)	296 days	Wed 10/08/11	Thu 31/05/12
79	L.V. Switchboard (MCC4) Installation and Testing	62 days	Fri 01/06/12	Wed 01/08/12
80	Modification of Existing SCADA/PLC System E at Aeration Tank Control Kiosk	28 days	Thu 05/07/12	Wed 01/08/12
81	B.S. & F.S. Installation	135 days	Tue 20/03/12	Wed 01/08/12
82	**Testing & Commissioning**	**210 days**	**Fri 22/06/12**	**Thu 17/01/13**
83	Functional Test of FC11B	14 days	Fri 22/06/12	Thu 05/07/12
84	Functional Test of FC12B	14 days	Fri 22/06/12	Thu 05/07/12
85	System Commissioning	21 days	Fri 28/12/12	Thu 17/01/13

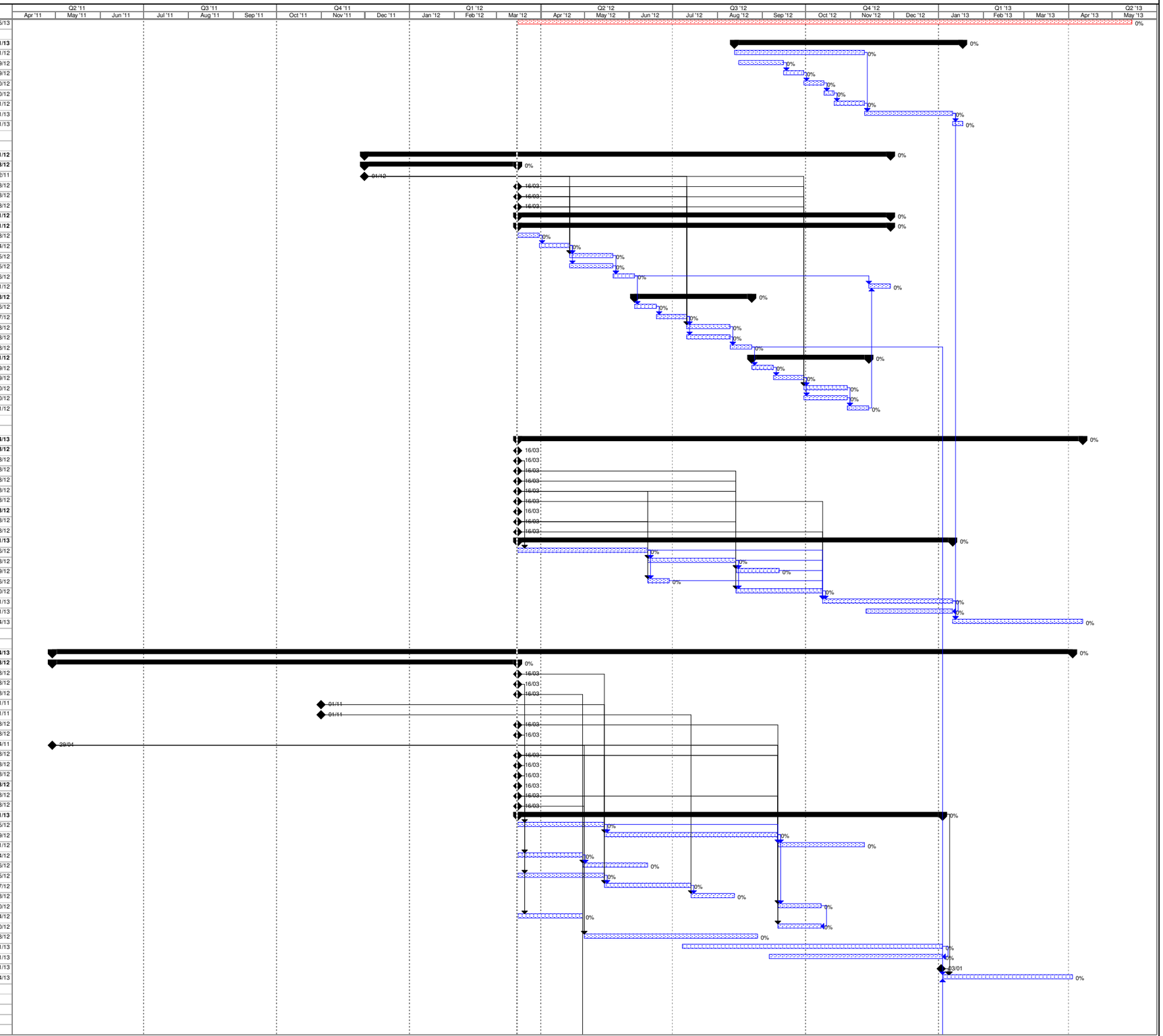
Revision: D
Date: 2 September 2011

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

DSD Contract : DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section III Works Programme

ID	Task Name	Duration	Start	Finish
1	**Section III of the Works**	425 days	Fri 16/03/12	Tue 14/05/13
2				
3	**Modification / Replacement of Existing L.V. Switchboard (PST MCC5 & MCC5A)**	**158 days**	**Mon 13/08/12**	**Thu 17/01/13**
4	MCC5 Manufacture & Delivery to Site	90 days	Mon 13/08/12	Sat 10/11/12
5	Temporary Works Preparation	31 days	Thu 16/08/12	Sat 15/09/12
6	Temporary Works Installation	14 days	Sun 16/09/12	Sat 29/09/12
7	Migration of Power/Control for Existing E&M Equipment to Temporary Panels	14 days	Sun 30/09/12	Sat 13/10/12
8	Removal of Existing MCC5 & MCC5B	7 days	Sun 14/10/12	Sat 20/10/12
9	Civil Modification Works (By Civil Contractor)	21 days	Sun 21/10/12	Sat 10/11/12
10	MCC5 Installation, MCC5A Modification, SAT, Cable Installation & Migration	61 days	Sun 11/11/12	Thu 10/01/13
11	Removal of Temporary Panels	7 days	Fri 11/01/13	Thu 17/01/13
12				
13				
14	**Air Blowers in CBC**	**364 days**	**Thu 01/12/11**	**Wed 28/11/12**
15	**Equipment and Material Delivery to Site**	**106 days**	**Thu 01/12/11**	**Fri 16/03/12**
16	Air Blowers	0 days	Thu 01/12/11	Thu 01/12/11
17	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
18	Air Ductwork	0 days	Fri 16/03/12	Fri 16/03/12
19	Vibration Monitoring System	0 days	Fri 16/03/12	Fri 16/03/12
20	**Modification Works**	**258 days**	**Fri 16/03/12**	**Wed 28/11/12**
21	**Air Blower No.5**	**258 days**	**Fri 16/03/12**	**Wed 28/11/12**
22	Decommissioning & Dismantle of Existing Air Blower & Accessories	15 days	Fri 16/03/12	Fri 30/03/12
23	Civil Modification & GMS Puddle Flange Pipe Installation (By Civil Contractor)	21 days	Sat 31/03/12	Fri 20/04/12
24	Installation of New Air Blower & Accessories	30 days	Sat 21/04/12	Sun 20/05/12
25	Electrical Installation (with Temporary MCC/Starter Panel)	30 days	Sat 21/04/12	Sun 20/05/12
26	Testing and Commissioning	15 days	Mon 21/05/12	Mon 04/06/12
27	Migration from Temporary MCC/Starter to MCC2	15 days	Wed 14/11/12	Wed 28/11/12
28	**Air Blower No.2**	**81 days**	**Tue 05/06/12**	**Fri 24/08/12**
29	Decommissioning & Dismantle of Existing Air Blower & Accessories	15 days	Tue 05/06/12	Tue 19/06/12
30	Civil Modification & GMS Puddle Flange Pipe Installation (By Civil Contractor)	21 days	Wed 20/06/12	Tue 10/07/12
31	Installation of New Air Blower & Accessories	30 days	Wed 11/07/12	Thu 09/08/12
32	Electrical Installation (with New MCC2)	30 days	Wed 11/07/12	Thu 09/08/12
33	Testing and Commissioning	15 days	Fri 10/08/12	Fri 24/08/12
34	**Air Blower No.1**	**81 days**	**Sat 25/08/12**	**Tue 13/11/12**
35	Decommissioning & Dismantle of Existing Air Blower & Accessories	15 days	Sat 25/08/12	Sat 08/09/12
36	Civil Modification & GMS Puddle Flange Pipe Installation (By Civil Contractor)	21 days	Sun 09/09/12	Sat 29/09/12
37	Installation of New Air Blower & Accessories	30 days	Sun 30/09/12	Mon 29/10/12
38	Electrical Installation (with New MCC2)	30 days	Sun 30/09/12	Mon 29/10/12
39	Testing and Commissioning	15 days	Tue 30/10/12	Tue 13/11/12
40				
41				
42	**Primary Sedimentation Tank No.5**	**391 days**	**Fri 16/03/12**	**Wed 10/04/13**
43	**Equipment and Material Delivery to Site**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
44	Sludge & Scum Collection System	0 days	Fri 16/03/12	Fri 16/03/12
45	PST Drain-off Pump	0 days	Fri 16/03/12	Fri 16/03/12
46	Scum Pump	0 days	Fri 16/03/12	Fri 16/03/12
47	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
48	Local Control Panel for Sludge & Scum Collection System	0 days	Fri 16/03/12	Fri 16/03/12
49	**Site Possession / Available**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
50	PST No.5	0 days	Fri 16/03/12	Fri 16/03/12
51	Cable Drawpit & Duct	0 days	Fri 16/03/12	Fri 16/03/12
52	**Installation**	**301 days**	**Fri 16/03/12**	**Thu 10/01/13**
53	Sludge & Scum Scrapers	90 days	Fri 16/03/12	Wed 13/06/12
54	Influent Pipework in Pipe Gallery	61 days	Thu 14/06/12	Mon 13/08/12
55	PST Drain-off Pump & Associated Pipework	30 days	Tue 14/08/12	Wed 12/09/12
56	Water Spray Pipework for Scum Trough	15 days	Thu 14/06/12	Thu 28/06/12
57	Scum Pump & Associated Pipework	60 days	Tue 14/08/12	Fri 12/10/12
58	Local Control Panel & Electrical Installation	90 days	Sat 13/10/12	Thu 10/01/13
59	H2S Detection System Installation	60 days	Mon 12/11/12	Thu 10/01/13
60	**Testing and Commissioning**	90 days	Fri 11/01/13	Wed 10/04/13
61				
62				
63	**New Aeration Tanks No.5 to 7**	**706 days**	**Fri 29/04/11**	**Wed 03/04/13**
64	**Equipment and Material Delivery to Site**	**322 days**	**Fri 29/04/11**	**Fri 16/03/12**
65	Air Diffusers	0 days	Fri 16/03/12	Fri 16/03/12
66	GRP Mixer Bridges	0 days	Fri 16/03/12	Fri 16/03/12
67	Bridge Mounted Vertical Mixers	0 days	Fri 16/03/12	Fri 16/03/12
68	MLR Pumps	0 days	Tue 01/11/11	Tue 01/11/11
69	Submersible Mixers	0 days	Tue 01/11/11	Tue 01/11/11
70	Water Spray Pumps	0 days	Fri 16/03/12	Fri 16/03/12
71	Penstock & Actuators	0 days	Fri 16/03/12	Fri 16/03/12
72	Instruments (EM Flowmeters, Air Flowmeters & Online Sensors)	0 days	Fri 29/04/11	Fri 29/04/11
73	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
74	Lifting Appliance	0 days	Fri 16/03/12	Fri 16/03/12
75	GMS Air Mains	0 days	Fri 16/03/12	Fri 16/03/12
76	**Site Possession / Available**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
77	New Aeration Tanks No.5 to 7	0 days	Fri 16/03/12	Fri 16/03/12
78	Pipe Gallery Extension	0 days	Fri 16/03/12	Fri 16/03/12
79	**Installation**	**294 days**	**Fri 16/03/12**	**Thu 03/01/13**
80	GMS Air Mains & FRP Staircase	60 days	Fri 16/03/12	Mon 14/05/12
81	Air Diffusers	120 days	Tue 15/05/12	Tue 11/09/12
82	Air Pipework, Butterfly Valves & Air Flowmeters	60 days	Wed 12/09/12	Sat 10/11/12
83	GRP Mixer Bridges	45 days	Fri 16/03/12	Sun 29/04/12
84	Bridge Mounted Vertical Mixers	45 days	Mon 30/04/12	Wed 13/06/12
85	Lifting Appliance	60 days	Fri 16/03/12	Mon 14/05/12
86	MLR Pumps & Associated Pipework	60 days	Tue 15/05/12	Fri 13/07/12
87	Submersible Mixers	30 days	Sat 14/07/12	Sun 12/08/12
88	Water Spray Pumps & Associated Pipework	30 days	Wed 12/09/12	Thu 11/10/12
89	Penstock & Actuators	45 days	Fri 16/03/12	Sun 29/04/12
90	Instruments	30 days	Wed 12/09/12	Thu 11/10/12
91	RAS Pipework in Pipe Gallery Extension	120 days	Tue 01/05/12	Tue 28/08/12
92	Electrical Works	180 days	Sun 08/07/12	Thu 03/01/13
93	SCADA/PLC System	120 days	Thu 06/09/12	Thu 03/01/13
94	**MCC3 Ready**	0 days	Thu 03/01/13	Thu 03/01/13
95	**Testing and Commissioning**	90 days	Fri 04/01/13	Wed 03/04/13
96				
97				
98				
99				
100				



