

China Harbour Engineering Company Limited

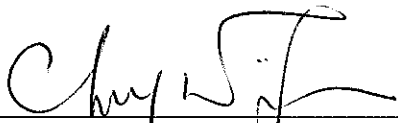
Contract No. DC/2007/20

**Harbour Area Treatment Scheme Stage 2A –
Construction of Advance Disinfection Facilities at
Stonecutters Island Sewage Treatment Works**

Environmental Monitoring and Audit

Monthly Report (Version 1.0) for

December 2009

Certified By	 _____ Dr. Priscilla Choy (Environmental Team Leader)
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REMARKS:

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

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

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TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
Introduction	1
Environmental Monitoring and Audit Works	1
Environmental Licenses and Permits	1
Key Information in the Reporting Month.....	1
Future Key Issues	2
1 INTRODUCTION.....	3
Background.....	3
Project Organizations	4
Construction Programme.....	5
Summary of EM&A Requirements	5
2 ENVIRONMENTAL AUDIT.....	6
Site Audits	6
Status of Environmental Licensing and Permitting.....	6
Status of Waste Management	6
Implementation Status of Environmental Mitigation Measures.....	6
Summary of Complaint and Prosecution.....	8
3 FUTURE KEY ISSUES	9
Key Issues for the Coming Month.....	9
4 CONCLUSIONS AND RECOMMENDATIONS.....	10
Conclusions	10
Recommendations	10

LIST OF TABLES

Table I	Summary Table for Key Information in the Reporting Month
Table 1.1	Key Project Contacts
Table 2.1	Summary of Environmental Licensing and Permit Status
Table 2.2	Observations and Recommendations of Site Audit

LIST OF FIGURE

Figure 1.1	Site Layout Plan
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LIST OF APPENDICES

Appendix A	Site Audit Summary
Appendix B	Summary of Waste Generation in the Reporting Month
Appendix C	Environmental Mitigation Implementation Schedule
Appendix D	Complaint Log
Appendix E	Construction Programme

EXECUTIVE SUMMARY

Introduction

1. This is the 18th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for Contract No. DC/2007/20 “Harbour Area Treatment Scheme Stage 2A – Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works” (the Project). This report documents the findings of Construction Phase EM&A Works conducted for the Project in December 2009.
2. The construction works for Portions 1 & 2 and Portions 3 & 4 of the Project were commenced on 18th July 2008 and 18th September 2008 respectively.
3. The major site activities undertaken in the reporting month included:
 - Total 287m long drainage system was complete;
 - CCTV cameras were installed;
 - Second 7-day Commissioning test on E&M works was finished on 4 December 2009;
 - Walkway covering dosing pipes on top of Sedimentation Tank was installed.

Environmental Monitoring and Audit Works

4. With reference to the letter provide by Engineer’s Representative on 23 November 2009, all civil construction works has been substantially completed in early November 2009. As no major environmental impacts caused by the captioned project are anticipated and another HATS Stage 2A Contract No. DC/2007/23 need to take over the same monitoring station at Government Dockyard for their construction phase impact monitoring, the construction phase monitoring for Contract No. DC/2007/20 was ceased by the end of November. The cease of construction phase impact monitoring was verified by IEC and informed to EPD on 25th and 26th November 2009 respectively.
5. The weekly environmental site audit was ceased after the completion of testing and commissioning of E&M system and verification of outstanding items during site audit. The last site audit was conducted on 23rd December.

Environmental Licenses and Permits

6. Environmental related licenses/permits granted to the Project include the Variation Environmental Permit (VEP), billing account for Disposal of construction waste, Waste Water Discharge license, Chemical Waste Producer License and Construction Noise Permit.

Key Information in the Reporting Month

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

Table I 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 for November 09 (Version 1.1)	Submitted to EPD on 11 th December 2009 (EP condition 4.4).	No comment	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

8. All civil works for this project have been substantially completed by the Contractor. No key issue was identified for the coming month.

1 INTRODUCTION

Background

- 1.1 “Harbour Area Treatment Scheme Stage 2A – Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works” (hereinafter called “the Project”) under Contract No. DC/2007/20 is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). A Final Environmental Impact Assessment (EIA) Report has been prepared in July 2007 to consider the key issues of noise, air quality, water quality, ecological, construction waste and human health risk, and identify possible mitigation measures. The Final EIA Report was endorsed by Environmental Protection Department (EPD) on 8 November 2007 and was included in the EIA register under the EIAO as report no. AEIAR-113/2007. Environmental Monitoring and Audit (EM&A) Manual for the Final EIA Report was also included as part of the Final EIA report in the register. An Environmental Permit (EP) No. EP-295/2007 was issued on 3rd December 2007 for the Project “Harbour Area Treatment Scheme – Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works” to the Drainage Services Department (DSD) as Permit Holder. A Variation Environmental Permit (VEP) No. EP-295/2007/A was issued on 20th May 2009 for the variation of condition 1.7 and 3.6 of Part C. A further Variation Environmental Permit (VEP) No. EP-295/2007/B was issued on 25th November 2009 for the variation of condition 1.7 of Part A and 3.2 of Part C; deletion of condition 3.3 of Part C and variation of Figures 1, 3, 4 & 6 in the EP. This Project comprises the Construction Phase of the Project “Harbour Area Treatment Scheme – Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works”.
- 1.2 The Project comprises mainly the construction of the advance disinfection facilities (ADF) include:
- (a) Chlorination system - provision of a sodium hypochlorite solution storage farm and associated dosing system; and
 - (b) Dechlorination system - provision of a sodium bisulphite storage and associated dosing system.
- 1.3 The Project site layout plan is shown in **Figure 1.1**.
- 1.4 The Project will be constructed within the existing sewage treatment works on Stonecutters Island (SCISTW), which is providing Chemically Enhanced Primary Treatment (CEPT) for 1.4 million cubic metres of sewage collected each day through deep tunnels from the HATS Stage 1 catchments (i.e. the whole of Kowloon peninsula, Tseung Kwan O, Kwai Chung, Tsing Yi, Chai Wan and Shau Kei Wan). The design treatment capacity of the SCISTW is 1.7 million cubic metres per day. At present, the plant has no disinfection facility and the CEPT treated effluent is now discharged to the waters southwest of Stonecutters Island through a 1.7 km long outfall.

- 1.5 The chlorination system of the disinfection facilities would be located within the site boundary of the existing SCISTW (**Figure 1.1** refers). The dechlorination plant would be located adjacent to the existing chamber no. 15 (**Figure 1.1** refers) at the western end of Container Port Road South.
- 1.6 China Harbour Engineering Company Limited (CHEC) was awarded as the main contractor (hereinafter called “the Contractor”) of the Project. Cinotech Consultants Limited (Cinotech) was commissioned by CHEC as the Environmental Team (ET). Dr. Priscilla CHOY of Cinotech was appointed as the ET Leader of the Project in accordance with EP Condition 2.1. Hyder Consulting Limited (Hyder) was employed by DSD to undertake Independent Environmental Checker (IEC) services of the Project and Mr. Antony Wong of Hyder was appointed as the IEC under EP Condition 2.2.
- 1.7 The construction works for Portions 1 & 2 and Portions 3 & 4 of the Project were commenced on 18th July 2008 and 18th September 2008 respectively.
- 1.8 This is the 18th monthly EM&A report summarizing the Construction Phase EM&A works conducted for the Project in December 2009.

Project Organizations

- 1.9 Different parties with different levels of involvement in the project organization include:
- Project Proponent/ Permit Holder – Drainage Services Department (DSD)
 - Engineer’s Representative (ER) – Ove Arup & Partners Hong Kong Ltd. (ARUP)
 - Contractor – China Harbour Engineering Company Limited (CHEC)
 - Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)
 - Independent Environmental Checker (IEC) – Hyder Consulting Limited (Hyder)
- 1.10 The responsibilities of respective parties in construction phase are detailed in Sections 1.19 to 1.25 of the Final EM&A Manual.
- 1.11 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	Project Proponent/ Permit Holder	Ms. Ada LAI	Engineer	2159 3411	2833 9162
ARUP	Engineer’s Representative	Mr. Gary CHEUNG	Resident Engineer	6201 3158	2407 8772
		Mr. Sunny LO	Inspector of Works	6345 0548	
CHEC	Contractor	Mr. T. K. CHEUNG	Project Manager	2741 0191	2741 2772
		Mr. Aaron AU	Site Agent	6345 0754	
		Mr. M. C. LAM	Environmental Officer	9483 0566	
Cinotech	Environmental Team	Dr. Priscilla CHOY	Environmental Team Leader	2151 2089	3107 1388
		Mr. Kin CHAN	Environmental Team Member	2151 2077	
		Mr. Henry LEUNG	Monitoring Team Leader	2151 2087	

Party	Role	Name	Position	Phone No.	Fax No.
Hyder	Independent Environmental Checker	Mr. Antony WONG	Independent Environmental Checker	2911 2744	2805 5028
		Mr. Terence KONG	Project Manager	2911 2730	
		Ms. Selina LEUNG	Independent Environmental Checker Representative	2911 2745	

Construction Programme

1.12 The site activities undertaken in the reporting month were:

- Total 287m long drainage system was complete;
- CCTV cameras were installed;
- Second 7-day Commissioning test on E&M works was finished on 4 December 2009;
- Walkway covering dosing pipes on top of Sedimentation Tank was installed.

Summary of EM&A Requirements

1.13 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 Final EIA report; and
- Environmental requirements in contract documents.

1.14 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of this report.

This report presents the monitoring results, observations, and locations of audit works for the Project in the reporting month.

2 ENVIRONMENTAL AUDIT

Site Audits

- 2.1 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 A**.
- 2.2 Site audits were conducted on 2nd, 9th, 17th and 23rd December 2009 by the representatives of ER, the Contractor and the ET. No non-compliance was observed during the site audits.
- 2.3 The weekly environmental site audit was ceased after the completion of testing and commissioning of E&M system and verification of outstanding items during site audit. The last site audit was conducted on 23rd December.

Status of Environmental Licensing and Permitting

- 2.4 All permits/licenses obtained for the Project are summarized in **Table 2.1**.

Status of Waste Management

- 2.5 The Construction and Demolition (C&D) materials generated in the reporting month were mainly excavated materials regarded as inert C&D materials that disposed of as Public Fill. The quantities of waste generated in this reporting month are summarized in **Appendix B**. No chemical waste was generated in the reporting month.

Implementation Status of Environmental Mitigation Measures

- 2.6 According to the Final EIA Report and the Final EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. A summary of the EMIS is provided in **Appendix C**.

Table 2.1 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Details	Status
	From	To		
<i>Environmental Permit (EP)</i>				
EP-295/2007	03/12/07	N/A	The Project involves construction and operation of disinfection facilities (chlorination/dechlorination) within the existing Stonecutters Island Sewage Treatment Works. The disinfection facilities include storage, dosing and associated pipeline systems for sodium hypochlorite sodium bisulphite.	Superseded
EP-295/2007/A	20/5/09	N/A		Superseded
EP-295/2007/B	25/11/09	N/A		Valid
<i>Billing Account for Disposal of Construction Waste</i>				
7007138	13/05/08	N/A	Disposal of Construction waste.	Valid
<i>Chemical Waste Producer Number</i>				
WPN: 5213-269-C2397-22	04/09/08	N/A	Disposal of Chemical Waste including lubricating oil, spent batteries and etc.	Valid
<i>Waste Water Discharge License</i>				
EP760/269/0133011	14/07/08	31/07/13	Discharge of industrial trade effluent and all other wastewater arising from Construction site at Stonecutters Island Sewage Treatment Works, Kowloon (Contract No. DC/2007/20 HATS 2A-Construction of Advance Disinfection Facilities at SCISTW) to communal storm drain after solid removal.	Valid
EP760/269/0133011a	27/10/08	31/10/13	Discharge of industrial trade effluent and all other wastewater arising from Construction site of Harbour Area Treatment Scheme 2 A (Portions 3 & 4), at Container Port Road South, Stonecutters Island, Kowloon to communal storm drain after solid removal.	Valid
<i>Construction Noise Permit (CNP)</i>				
GW-RW0234-09	1/7/09	30/11/09	<u>Location:</u> Construction site in Stonecutters Island Sewage Treatment Works at Stonecutters Island, Kowloon. <u>Day and hours for the use of PMEs:</u> 19:00-23:00 on any day not being a general holiday and 07:00-19:00 on general holidays including Sundays	Expired
GW-RW0316-09	1/8/09	31/12/09	<u>Location:</u> Construction site in Stonecutters Island Sewage Treatment Works at Stonecutters Island, Kowloon. <u>Day and hours for the use of PMEs:</u> 00:00-24:00 on any day not being a general holiday and 19:00-2400 & 00:00-07:00 on general holidays including Sundays	Valid

- 2.7 During the weekly environmental site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 2.2**.