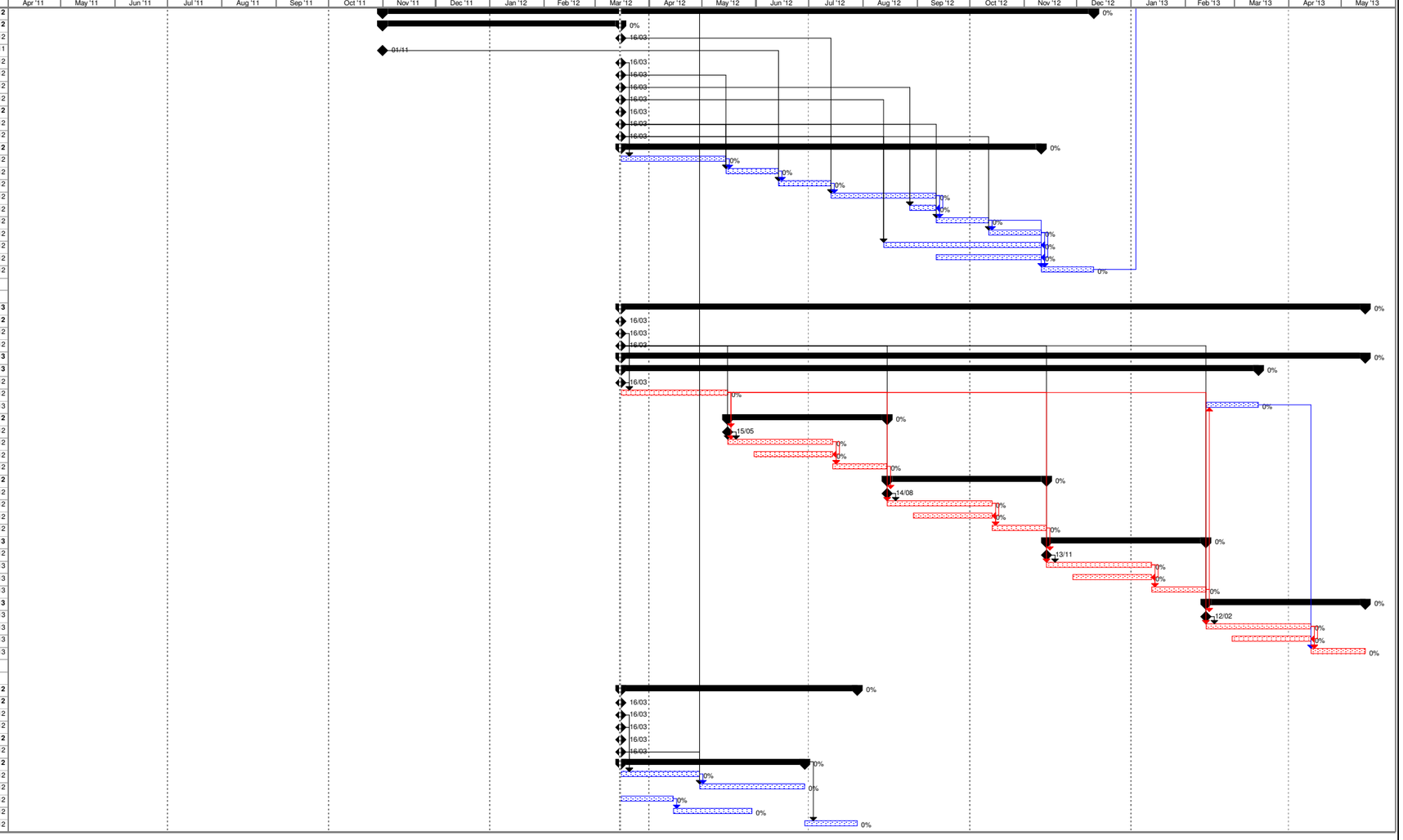
Rev. 1
Date: 15 Mar 2012

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

DSD Contract : DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section III Works Programme

ID	Task Name	Duration	Start	Finish
101	**New Mixed Liquor Channels**	**406 days**	**Tue 01/11/11**	**Mon 10/12/12**
102	**Equipment and Material Delivery to Site**	**136 days**	**Tue 01/11/11**	**Fri 16/03/12**
103	Foam Removal Collector	0 days	Fri 16/03/12	Fri 16/03/12
104	Submersible Mixers	0 days	Tue 01/11/11	Tue 01/11/11
105	Penstock & Actuator	0 days	Fri 16/03/12	Fri 16/03/12
106	Lifting Appliance	0 days	Fri 16/03/12	Fri 16/03/12
107	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
108	Local Control Panel	0 days	Fri 16/03/12	Fri 16/03/12
109	**Site Possession / Available**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
110	Mixed Liquor Channel, Foam Channel & Pillar Box	0 days	Fri 16/03/12	Fri 16/03/12
111	Bunded Area & Shelter for NaOCl Dosing System	0 days	Fri 16/03/12	Fri 16/03/12
112	**Installation**	**240 days**	**Fri 16/03/12**	**Sat 10/11/12**
113	Penstock & Actuactor in Flow Splitter Box	60 days	Fri 16/03/12	Mon 14/05/12
114	Lifting Appliance	30 days	Tue 15/05/12	Wed 13/06/12
115	Submersible Mixers	30 days	Thu 14/06/12	Fri 13/07/12
116	Foam Removal Collector	60 days	Sat 14/07/12	Tue 11/09/12
117	Water Spray System	15 days	Tue 28/08/12	Tue 11/09/12
118	Relocation of Foam Transfer Pumps	30 days	Wed 12/09/12	Thu 11/10/12
119	Relocation of NaOCl Dosing System	30 days	Fri 12/10/12	Sat 10/11/12
120	Local Control Panel & Electrical Installation	90 days	Mon 13/08/12	Sat 10/11/12
121	SCADA/PLC System	60 days	Wed 12/09/12	Sat 10/11/12
122	**Testing and Commissioning**	30 days	Sun 11/11/12	Mon 10/12/12
123				
124				
125	**Existing Aeration Tanks No.1 to 4**	**425 days**	**Fri 16/03/12**	**Tue 14/05/13**
126	**Equipment and Material Delivery to Site**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
127	GMS Air Mains	0 days	Fri 16/03/12	Fri 16/03/12
128	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
129	**Modification Works**	**425 days**	**Fri 16/03/12**	**Tue 14/05/13**
130	**New Air Mains**	**364 days**	**Fri 16/03/12**	**Thu 14/03/13**
131	Steel Bridges (By Civil Contractor) Available for Air Mains	0 days	Fri 16/03/12	Fri 16/03/12
132	GMS Air Mains Installation	61 days	Fri 16/03/12	Tue 15/05/12
133	Connection Existing Air Mains beside RAS Pumping Station (By Civil Contractor)	30 days	Wed 13/02/13	Thu 14/03/13
134	**Aeration Tank No.4**	**91 days**	**Tue 15/05/12**	**Tue 14/08/12**
135	Tank Available for Modification (Drained Down by DSD/ST1)	0 days	Tue 15/05/12	Tue 15/05/12
136	Air Pipework, Butterfly Valves & Air Flowmeters	60 days	Wed 16/05/12	Sat 14/07/12
137	Electrical Installation	45 days	Thu 31/05/12	Sat 14/07/12
138	Testing and Commissioning	31 days	Sun 15/07/12	Tue 14/08/12
139	**Aeration Tank No.3**	**91 days**	**Tue 14/08/12**	**Tue 13/11/12**
140	Tank Available for Modification (Drained Down by DSD/ST1)	0 days	Tue 14/08/12	Tue 14/08/12
141	Air Pipework, Butterfly Valves & Air Flowmeters	60 days	Wed 15/08/12	Sat 13/10/12
142	Electrical Installation	45 days	Thu 30/08/12	Sat 13/10/12
143	Testing and Commissioning	31 days	Sun 14/10/12	Tue 13/11/12
144	**Aeration Tank No.2**	**91 days**	**Tue 13/11/12**	**Tue 12/02/13**
145	Tank Available for Modification (Drained Down by DSD/ST1)	0 days	Tue 13/11/12	Tue 13/11/12
146	Air Pipework, Butterfly Valves, & Air Flowmeters	60 days	Wed 14/11/12	Sat 12/01/13
147	Electrical Installation	45 days	Thu 29/11/12	Sat 12/01/13
148	Testing and Commissioning	31 days	Sun 13/01/13	Tue 12/02/13
149	**Aeration Tank No.1**	**91 days**	**Tue 12/02/13**	**Tue 14/05/13**
150	Tank Available for Modification (Drained Down by DSD/ST1)	0 days	Tue 12/02/13	Tue 12/02/13
151	Air Pipework, Butterfly Valves & Air Flowmeters	60 days	Wed 13/02/13	Sat 13/04/13
152	Electrical Installation	45 days	Thu 28/02/13	Sat 13/04/13
153	Testing and Commissioning	31 days	Sun 14/04/13	Tue 14/05/13
154				
155				
156	**Filtrate Pumping System (Stage I/II Modification)**	**135 days**	**Fri 16/03/12**	**Sat 28/07/12**
157	**Equipment and Material Delivery to Site**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
158	Submersible Pump	0 days	Fri 16/03/12	Fri 16/03/12
159	Pipework & Valves	0 days	Fri 16/03/12	Fri 16/03/12
160	**Site Possession / Available**	**0 days**	**Fri 16/03/12**	**Fri 16/03/12**
161	Underground Pipework to Stage IV Aeration Tanks (By Civil Contractor)	0 days	Fri 16/03/12	Fri 16/03/12
162	**Installation**	**105 days**	**Fri 16/03/12**	**Thu 28/06/12**
163	Pump Replacement & Pipework Modification at Existing Pump Chamber	45 days	Fri 16/03/12	Sun 29/04/12
164	Filtrate Pipework Installation at Aeration Tanks	60 days	Mon 30/04/12	Thu 28/06/12
165	Existing L.V. Switchboard Modification	30 days	Fri 16/03/12	Sat 14/04/12
166	Electrical Installation	45 days	Sun 15/04/12	Tue 29/05/12
167	**Testing and Commissioning**	30 days	Fri 29/06/12	Sat 28/07/12



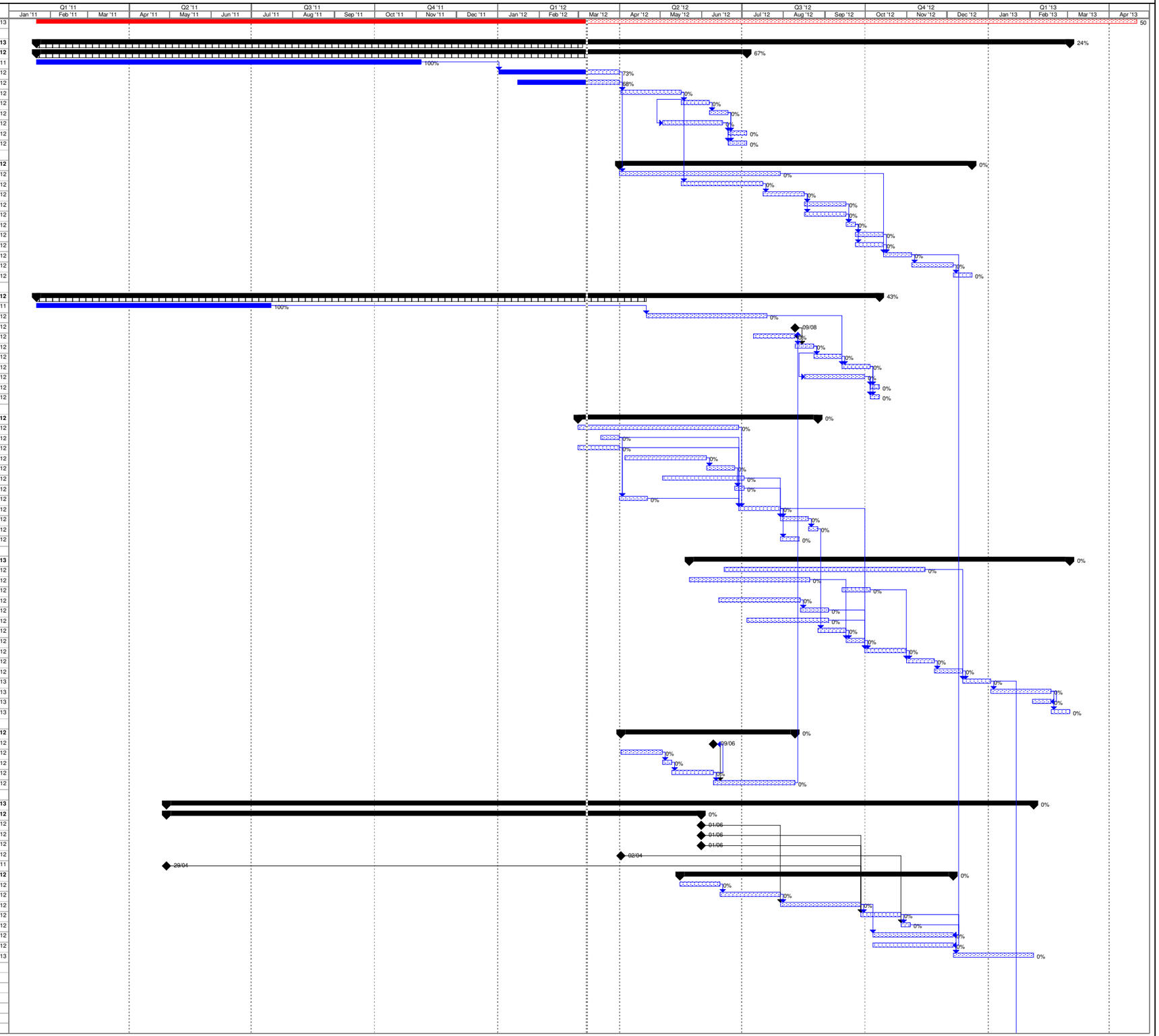
Rev. 1
Date: 15 Mar 2012

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

DSD Contract : DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section V Works Programme