Table 2.2 Observations and Recommendations of Site Audit

Parameters	Date	Observations	Remedial Actions
<i>Water Quality</i>	17 Dec 09	<u>Observation</u> Sediment was observed in the U-channel near Day Tank. Contractor was reminded to clear it.	The situation was observed improved/rectified in audit session 91223
<i>Waste / Chemical Management</i>	17 Dec 09	<u>Observation</u> Wastes were found disposed not properly near NaOCl Storage Compound, Contractor was reminded to clear it.	The situation was observed improved/rectified in audit session 91223.

Summary of Complaint and Prosecution

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

3 FUTURE KEY ISSUES

Key Issues for the Coming Month

- 3.1 All civil works for this project have been substantially completed by the Contractor. No key issue was identified for the coming month.
- 3.2 Updated construction programme is provided in **Appendix E**

4 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 4.1 Environmental monitoring works were completed in November. Regularly site inspections were conducted on a weekly basis in the reporting month and the inspection was ceased after 23rd December. The results were reviewed and checked.

Complaint and Prosecution

- 4.2 No environmental prosecution and complaint was received in the reporting month.

Recommendations

- 4.3 According to the environmental audits performed in the reporting month, the following recommendations were made:

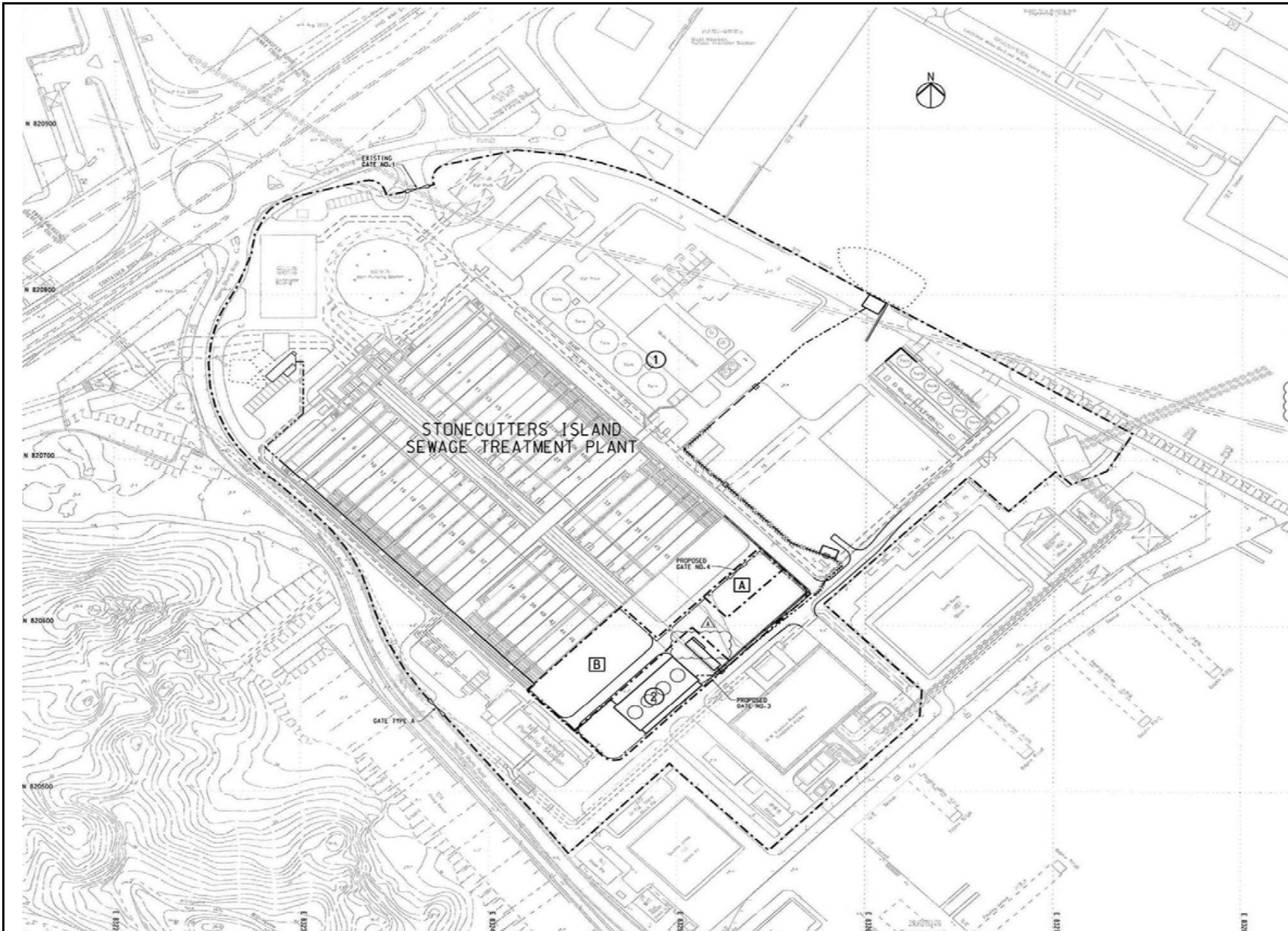
Water Impact

- To ensure proper use and maintenance of the de-silting facilities and drainage system;
- To avoid formation of ponding/ stagnant water on site;
- To carry out larviciding regularly against mosquito breeding;
- To clear the silt and sand in open U-channel regularly;
- To well maintain the drainage system inside and around the Site area; and
- To prevent surface runoff into public area or drainage channel.

Waste / Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To provide proper storage area or drip trays for oil containers on site;
- To avoid and check for any accumulation of waste materials or rubbish on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment; and
- To well maintain the equipments and drip trays to avoid oil leakage.