ID	Task Name	Duration	Start	Finish
1	**Section V of the Works**	821 days	Sat 22/01/11	Sun 21/04/13
2				
3	**Modification / Replacement of Existing L.V. Switchboard**	**771 days**	**Sat 22/01/11**	**Sat 02/03/13**
4	**CBC G/F MCC**	**530 days**	**Sat 22/01/11**	**Wed 04/07/12**
5	Drawing Submission for CLP & DSD Approval	287 days	Sat 22/01/11	Fri 04/11/11
6	Switchboard Manufacture & Delivery to Site	90 days	Mon 02/01/12	Sat 31/03/12
7	Temporary Works Preparation	76 days	Mon 16/01/12	Sat 31/03/12
8	Site Setup of Temporary Backup Facilities & Removal of Existing Switchboard	45 days	Mon 02/04/12	Wed 16/05/12
9	Civil Modification Works (By Civil Contractor)	21 days	Thu 17/05/12	Wed 06/06/12
10	New Switchboard Installation & SAT	14 days	Thu 07/06/12	Wed 20/06/12
11	CLP's Tx Upgrading Works & Cable Connection to New Switchboard	45 days	Thu 03/05/12	Sat 16/06/12
12	Removal of Existing Cables & Installation of New Cables	14 days	Thu 21/06/12	Wed 04/07/12
13	Connect Permanent Power Supply for Existing Small Power D/B	14 days	Thu 21/06/12	Wed 04/07/12
14				
15	**IW 1/F MCC1**	**263 days**	**Sun 01/04/12**	**Wed 19/12/12**
16	Switchboard Manufacture & Delivery to Site	120 days	Sun 01/04/12	Sun 29/07/12
17	Temporary Works Preparation	61 days	Thu 17/05/12	Mon 16/07/12
18	Temporary Works Installation	31 days	Tue 17/07/12	Thu 16/08/12
19	Migration of Power/Control for Existing E&M Equipment to Temporary Panels	31 days	Fri 17/08/12	Sun 16/09/12
20	Relocation of Existing Remote I/O Panel	31 days	Fri 17/08/12	Sun 16/09/12
21	Removal of Existing Switchboard	7 days	Mon 17/09/12	Sun 23/09/12
22	Civil Modification Works (By Civil Contractor)	21 days	Mon 24/09/12	Sun 14/10/12
23	Modification of Exisiting Switchroom Partition	21 days	Mon 24/09/12	Sun 14/10/12
24	New Switchboard Installation & SAT	21 days	Mon 15/10/12	Sun 04/11/12
25	Migration of Power/Control of Existing E&M Equipment to New Switchboard	31 days	Mon 05/11/12	Wed 05/12/12
26	Removal of Existing Cables & Installation of New Cables	14 days	Thu 06/12/12	Wed 19/12/12
27				
28	**IW G/F MCC**	**629 days**	**Sat 22/01/11**	**Thu 11/10/12**
29	Drawing Submission for CLP & DSD Approval	175 days	Sat 22/01/11	Fri 15/07/11
30	Switchboard Manufacture & Delivery to Site	90 days	Sat 21/04/12	Thu 19/07/12
31	Completion of Genset Replacement	0 days	Thu 09/08/12	Thu 09/08/12
32	Temporary Works Preparation	31 days	Tue 10/07/12	Thu 09/08/12
33	Site Setup of Temporary Backup Facilities & Removal of Existing Switchboard	14 days	Fri 10/08/12	Thu 23/08/12
34	Civil Modification Works (By Civil Contractor)	21 days	Fri 24/08/12	Thu 13/09/12
35	New Switchboard Installation & SAT	21 days	Fri 14/09/12	Thu 04/10/12
36	CLP's Tx Upgrading Works & Cable Connection to New Switchboard	45 days	Fri 17/08/12	Sun 30/09/12
37	Removal of Existing Cables & Installation of New Cables	7 days	Fri 05/10/12	Thu 11/10/12
38	Connect Power Supply for Existing Lighting & Small Power D/B	7 days	Fri 05/10/12	Thu 11/10/12
39				
40	**CBC 1/F MCC2A**	**179 days**	**Thu 01/03/12**	**Sun 26/08/12**
41	Switchboard Manufacture & Delivery to Site	120 days	Thu 01/03/12	Thu 28/06/12
42	Relocate Existing Workstation to Existing Polymer Pump Room	14 days	Sun 18/03/12	Sat 31/03/12
43	Relocate Existing CH4 & H2S Sensors Panels (if required)	31 days	Thu 01/03/12	Sat 31/03/12
44	Temporary Works Preparation	61 days	Thu 05/04/12	Mon 04/06/12
45	Temporary Works Installation	21 days	Tue 05/06/12	Mon 25/06/12
46	Installation of Permanent Marshalling Boxes & Cable Trays	61 days	Thu 03/05/12	Mon 02/07/12
47	Migration of Power/Control for Existing E&M Equipment to Temporary Panels (future from MCC2)	7 days	Tue 26/06/12	Mon 02/07/12
48	Civil Modification Works (By Civil Contractor)	21 days	Sun 01/04/12	Sat 21/04/12
49	New Switchboard Installation & SAT	31 days	Fri 29/06/12	Sun 29/07/12
50	Migration of Power/Control for Existing E&M Equipment to New Switchbaord	21 days	Mon 30/07/12	Sun 19/08/12
51	Removal of Existing Switchboard	7 days	Mon 20/08/12	Sun 26/08/12
52	Removal of Existing Cables & Installation of New Cables	14 days	Mon 30/07/12	Sun 12/08/12
53				
54	**CBC 1/F MCC2**	**284 days**	**Wed 23/05/12**	**Sat 02/03/13**
55	MCC2 Manufacture & Delivery to Site	150 days	Mon 18/06/12	Wed 14/11/12
56	MCC2 Extension Manufacture & Delivery to Site	90 days	Wed 23/05/12	Mon 20/08/12
57	Demolition of MCC8 at CBC 1/F	21 days	Fri 14/09/12	Thu 04/10/12
58	Temporary Works Preparation	61 days	Thu 14/06/12	Mon 13/08/12
59	Temporary Works Installation	21 days	Tue 14/08/12	Mon 03/09/12
60	Installation of Permanent Marshalling Boxes & Cable Trays	61 days	Thu 05/07/12	Mon 03/09/12
61	Civil Modification Works for MCC2 Extension (By Civil Contractor)	21 days	Mon 27/08/12	Sun 16/09/12
62	MCC2 Extension Installation & SAT	14 days	Mon 17/09/12	Sun 30/09/12
63	Migration of Power/Control for Existing E&M Equipment to New MCC2 Extension & Temp. MCC	31 days	Mon 01/10/12	Wed 31/10/12
64	Removal of Existing Switchboard MCC2	21 days	Thu 01/11/12	Wed 21/11/12
65	Civil Modification Works for MCC2 (By Civil Contractor)	21 days	Thu 22/11/12	Wed 12/12/12
66	MCC2 Installation & SAT	21 days	Thu 13/12/12	Wed 02/01/13
67	Migration of Power/Control for Existing E&M Equipment to New MCC2	45 days	Thu 03/01/13	Sat 16/02/13
68	Installation of New Cables	14 days	Sun 03/02/13	Sat 16/02/13
69	Removal of Temporary Panels	14 days	Sun 17/02/13	Sat 02/03/13
70				
71	**Replacement of Emergency Genset for IW G/F MCC**	**130 days**	**Mon 02/04/12**	**Thu 09/08/12**
72	New 1500kVA Genset & Accessories Delivery to Site	0 days	Sat 09/06/12	Sat 09/06/12
73	Site Setup of Power Backup Facilities by Tempoary Genset	31 days	Mon 02/04/12	Wed 02/05/12
74	Removal of Existing 750kVA Genset	7 days	Thu 03/05/12	Wed 09/05/12
75	Civil Modification Works (By Civil Contractor)	31 days	Thu 10/05/12	Sat 09/06/12
76	Installation of New Genset & SAT	61 days	Sun 10/06/12	Thu 09/08/12
77				
78	**Inlet Works**	**647 days**	**Fri 29/04/11**	**Sun 03/02/13**
79	**Equipment and Material Deliver to Site**	**399 days**	**Fri 29/04/11**	**Fri 01/06/12**
80	Screw Pumps	0 days	Fri 01/06/12	Fri 01/06/12
81	Mechanical Bar Screen	0 days	Fri 01/06/12	Fri 01/06/12
82	Screw Conveyor	0 days	Fri 01/06/12	Fri 01/06/12
83	Actuator for Existing Penstocks	0 days	Mon 02/04/12	Mon 02/04/12
84	Ultrasonic Level Sensors	0 days	Fri 29/04/11	Fri 29/04/11
85	**Installation**	**204 days**	**Wed 16/05/12**	**Wed 05/12/12**
86	Temporary Flow Diversion	30 days	Wed 16/05/12	Thu 14/06/12
87	Construction / Modification of Existing Concrete Plinths for Screw Pumps	45 days	Fri 15/06/12	Sun 29/07/12
88	Screw Pump Installation & Screeding Works	60 days	Mon 30/07/12	Thu 27/09/12
89	Installation of Mechanical Bar Screen, Screw Conveyor & Ultrasonic Level Sensors	30 days	Fri 28/09/12	Sat 27/10/12
90	Installation of Actuators for Existing Penstocks	7 days	Sun 28/10/12	Sat 03/11/12
91	Electrical Installation	60 days	Sun 07/10/12	Wed 05/12/12
92	SCADA/PLC System	60 days	Sun 07/10/12	Wed 05/12/12
93	**Testing and Commissioning**	60 days	Thu 06/12/12	Sun 03/02/13
94				
95				
96				
97				
98				
99				
100				



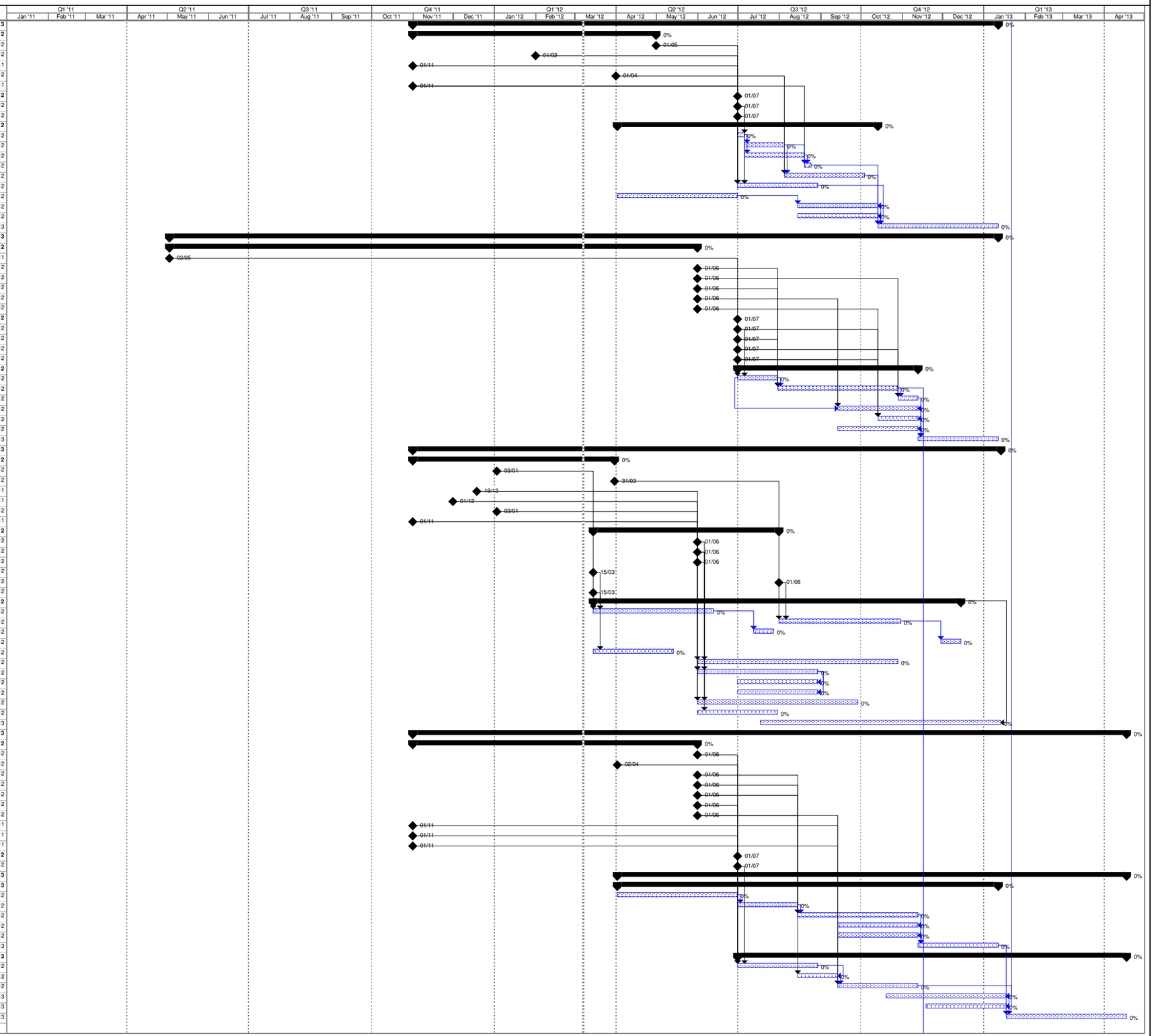
Rev. 2
Date: 7 Mar 2012

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

DSD Contract : DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section V Works Programme