FIGURE



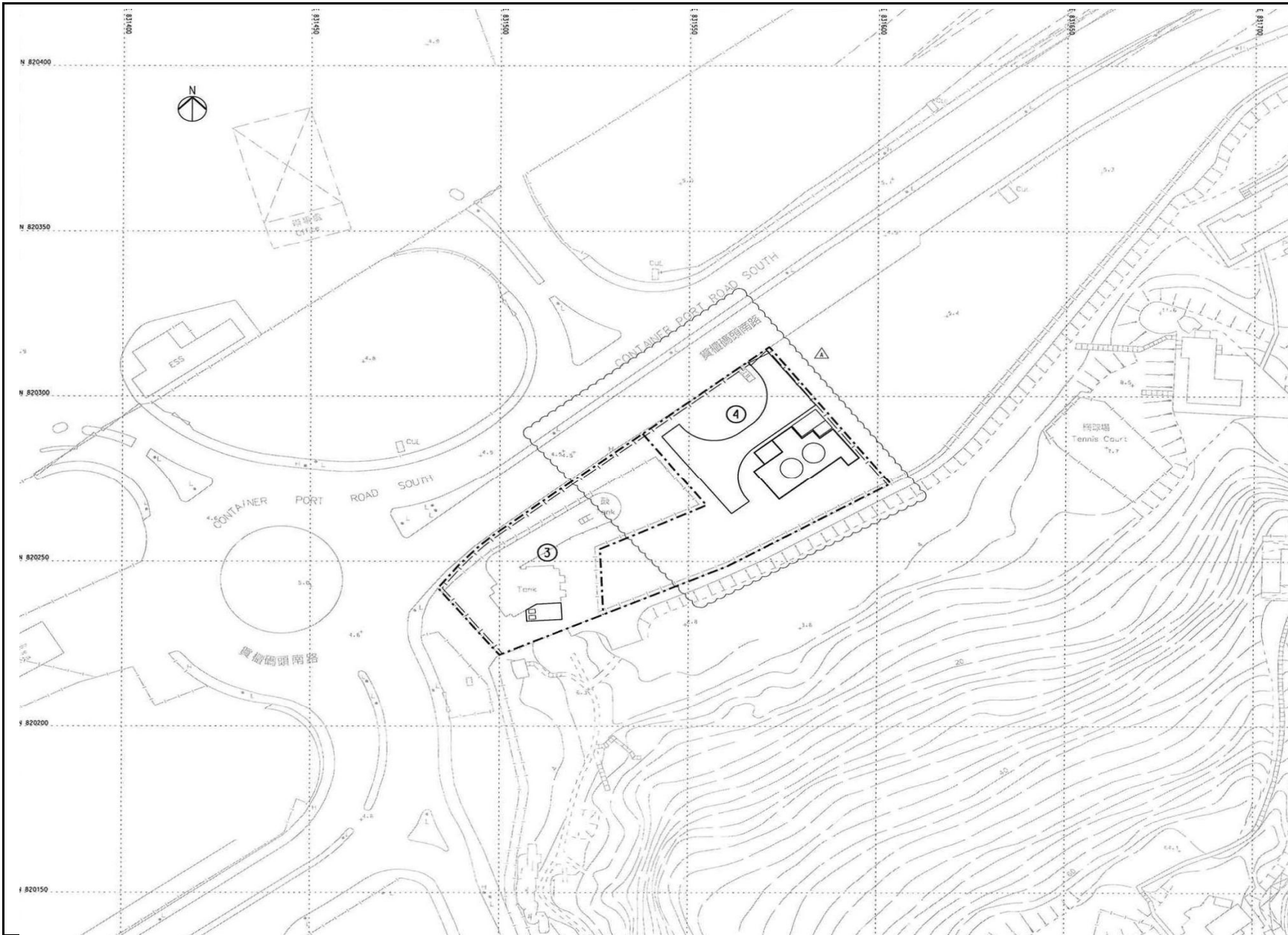
- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. ALL LEVELS REFER TO P.D.H.K. AND ARE IN METRES.
 3. ALL GRIDS REFER TO HONG KONG 1980 GRID.
 4. A PROJECT STAKEBOARD SHALL BE ERECTED WITHIN WORKS AREA B WITH LOCATION TO BE DETERMINED BY THE ENGINEER.
 5. THE CONTRACTOR SHALL BE PERMITTED TO DETAIN THE WORKS AREAS FOR USE UP TO THE SUBSTANTIAL COMPLETION OF THE WORKS SOLELY FOR THE PURPOSE OF COMPLETING HIS OBLIGATION WITH RESPECT TO THE WORKS OF THIS CONTRACT OR AT SUCH LATER DATE AS THE ENGINEER MAY ADVISE THE CONTRACTOR IN WRITING.

- LEGEND :**
- PORTION / WORKS AREA
 - PORTION 1
 - WORKS AREA A
 - CHAIN LINK FENCE TYPE 1 WITH GATE
 - TRENCH DOUBLE-CONTAINMENT PIPES AND TRENCH WITH MULTI-SHADE COVER
 - TRENCH DOUBLE-CONTAINMENT PIPES AND TRENCH WITH PRECAST CONCRETE COVER
 - TRENCH DOUBLE-CONTAINMENT PIPES WITHOUT TRENCH
 - SCREENING STRUCTURE MADE OF WATER-FILLED BARRIERS
 - TWO LAYERS GEOMEMBRANE
 - GATE

Title Contract No. DC/2007/20
 HARBOUR AREA TREATMENT SCHEME STAGE 2A - CONSTRUCTION OF ADVANCE DISINFECTION FACILITIES AT STONECUTTERES ISLAND SEWAGE TREATMENT WORKS
 Project Site Layout Plan (Page 1 of 2)

Scale	N.T.S	Project No.	MA8009
Date	Jun-08	Figure	1.1





- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. GRID LINES ARE HONG KONG GRID 1980.
 3. A PROJECT SIGNBOARD SHALL BE ERRECTED NEAR GATE NO. 3 IN PORTION 4 WITH LOCATION TO BE DETERMINED BY THE ENGINEER.