ID	Task Name	Duration	Start	Finish
101	**Filtrate Treatment Plant (SBR)**	**438 days**	**Tue 01/11/11**	**Fri 11/01/13**
102	**Equipment and Material Delivery to Site**	**182 days**	**Tue 01/11/11**	**Tue 01/05/12**
103	Air Blower	0 days	Tue 01/05/12	Tue 01/05/12
104	Filtrate Transfer Pump	0 days	Wed 01/02/12	Wed 01/02/12
105	Filtrate Inlet Sump Pump	0 days	Tue 01/11/11	Tue 01/11/11
106	Air Diffusers	0 days	Sun 01/04/12	Sun 01/04/12
107	Pipework & Valves	0 days	Tue 01/11/11	Tue 01/11/11
108	**Site Possession / Available**	**0 days**	**Sun 01/07/12**	**Sun 01/07/12**
109	SBR Tank	0 days	Sun 01/07/12	Sun 01/07/12
110	Civil Works Provision (By Civil Contractor)	0 days	Sun 01/07/12	Sun 01/07/12
111	**Installation**	**195 days**	**Mon 02/04/12**	**Sat 13/10/12**
112	Take Down of Existing Decanter	5 days	Sun 01/07/12	Thu 05/07/12
113	Modification of Concrete Corbels & Cast-in Puddle Flanged Pipe (By Civil Contractor)	30 days	Fri 06/07/12	Sat 04/08/12
114	Off-site Modification of Existing Decanter	45 days	Fri 06/07/12	Sun 19/08/12
115	Installation of Modified Decanter	5 days	Mon 20/08/12	Fri 24/08/12
116	Modification of Air Diffusers	60 days	Sun 05/08/12	Wed 03/10/12
117	Installation of Air Blower, Filtrate Transfer Pump, Filtrate Inlet Sump Pump & Associated Pipework	60 days	Sun 01/07/12	Wed 29/08/12
118	Existing L.V. Switchboard Modification	90 days	Mon 02/04/12	Sat 30/06/12
119	Electrical Installation	60 days	Wed 15/08/12	Sat 13/10/12
120	SCADA/PLC System	60 days	Wed 15/08/12	Sat 13/10/12
121	**Testing and Commissioning**	90 days	Sun 14/10/12	Fri 11/01/13
122	**Primary Sludge Gravity Thickener**	**620 days**	**Tue 03/05/11**	**Fri 11/01/13**
123	**Equipment and Material Delivery to Site**	**395 days**	**Tue 03/05/11**	**Fri 01/06/12**
124	Knife Gate Valves & Actuators	0 days	Tue 03/05/11	Tue 03/05/11
125	Deodorizing Unit, Extraction Fan & Accessories	0 days	Fri 01/06/12	Fri 01/06/12
126	Pipework & Valves	0 days	Fri 01/06/12	Fri 01/06/12
127	Air Ductwork & Accessories	0 days	Fri 01/06/12	Fri 01/06/12
128	Local Control Panel for DO Unit	0 days	Fri 01/06/12	Fri 01/06/12
129	CCTV System	0 days	Fri 01/06/12	Fri 01/06/12
130	**Site Possession / Available**	**0 days**	**Sun 01/07/12**	**Sun 01/07/12**
131	Decanting Chamber	0 days	Sun 01/07/12	Sun 01/07/12
132	Concrete Plinth for DO System	0 days	Sun 01/07/12	Sun 01/07/12
133	Civil Works Provision at Existing Valve Chamber (By Civil Contractor)	0 days	Sun 01/07/12	Sun 01/07/12
134	Cable Drawpit & Ducts	0 days	Sun 01/07/12	Sun 01/07/12
135	**Installation**	**135 days**	**Sun 01/07/12**	**Mon 12/11/12**
136	Knife Gate Valves & Actuators	30 days	Sun 01/07/12	Mon 30/07/12
137	Deodorizing Unit, Air Ductwork & Associated Accessories	90 days	Tue 31/07/12	Sun 28/10/12
138	Pipework Installation at Existing Valve Chamber	15 days	Mon 29/10/12	Mon 12/11/12
139	Electrical Installation	60 days	Fri 14/09/12	Mon 12/11/12
140	CCTV Installation	30 days	Sun 14/10/12	Mon 12/11/12
141	SCADA/PLC System	60 days	Fri 14/09/12	Mon 12/11/12
142	**Testing and Commissioning**	60 days	Tue 13/11/12	Fri 11/01/13
143	**Biogas System**	**440 days**	**Tue 01/11/11**	**Sun 13/01/13**
144	**Equipment and Material Delivery to Site**	**151 days**	**Tue 01/11/11**	**Sat 31/03/12**
145	Waste Gas Burner for Stage I/II	0 days	Tue 03/01/12	Tue 03/01/12
146	Waste Gas Burner for Stage IV	0 days	Sat 31/03/12	Sat 31/03/12
147	Biogas Holding Tank Materials	0 days	Mon 19/12/11	Mon 19/12/11
148	Flame Arrestor and Condensation Pot	0 days	Thu 01/12/11	Thu 01/12/11
149	Biogas Booster	0 days	Tue 03/01/12	Tue 03/01/12
150	Pipework & Valves	0 days	Tue 01/11/11	Tue 01/11/11
151	**Site Possession / Available**	**139 days**	**Thu 15/03/12**	**Wed 01/08/12**
152	Biogas Holding Tank Concrete Slab	0 days	Fri 01/06/12	Fri 01/06/12
153	Biogas Holding Tank Valve Chamber	0 days	Fri 01/06/12	Fri 01/06/12
154	Gas Transfer Station	0 days	Fri 01/06/12	Fri 01/06/12
155	Concrete Plinth for Waste Gas Burner in Stage I/II	0 days	Thu 15/03/12	Thu 15/03/12
156	Concrete Plinth for Waste Gas Burner in Stage IV	0 days	Wed 01/08/12	Wed 01/08/12
157	Concrete Plinth for Relocated DO in Stage I/II	0 days	Thu 15/03/12	Thu 15/03/12
158	**Installation**	**275 days**	**Thu 15/03/12**	**Fri 14/12/12**
159	Waste Gas Burner Installation in Stage I/II	90 days	Thu 15/03/12	Tue 12/06/12
160	Waste Gas Burner Installation in Stage IV	91 days	Wed 01/08/12	Tue 30/10/12
161	Dismantle of Existing Waste Gas Burner in Stage I/II	15 days	Fri 13/07/12	Fri 27/07/12
162	Dismantle of Existing Waste Gas Burner in Stage IV	15 days	Fri 30/11/12	Fri 14/12/12
163	Relocation of Existing DO in Stage I/II (V.O.)	60 days	Thu 15/03/12	Sun 13/05/12
164	Biogas Holding Tank Installation	150 days	Fri 01/06/12	Sun 28/10/12
165	Installation in New Valve Chamber for New Biogas Holding Tank	90 days	Fri 01/06/12	Wed 29/08/12
166	Installation in Existing Valve Chamber No.1 & 2 for Existing Biogas Holding Tank	60 days	Sun 01/07/12	Wed 29/08/12
167	Installation in Pipe Gallery	60 days	Sun 01/07/12	Wed 29/08/12
168	Installation in Gas Transfer Station	120 days	Fri 01/06/12	Fri 28/09/12
169	Methane Gas Detection System Installation	60 days	Fri 01/06/12	Mon 30/07/12
170	**Testing and Commissioning**	180 days	Wed 18/07/12	Sun 13/01/13
171	**Sludge Digestion Tank No.3 and Hot Water Circulation System**	**534 days**	**Tue 01/11/11**	**Wed 17/04/13**
172	**Equipment and Material Delivery to Site**	**213 days**	**Tue 01/11/11**	**Fri 01/06/12**
173	Sludge Mixers	0 days	Fri 01/06/12	Fri 01/06/12
174	Draft Tube & Cast-in Items	0 days	Mon 02/04/12	Mon 02/04/12
175	GRP Platform for Sludge Mixers	0 days	Fri 01/06/12	Fri 01/06/12
176	Hot Water Boiler	0 days	Fri 01/06/12	Fri 01/06/12
177	Hot Water Recirculation Pump	0 days	Fri 01/06/12	Fri 01/06/12
178	Heat Exchanger	0 days	Fri 01/06/12	Fri 01/06/12
179	Pipework & Valves	0 days	Fri 01/06/12	Fri 01/06/12
180	Flame Arrestor & Condensation Pot	0 days	Tue 01/11/11	Tue 01/11/11
181	Inspection Window	0 days	Tue 01/11/11	Tue 01/11/11
182	Pressure Vacuum Relief Valve c/w Flame Arrestor	0 days	Tue 01/11/11	Tue 01/11/11
183	**Site Possession / Available**	**0 days**	**Sun 01/07/12**	**Sun 01/07/12**
184	Sludge Digestion Tank No.3	0 days	Sun 01/07/12	Sun 01/07/12
185	**Site Works**	**381 days**	**Mon 02/04/12**	**Wed 17/04/13**
186	**Hot Water Circulation System**	**285 days**	**Mon 02/04/12**	**Fri 11/01/13**
187	Temporary Works to Facilitate Civil Modification Works	90 days	Mon 02/04/12	Sat 30/06/12
188	Civil Modification Works (By Civil Contractor)	45 days	Sun 01/07/12	Tue 14/08/12
189	Installation of Hot Water Boiler, Recirculation Pump & Associated Pipework	90 days	Wed 15/08/12	Mon 12/11/12
190	Electrical Installation (with Temporary MCC)	60 days	Fri 14/09/12	Mon 12/11/12
191	SCADA/PLC System	60 days	Fri 14/09/12	Mon 12/11/12
192	Testing and Commissioning	60 days	Tue 13/11/12	Fri 11/01/13
193	**Sludge Digestion Tank No.3**	**291 days**	**Sun 01/07/12**	**Wed 17/04/13**
194	Installation of Draft Tubes, Sludge Mixers, Heat Exchangers & Inspection Window	60 days	Sun 01/07/12	Wed 29/08/12
195	Installation of GRP Platform	30 days	Wed 15/08/12	Thu 13/09/12
196	Installation of Sludge, Biogas, Hot Water Recirculation, FeCl3 Dosing Pipework & Instruments	60 days	Fri 14/09/12	Mon 12/11/12
197	Electrical Installation	90 days	Sat 20/10/12	Thu 17/01/13
198	SCADA/PLC System	60 days	Mon 19/11/12	Thu 17/01/13
199	Testing and Commissioning	90 days	Fri 18/01/13	Wed 17/04/13
200				