- LEGEND :**
- PORTION/WORKS AREA
 - PORTION 3
 - HOARDING WITH GATE
 - EXISTING FENCING TO BE DEMOLISHED
 - GATE

Title Contract No. DC/2007/20
 HARBOUR AREA TREATMENT SCHEME STAGE 2A - CONSTRUCTION OF ADVANCE DISINFECTION FACILITIES
 AT STONECUTTERES ISLAND SEWAGE TREATMENT WORKS

Project Site Layout Plan (Page 2 of 2)

Scale	N.T.S	Project No.	MA8009
Date	Jun-08	Figure	1.1



APPENDIX A
Site Audit Summary

Contract No. DC/2007/20

Harbour Area Treatment Scheme Stage 2A –

Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	91202
Date	2 December 2009
Time	14:45 – 15:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Water Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection <p><i>Air Quality</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Noise</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection <p><i>Waste / Chemical Management</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p><i>Permit / Licenses</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. <p><i>Others</i></p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection• Follow-up on previous audit session (Ref. No. 91119), all environmental deficiencies was improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Kin Chan		3 December 2009
Checked by	Dr. Priscilla Choy		3 December 2009



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	91209
Date	9 December 2009
Time	14:45 – 15:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Water Quality</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection <p><i>Air Quality</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Noise</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection <p><i>Waste / Chemical Management</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during the site inspection. <p><i>Permit / Licenses</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Others</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection • Follow-up on previous audit session (Ref. No. 91119), all environmental deficiencies was improved/rectified during the site inspection. 	

	Name	Signature	Date
Recorded by	Kin Chan		10 December 2009
Checked by	Dr. Priscilla Choy		10 December 2009

Contract No. DC/2007/20

Harbour Area Treatment Scheme Stage 2A –

Construction of Advance Disinfection Facilities at Stonecutters Island Sewage Treatment Works



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	91217
Date	17 December 2009
Time	14:00 – 15:00

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

Ref. No.	Remarks/Observations	Related Item No.
	<p>Water Quality</p> <ul style="list-style-type: none">• Clear the sediment at the U-channel near Day Tank <p>Air Quality</p> <ul style="list-style-type: none">• No environmental deficiency was identified during the site inspection. <p>Noise</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection <p>Waste / Chemical Management</p> <ul style="list-style-type: none">• Wastes were found disposed not properly near NaOCl Storage Compound. <p>Permit / Licenses</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection. <p>Others</p> <ul style="list-style-type: none">• No environmental deficiency was identified during site inspection	<p>O-01</p> <p>O-02</p>

	Name	Signature	Date
Recorded by	Kin Chan		18 December 2009
Checked by	Dr. Priscilla Choy		18 December 2009



Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	91223
Date	23 December 2009
Time	15:00 – 15:30

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Water Quality</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Air Quality</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Noise</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Waste / Chemical Management</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Permit / Licenses</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection. <p><i>Others</i></p> <ul style="list-style-type: none"> • No environmental deficiency was identified during site inspection • Follow-up on previous audit session (Ref. No. 91217), all environmental deficiencies was improved/rectified during the site inspection. 	

	Name	Signature	Date
Recorded by	Kin Chan		24 December 2009
Checked by	Dr. Priscilla Choy		24 December 2009

APPENDIX B
Summary of Waste Generation in the
reporting month

Appendix B

Contract No.: DC/2007/20

Monthly Summary Waste Flow Table For 2009 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Waste Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 2)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 1)	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 '000m ³)
Jan	0.11	0	0	0	0.11	0	0	0	0	0	
Feb	0.125	0	0	0	0.125	0	0	0	0	0	
Mar	0.16	0	0	0	0.16	0	0	0	0	0.02	
Apr	0.075	0	0	0	0.075	0	0	0	0	0	
May	0.25	0	0	0	0.25	0	0	0	0	0.03	
Jun	0.025	0	0	0	0.025	0	0	0	0	0.001	
Sub-total	0.745	0	0	0	0.745	0	0	0	0	0.051	
July	0.15	0	0	0	0.15	0	0	0	0	0.005	
Aug	0.06	0	0	0	0.06	0	0	0	0	0.02	
Sep	0.229	0	0	0	0.229	0	0	0	0	0.001	
Oct	0.041	0	0	0	0.041	0	0	0	0	0.002	
Nov	0	0	0	0	0	0	0	0	0	0.003	
Dec	0	0	0	0	0	0	0	0	0	0.003	
Total	1.225	0	0	0	1.225	0	0	0	0	0.085	

- Notes: (1) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 (2) Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table For 2008 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Waste Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 2)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 1)	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 '000m ³)
Jan											
Feb											
Mar											
Apr											
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
July	0.400	0.000	0.000	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.654	0.000	0.000	0.000	0.654	0.000	0.000	0.000	0.000	0.000	0.000
Sep	1.250	0.000	0.000	0.000	1.250	0.000	0.000	0.000	0.000	0.000	0.000
Oct	1.765	0.000	0.000	0.000	1.765	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.080	0.000	0.000	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.040
Dec	0.475	0.000	0.000	0.000	0.475	0.000	0.000	0.000	0.000	0.000	0.000
Total	4.624	0.000	0.000	0.000	4.624	0.000	0.000	0.000	0.000	0.000	0.100

- Notes: (1) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(2) Broken concrete for recycling into aggregates.

APPENDIX C
Environmental Mitigation Implementation
Schedule

APPENDIX C - Environmental Mitigation Implementation Schedule (EMIS)

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S3.29	<p>Dust mitigation measures stipulated in the Air Pollution Control (Construction Dust) Regulation should be incorporated to control dust emission from the site. Control measures relevant to this Project are listed below:</p> <ul style="list-style-type: none"> • Skip hoist for material transport should be totally enclosed by impervious sheeting; • Vehicle washing facilities should be provided at every vehicle exit point; • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore; • Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather; • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines; • Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs; • Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; • Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per 	Work sites / During the construction period	Contractor		√			EIAO-TM and Air Pollution Control (Construction Dust) Regulation

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
	<p>hour is the recommended limit;</p> <ul style="list-style-type: none"> • Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites; and • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 							
S4.48 – S4.50	Use of quiet PME	Work sites / During the construction period	Contractor		√			EIAO-TM and Noise Control Ordinance
S4.51	<p><i>Good Site Practice</i></p> <ul style="list-style-type: none"> • 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. 	Work sites / During the construction period	Contractor		√			EIAO-TM and Noise Control Ordinance