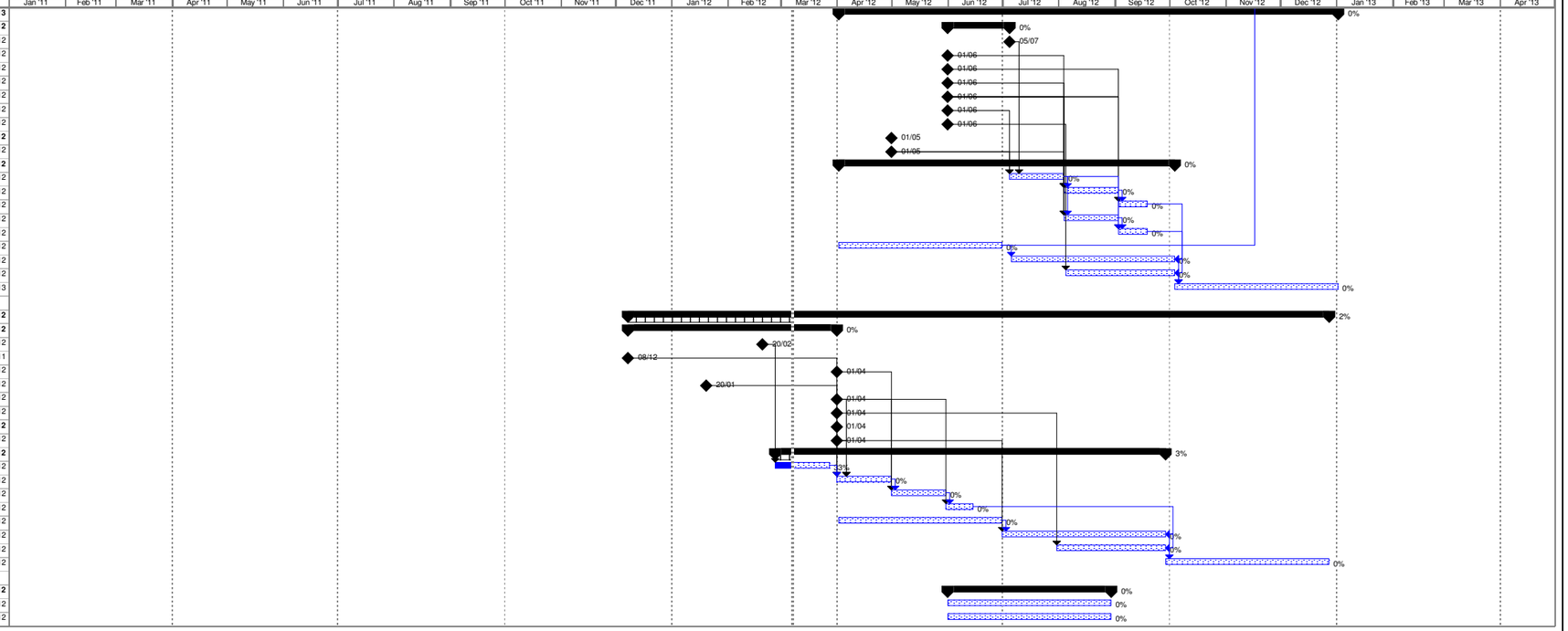
Rev. 2
Date: 7 Mar 2012

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

DSD Contract : DE/2009/09
Supply and Installation of Electrical and Mechanical Equipment for Tai Po Sewage Treatment Works Stage 5 Phase 2B

Section V Works Programme

ID	Task Name	Duration	Start	Finish
201	**SAS Thickening System**	**275 days**	**Mon 02/04/12**	**Tue 01/01/13**
202	**Equipment & Material Delivery to Site**	**34 days**	**Fri 01/06/12**	**Thu 05/07/12**
203	Centrifuge	0 days	Thu 05/07/12	Thu 05/07/12
204	SAS Feed Pump	0 days	Fri 01/06/12	Fri 01/06/12
205	Polyelectrolyte Feed Pump	0 days	Fri 01/06/12	Fri 01/06/12
206	Thickened Sludge Storage Tank	0 days	Fri 01/06/12	Fri 01/06/12
207	Pipework & Valves	0 days	Fri 01/06/12	Fri 01/06/12
208	Vibration Monitoring System	0 days	Fri 01/06/12	Fri 01/06/12
209	PLC System M Panel	0 days	Fri 01/06/12	Fri 01/06/12
210	**Site Possession / Available**	**0 days**	**Tue 01/05/12**	**Tue 01/05/12**
211	Civil Works Provision (By Civil Contractor)	0 days	Tue 01/05/12	Tue 01/05/12
212	**Installation**	**185 days**	**Mon 02/04/12**	**Wed 03/10/12**
213	Centrifuge, Vibration Monitoring System & Associated Accessories	30 days	Thu 05/07/12	Fri 03/08/12
214	SAS Feed Pump & Associated Pipework	30 days	Sat 04/08/12	Sun 02/09/12
215	Polyelectrolyte Feed Pump & Associated Pipework	16 days	Mon 03/09/12	Tue 18/09/12
216	Thickened Sludge Storage Tank & Associated Accessories	30 days	Sat 04/08/12	Sun 02/09/12
217	Centrate Pipework	16 days	Mon 03/09/12	Tue 18/09/12
218	Existing L.V. Switchboard Modification	90 days	Mon 02/04/12	Sat 30/06/12
219	Electrical Installation	90 days	Fri 06/07/12	Wed 03/10/12
220	SCADA/PLC System	60 days	Sun 05/08/12	Wed 03/10/12
221	**Testing & Commissioning**	90 days	Thu 04/10/12	Tue 01/01/13
222				
223	**Sludge Dewatering System**	**386 days**	**Thu 08/12/11**	**Thu 27/12/12**
224	**Equipment & Material Delivery to Site**	**115 days**	**Thu 08/12/11**	**Sun 01/04/12**
225	Membrane Filter Press	0 days	Mon 20/02/12	Mon 20/02/12
226	Sludge Feed Pump	0 days	Thu 08/12/11	Thu 08/12/11
227	Polyelectrolyte Dosing Pump	0 days	Sun 01/04/12	Sun 01/04/12
228	Flocctronic Sensor c/w Inline Mixer	0 days	Fri 20/01/12	Fri 20/01/12
229	Pipework & Valves	0 days	Sun 01/04/12	Sun 01/04/12
230	PLC System K Panel	0 days	Sun 01/04/12	Sun 01/04/12
231	**Site Possession / Available**	**0 days**	**Sun 01/04/12**	**Sun 01/04/12**
232	Civil Works Provision (By Civil Contractor)	0 days	Sun 01/04/12	Sun 01/04/12
233	**Installation**	**215 days**	**Mon 27/02/12**	**Fri 28/09/12**
234	Membrane Filter Press	30 days	Mon 27/02/12	Tue 27/03/12
235	Sludge Feed Pump & Associated Pipework	30 days	Sun 01/04/12	Mon 30/04/12
236	Polyelectrolyte Dosing Pump & Associated Pipework	30 days	Tue 01/05/12	Wed 30/05/12
237	Filtrate Pipework	15 days	Thu 31/05/12	Thu 14/06/12
238	Existing L.V. Switchboard Modification & Electrical Installation	90 days	Mon 02/04/12	Sat 30/06/12
239	Electrical Installation	90 days	Sun 01/07/12	Fri 28/09/12
240	SCADA/PLC System	60 days	Tue 31/07/12	Fri 28/09/12
241	**Testing and Commissioning**	90 days	Sat 29/09/12	Thu 27/12/12
242				
243	**Miscellaneous**	**90 days**	**Fri 01/06/12**	**Wed 29/08/12**
244	Hybrid Street Light Installation, Testing & Commissioning	90 days	Fri 01/06/12	Wed 29/08/12
245	Automatic Weather Station Installation, Testing & Commissioning	90 days	Fri 01/06/12	Wed 29/08/12



Rev. 2
Date: 7 Mar 2012

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

APPENDIX B
MONITORING REQUIREMENTS

APPENDIX B – MONITORING REQUIREMENTS

Type of Monitoring	Parameter	Frequency	Duration	Location of Measurement
Noise(1)	L_{eq}(30 min.) (0700-1900 hrs. on normal weekdays)	Once per week	30 mins	• NM1 (Outside the corridor of 1/F of Government Staff Quarter)
Air	1-hour TSP	3 times every six days	1 hour	• CAM1 (on flat roof of Government Staff Quarters) • CAM2 (on ground within TPSTW and just next to the Printing Centre of Hung Hing Printing Centre) • CAM3 (on ground within TPSTW and just next to Talcon Industrial Ltd.)
	24-hour TSP	Once every six days	24 hours	