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S4.56 & S13	Noise monitoring should be carried out to ensure that noise mitigation measures would be properly implemented. Details of the monitoring requirements are specified in the EM&A Manual.	Barrack / During the construction period	Contractor		√			EIAO-TM and Noise Control Ordinance
S5.212	The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted. It is recommended to install perimeter channels in the works areas to intercept runoff at site boundary prior to the commencement of any earthwork. To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided. Drainage channels are also required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance can ensure the normal operation of these facilities throughout the construction period. Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance
S5.213	There is a need to apply to EPD for a discharge licence under the WPCO 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 all the standards listed in the TM-DSS. Reuse and recycling of the treated effluent can minimise water consumption and reduce the effluent discharge volume. The beneficial uses of the treated effluent may include dust suppression, wheel washing and general cleaning. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S5.214	The construction programme should be properly planned to minimise 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 minimise 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 times. The stockpiles of materials should be placed at 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 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.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance
S5.215	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 spreading from the site area. It is recommended to clean the construction sites on a regular basis.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance
S5.216	The presence of construction workers generates sewage. It is recommended to provide sufficient chemical toilets in the works areas. The toilet facilities should be more 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 SCISTW as necessary.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S5.217	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. Regular 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 anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures.	Work sites / During the construction period	Contractor		√			EIAO-TM and Water Pollution Control Ordinance
S5.218	Contractor must 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.	Work sites / During the construction period	Contractor		√			EIAO-TM and Waste Disposal Ordinance
S5.219	Any service shop and 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 within the areas appropriately equipped to control these discharges.	Work sites / During the construction period	Contractor		√			EIAO-TM, Waste Disposal Ordinance and Water Pollution Control Ordinance
S5.220	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: <ul style="list-style-type: none"> 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 labeled, to notify and warn the personnel who are handling the wastes, to avoid accidents. 	Work sites / During the construction period	Contractor		√			EIAO-TM and Waste Disposal Ordinance

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
	<ul style="list-style-type: none"> Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 							
S10.21	<p><i>Good Site Practices</i></p> <p>Recommendations for good site practices during the construction activities include:</p> <ul style="list-style-type: none"> Nomination of an approved person, 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 handling procedures Provision of sufficient waste disposal points and regular collection of waste Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility. 	Work sites / During the construction period	Contractor		√			Waste Disposal Ordinance (Cap.54) ETWB TCW No. 19/2005

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S10.22	<p><i>Waste Reduction Measures</i></p> <p>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:</p> <ul style="list-style-type: none"> • Segregation and storage of different types of waste indifferent containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal • Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce • Proper storage and site practices to minimise the potential for damage or contamination of construction materials • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. • A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. 	Work sites / During planning & design stage, and construction stage	Contractor	√	√			
S10.24	<p><i>General Refuse</i></p> <p>General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	Work sites / During the construction period	Contractor		√			Public Health and Municipal Services Ordinance (Cap. 132)

EIA Ref	Environmental Protection Measures/Mitigation Measures	Location/Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S10.25	<p><i>Construction and Demolition Material</i></p> <p>In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated material generated from excavation works for the proposed chlorination plant, dechlorination plant, day tank and pipe trenches should be reused on-site as backfilling material as far as practicable. The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. C&D waste generated from site clearance and dismantling of formwork would require disposal to the designated landfill site. In order to monitor the disposal of C&D material at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.</p>	Work sites / During design stage and construction period	Contractor	√	√			ETWB TCW No. 33/2002 ETWB TCW No. 19/2005
S10.26	<p><i>Chemical Waste</i></p> <p>If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p>	Work sites / During the construction period	Contractor		√			Waste Disposal (Chemical Waste) (General) Regulation

All recommendations and requirements resulted during the course of EIA/EA Process, including ACE and / or accepted public comment to the proposed project.

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

APPENDIX D
Complaint Log

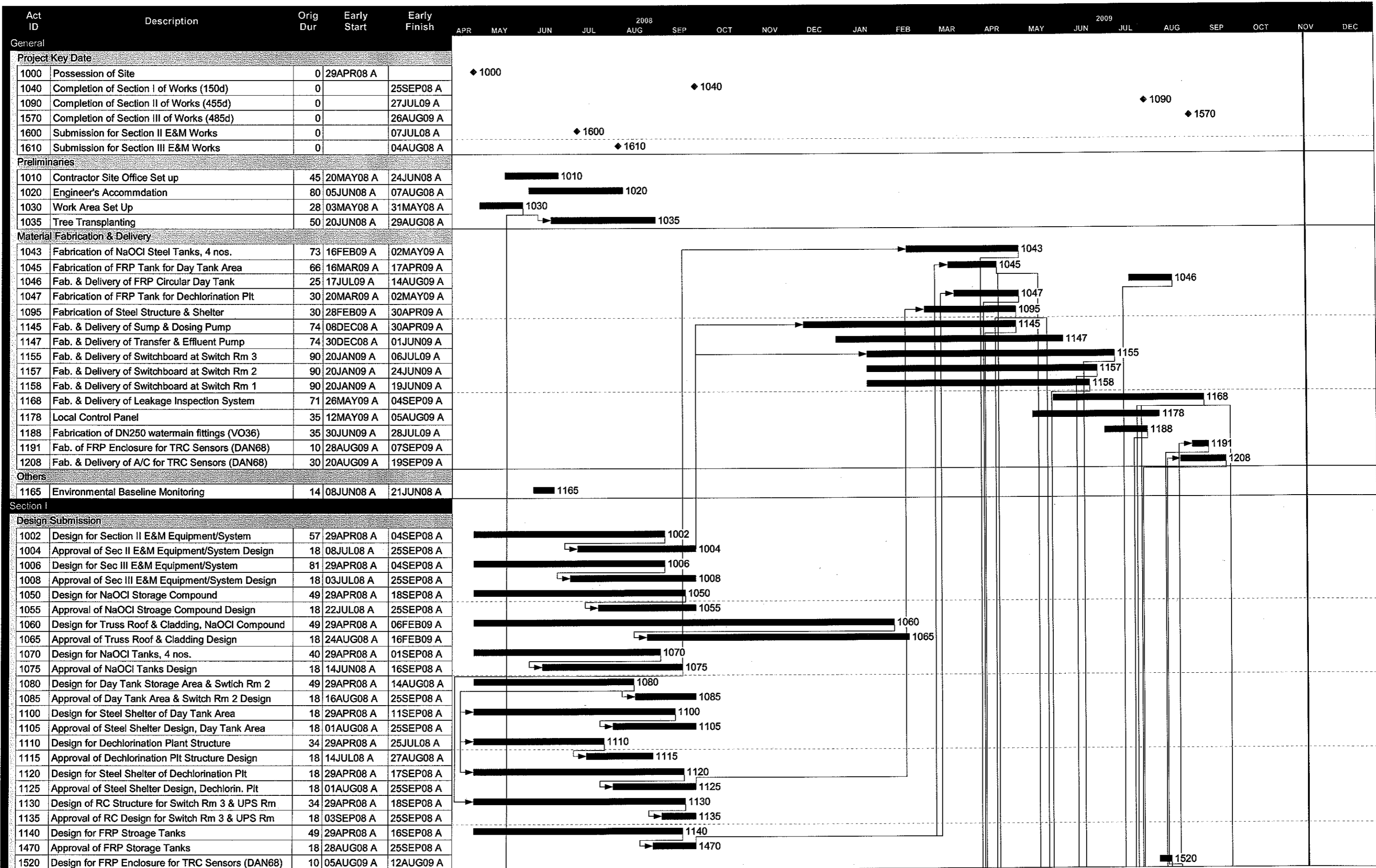
APPENDIX D – Complaint Log

Reporting Month: December 2009

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 from July 2008 to December 2009.