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

APPENDIX C
ACTION AND LIMIT LEVELS

APPENDIX C – Action and Limit Levels

1-Hour TSP

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

24-Hour TSP

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

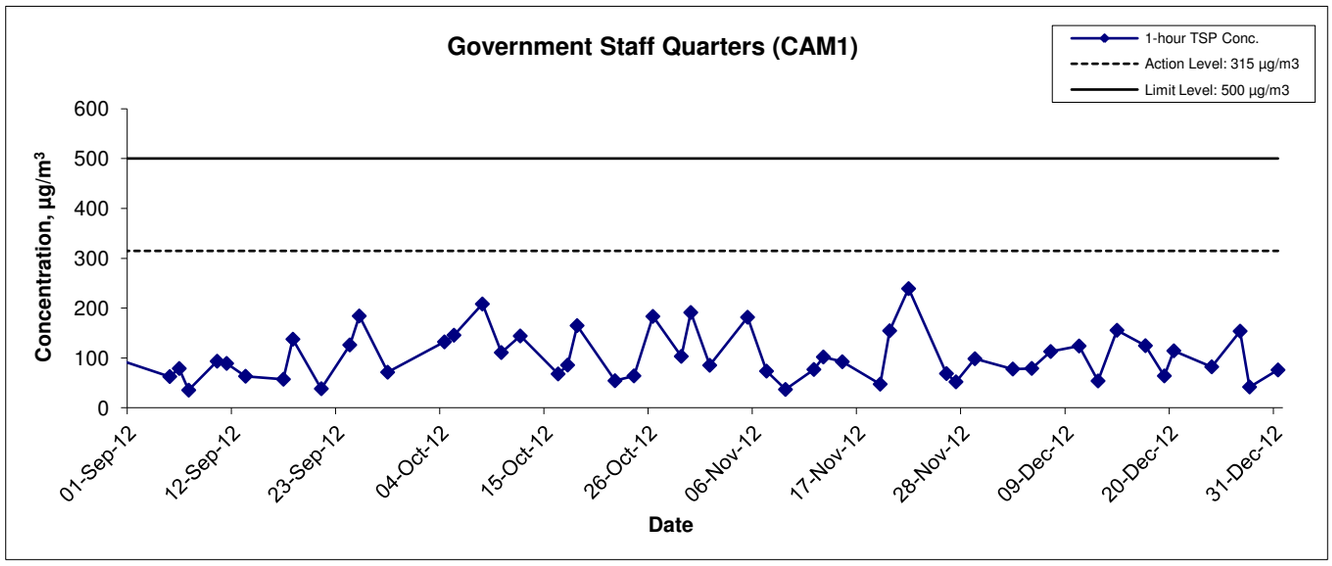
Construction Noise

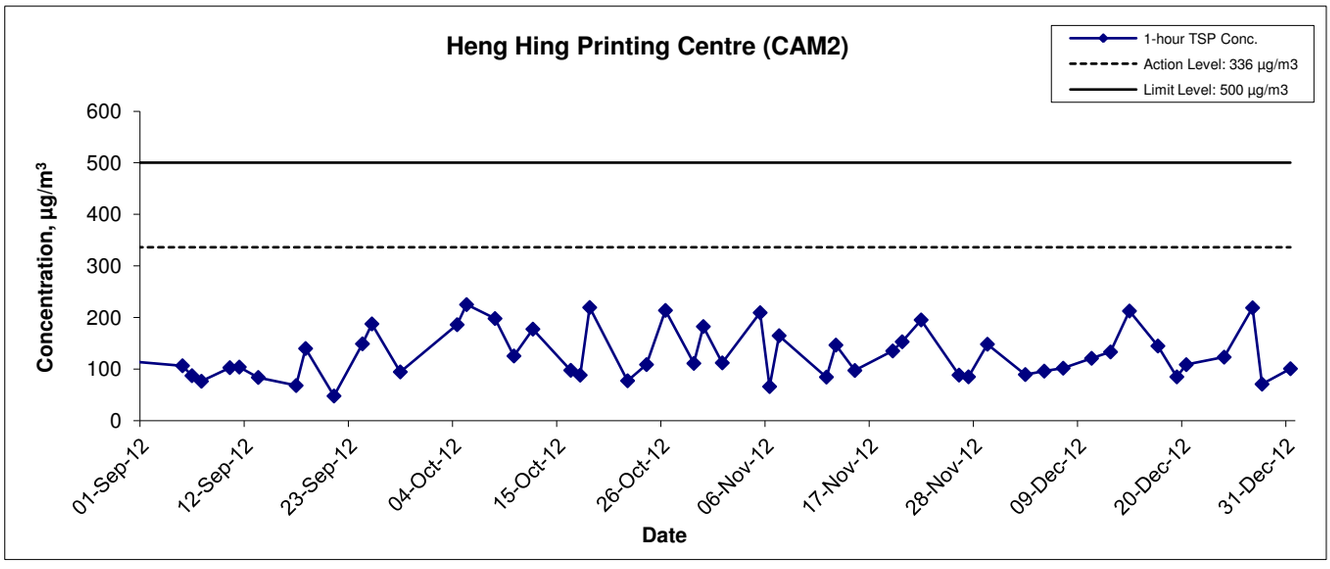
Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		70* dB(A)
2300-0700 hrs of next day		55* dB(A)

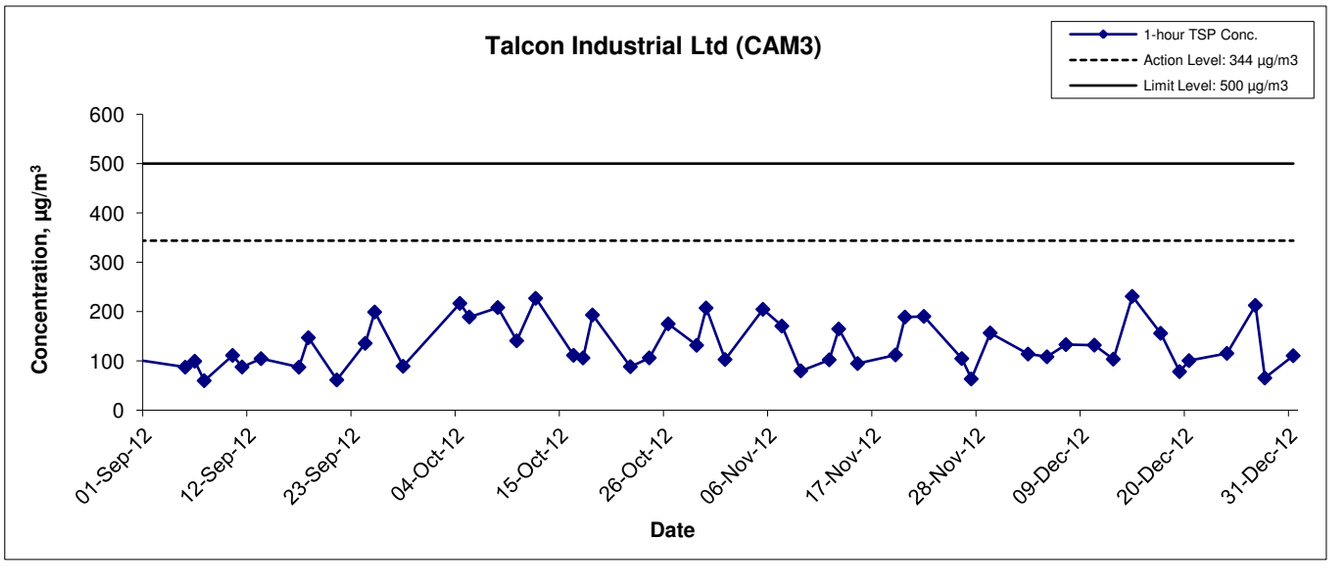
Notes:
* The Area Sensitivity Rating for Station NM1 is taken as C, due to the nearby industrial area, according to Table 1 of EPD's Technical Memorandum on Noise from Construction Work other than Percussive Piling.

APPENDIX D
GRAPHICAL PRESENTATION OF 1-HOUR TSP MONITORING RESULTS

1-hr TSP Concentration Levels





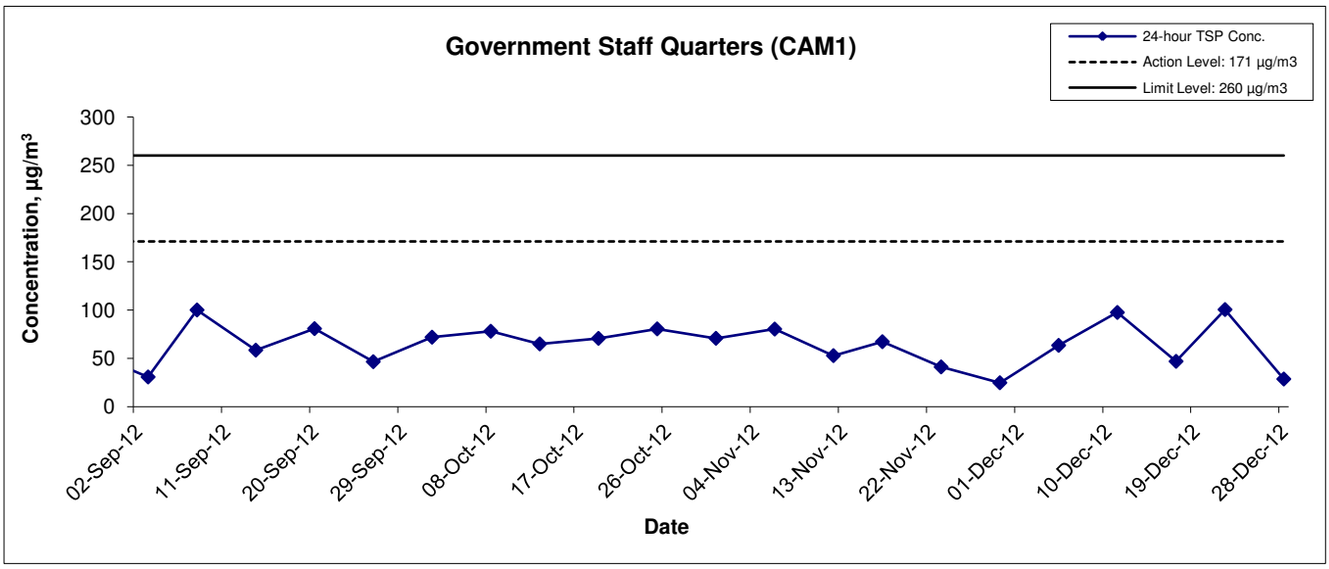


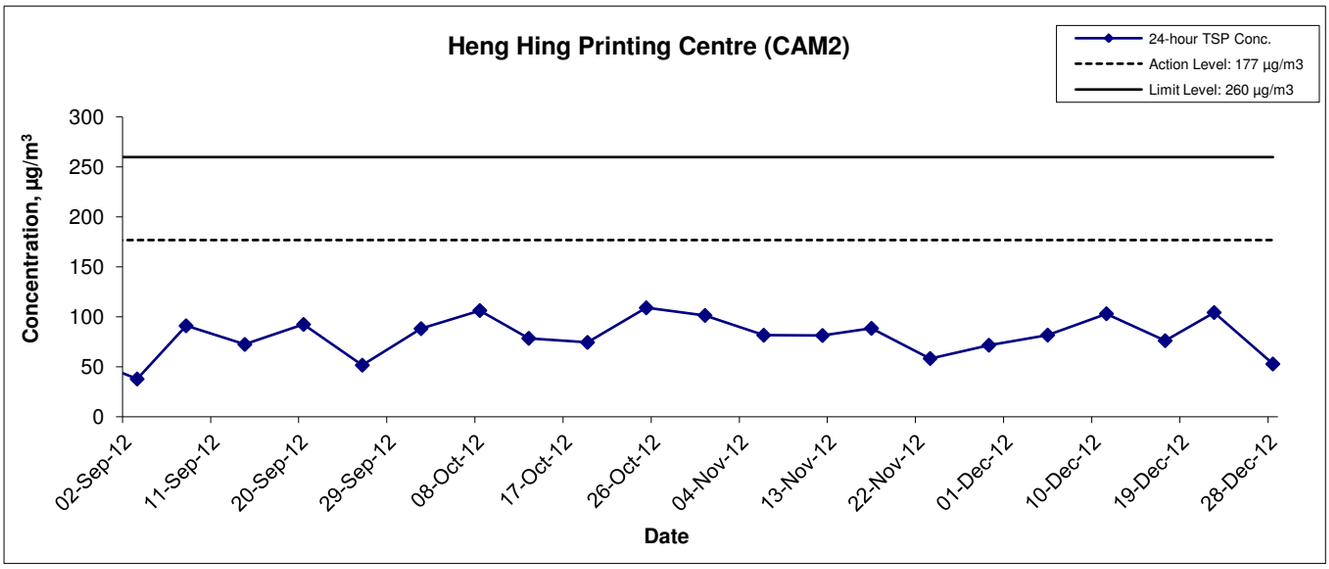
Title	Scale	Project No.
Contract No. DE/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B	N.T.S	MA10069
Graphical Presentation of 1-hour TSP Impact Monitoring Results	Date: Dec 12	Appendix: D

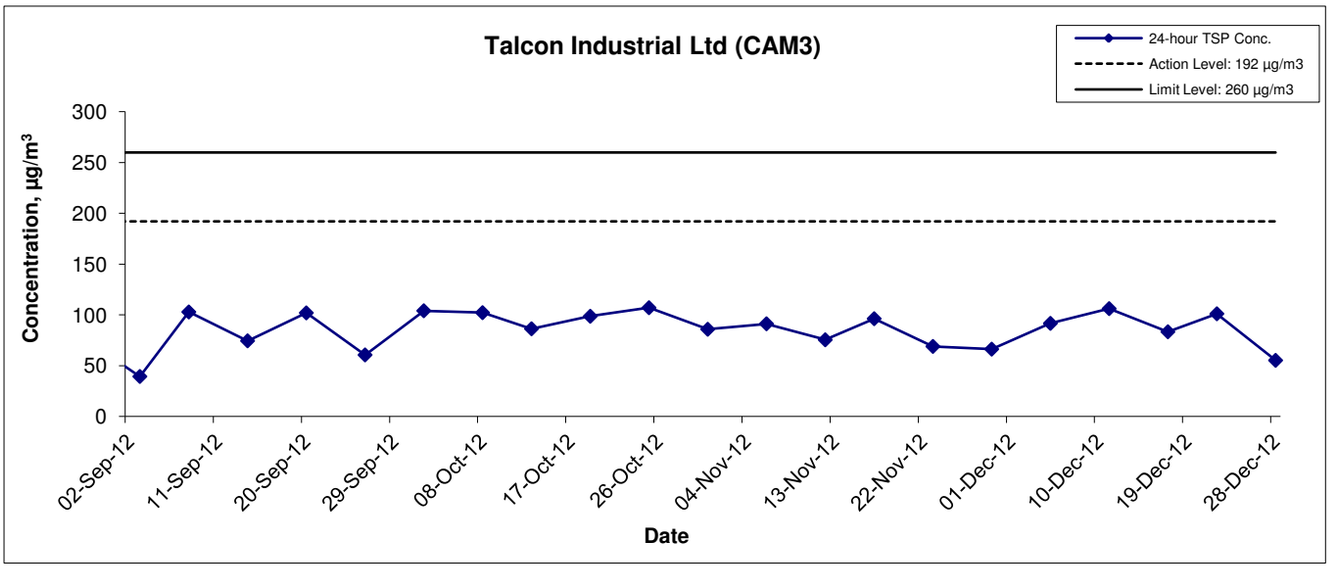
CINOTECH

APPENDIX E
GRAPHICAL PRESENTATION OF 24-HOUR TSP MONITORING RESULTS

24-hr TSP Concentration Levels



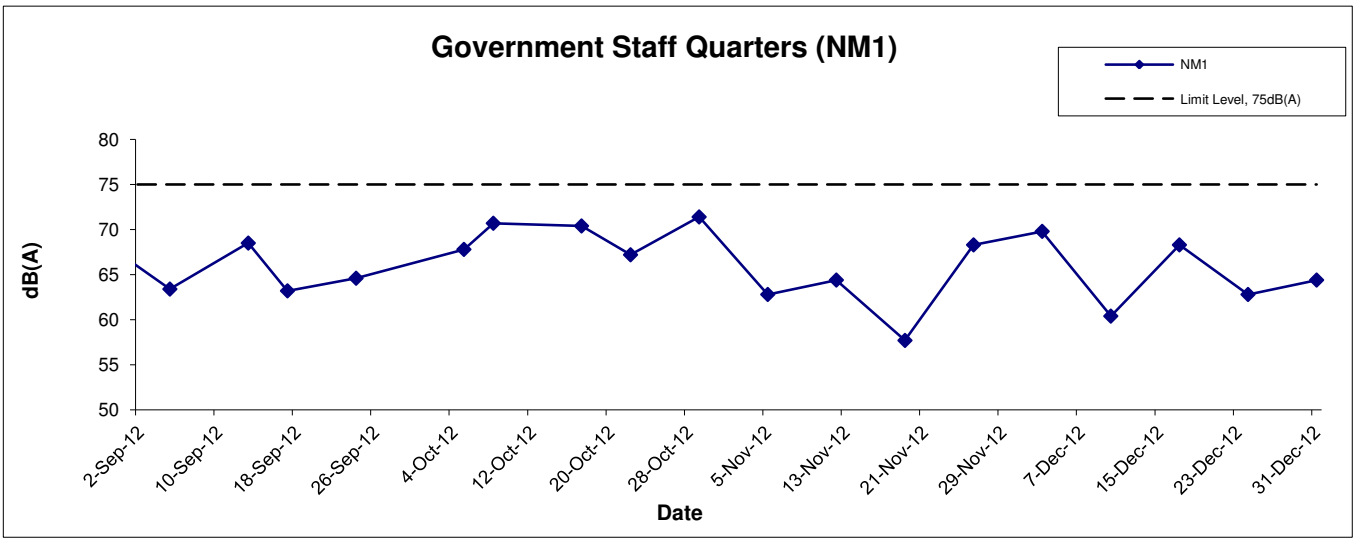




Title: Contract No. DE/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B Graphical Presentation of 24-hour TSP Impact Monitoring Results	Scale: N.T.S	Project No.: MA10069	CINOTECH
	Date: Dec 12	Appendix: E	

APPENDIX F
GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS

Noise Levels



Title: Contract No. DE/2009/09 Construction of Tai Po Sewage Treatment Works - Stage V Phase II B Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Dec 12	Project No.: MA10069 Appendix: F	CINOTECH

APPENDIX G
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

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

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

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

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

Type of Impact	Recommended Mitigation Measures	Status
	Bentonite Slurry Bentonite slurries used in construction works should be reconditioned and reused wherever practicable. Residual used bentonite slurry should be disposed of from the site as soon as possible. The Contractor should explore alternative disposal outlets for the residual used bentonite slurry and disposal at landfill should be the last resort.	N/A

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

APPENDIX H
SUMMARY OF ENVIRONMENTAL LICENSING AND PERMIT STATUS

APPENDIX H – 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
Registration of Chemical Waste Producer				
5517-727-T3270-01	--	N/A	Major chemical waste types: Spent lubricating oil, spend hydraulic oil, spend cooling oil, surplus paint, spent alkaline electrolyte, spent battery and battery parts containing heavy metals, scrap battery cell containing heavy metals, Nickel and its compounds, spent flammable liquid, spent copper etchant (Ferric chloride), Sodium hypochlorite, polymer, electric and torch bulbs and tubes, alkaline cleaner (spent alkaline solution)	Valid

APPENDIX I
WASTE GENERATION IN THE REPORTING QUARTER

Jardine Engineering Corporation, Limited

Name of Department: Drainage Services Department Contract No. : DE/2009/09

Monthly Summary - Waste Flow Table for 2012

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in tonne)
Jan	0	0	0	0	0	0	0	0	0	0	3.9
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	1.5	0.20	0	0	6.4
Apr	0	0	0	0	0	0	0	0.07	0	0	1.3
May	0	0	0	0	0	0	0	0.15	0	0	4.9
June	0	0	0	0	0	0	17.8	0	0	1030(L)	1.9
July	0	0	0	0	0	0	0	0	0	0	1.3
Aug	0	0	0	0	0	0	0	0.11	0	0	2.3
Sept	0	0	0	0	0	0	0	0.33	0	0	0
Oct	0	0	0	0	0	0	0	0.13	0	0	1.7
Nov	0	0	0	0	0	0	0	0.06	0	0	2.9
Dec	0	0	0	0	0	0	0	0.27	0	0	0
Total	0	0	0	0	0	0	19.3	1.32	0	1030(L)	26.6

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in tonne)
0	Nil	0	0	0	0	100	100	50	10	500

Notes:
(1) The performance targets are given in PS Clause 1.40.8(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3. (PS Clause 1.40.7(4)(b) refers.

APPENDIX J
SUMMARY OF EXCEEDANCE

APPENIDX J – SUMMARY OF EXCEEDANCE

Reporting Month: October to December 2012

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

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

c) Exceedance Report for Construction Noise (NIL)

APPENDIX K
COMPLAINT LOG

APPENDIX K – COMPLAINT LOG

Reporting Month: October to December 2012

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.