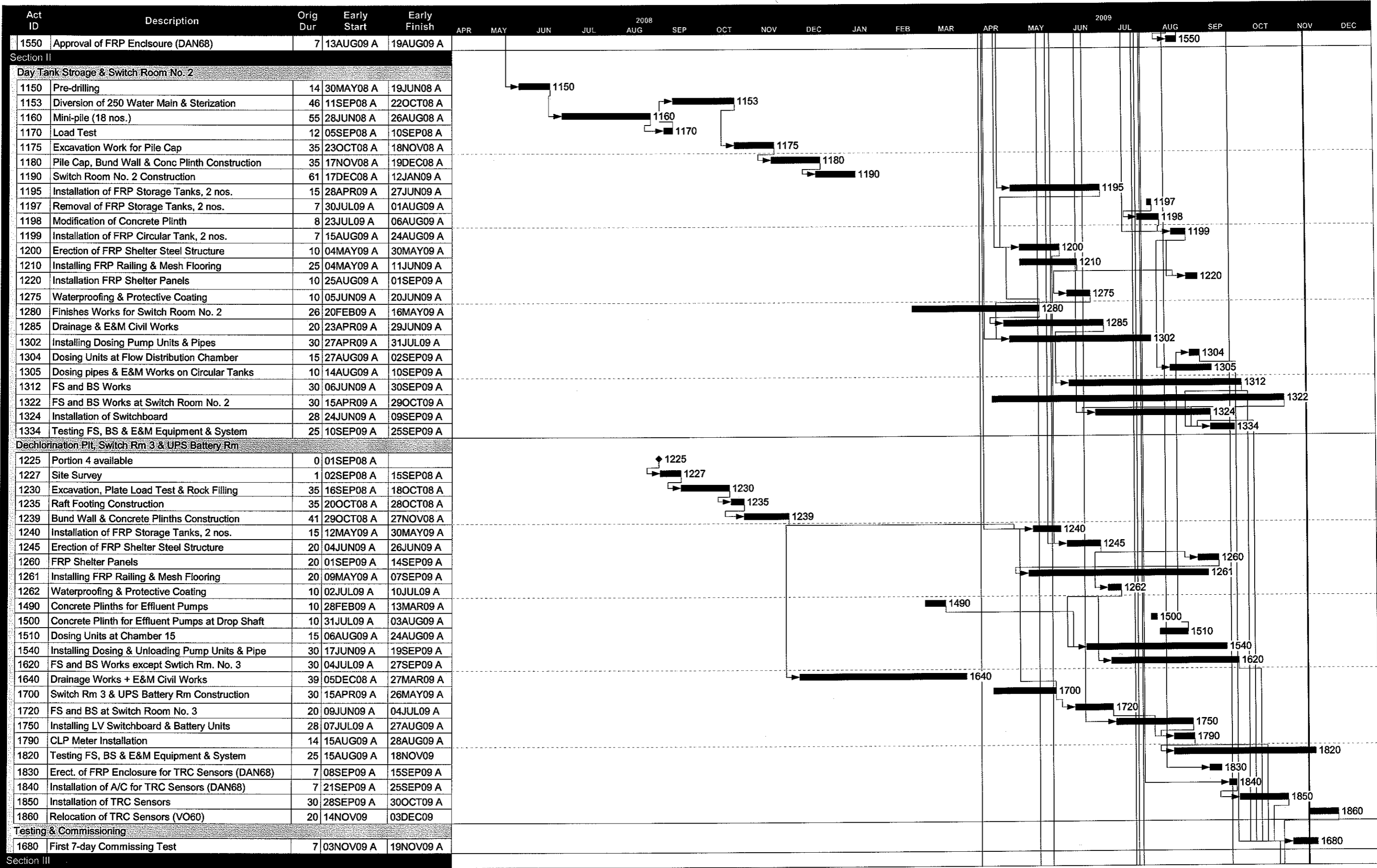
APPENDIX E
Construction Programme



Start date	29APR08	■	Early bar
Finish date	14DEC09	■	Progress bar
Data date	14NOV09	■	Critical bar
Run date	16NOV09	■	Summary bar
Page number	1A	◆	Start milestone point
c Primavera Systems, Inc.		◆	Finish milestone point

**China Harbour Engineering Co. Ltd.
HATS2A - Advance Facilities**

Date	Revision	Checked	Approved
11SEP08	C	Tim	
30MAR09	D	Aaron	
30JUN09	E	Aaron	
15NOV09	F	Aaron	

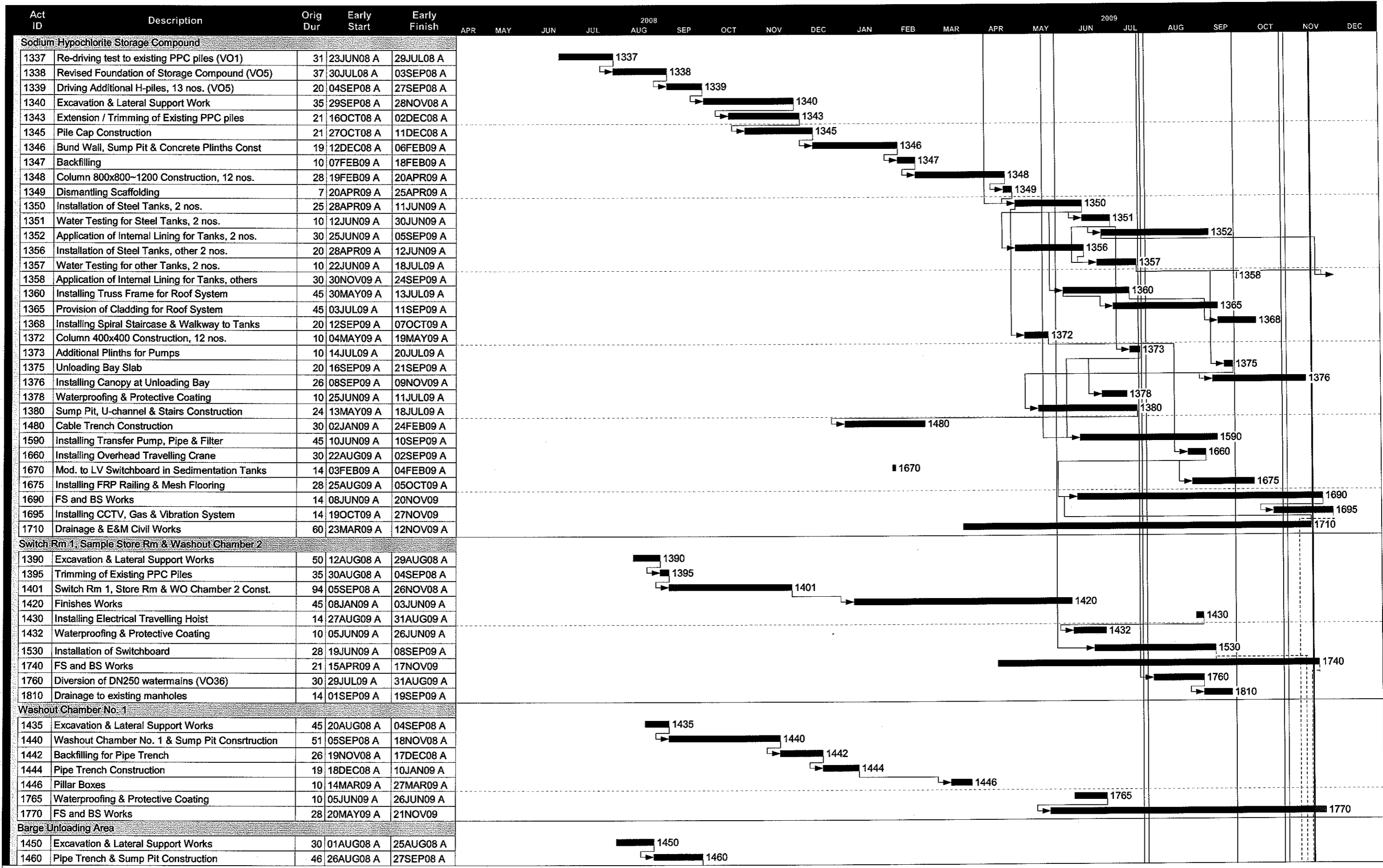


Start date 29APR08
 Finish date 14DEC09
 Data date 14NOV09
 Run date 16NOV09
 Page number 2A
 Primavera Systems, Inc.

■ Early bar
 ■ Progress bar
 ■ Critical bar
 — Summary bar
 ◆ Start milestone point
 ◆ Finish milestone point

China Harbour Engineering Co. Ltd.
HATS2A - Advance Facilities

Date	Revision	Checked	Approved
11SEP08	C	Tim	
30MAR09	D	Aaron	
30JUN09	E	Aaron	
15NOV09	F	Aaron	



Start date	29APR08
Finish date	14DEC09
Data date	14NOV09
Run date	16NOV09
Page number	3A
c Primavera Systems, Inc.	

- Early bar
- Progress bar
- Critical bar
- Summary bar
- ◆ Start milestone point
- ◆ Finish milestone point

China Harbour Engineering Co. Ltd.
HATS2A - Advance Facilities

Date	Revision	Checked	Approved
11SEP08	C	Tim	
30MAR09	D	Aaron	
30JUN09	E	Aaron	
15NOV09	F	Aaron	

Act ID	Description	Orig Dur	Early Start	Early Finish	APR	MAY	JUN	JUL	2008	AUG	SEP	OCT	NOV	DEC	2009	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1462	Pillar Box & Unloading Bay Construction I	20	29OCT08 A	26NOV08 A								█	█	█													
1464	Pillar Box & Unloading Bay Construction II	14	09JAN09 A	24JAN09 A										█													
1780	Mod. to LV Switchboard at Ferric Chloride Area	15	20JAN09 A	20JAN09 A										█													
Others																											
1482	Gas & Vibrat'n Detect'n for Ferric Chloride Area	15	02OCT09 A	30OCT09 A																					█	█	
1484	CCTV System for Ferric Chloride Area	15	20OCT09 A	20NOV09																							
1486	Truck Unloading System for Ferric Chloride Area	15	21AUG09 A	03OCT09 A																							
Associated Pipeworks & Utilities																											
1307	Dosing Pipe Trench CHB0 to 74 & CHB261 to 340	51	02FEB09 A	12MAR09 A																							
1310	Assoc. Pipework, Dosing Pipe CHB0 to 74	30	10APR09 A	28APR09 A																							
1315	Assoc. Pipework, Dosing Pipe CHB261 to 340	10	06OCT09 A	23OCT09 A																							
1320	Pipe Trench CHC0 to 885 CHD0 to 12	40	30APR09 A	23JUN09 A																							
1330	Assoc. Pipework, Chamber 15	14	04SEP09 A	19SEP09 A																							
1560	Assoc. Pipework, Sedimentation Tanks Stage 1	30	29APR09 A	11MAY09 A																							
1580	Assoc. Pipework, Sedimentation Tanks Stage 2	10	05SEP09 A	05OCT09 A																							
Testing & Commissioning																											
1400	Second 7-day Commissioning Test	7	04DEC09	11DEC09																							█
1410	Advance Commissioning Test at Auto Basic Mode	2	12DEC09	14DEC09																							█

Start date 29APR08
Finish date 14DEC09
Data date 14NOV09
Run date 16NOV09
Page number 4A
c Primavera Systems, Inc.

- █ Early bar
- █ Progress bar
- █ Critical bar
- Summary bar
- ◆ Start milestone point
- ◆ Finish milestone point

China Harbour Engineering Co. Ltd.
HATS2A - Advance Facilities

Date	Revision	Checked	Approved
11SEP08	C	Tim	
30MAR09	D	Aaron	
30JUN09	E	Aaron	
15NOV09	F	Aaron	