Harbour Area Treatment Scheme Stage 2A

Contract No. DC/2007/23, DE/2009/02, DC/2009/05, DC/2009/10, DC/2009/17 and DC/2009/18

Consolidated Monthly Environmental Monitoring and Audit Report
July 2012

(Version 1.1)

Certified By

(Environmental Team Leader)

REMARKS:

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

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
DSD	Drainage Services Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan
SCISTW	Stonecutters Island Sewage Treatment Works
HATS 2A	Harbour Area Treatment Scheme Stage 2A

EXECUTIVE SUMMARY

Introduction

1. This is the 32nd Consolidated Environmental Monitoring and Audit (EM&A) Report summaries the key information of EM&A monthly reports for the following construction contracts at the Stonecutters Island Sewage Treatment Works (SCISTW) under the Project of Harbour Area Treatment Scheme Stage 2A (the Project) and prepared by Cinotech Consultants Limited, the Environmental Team (ET) for Contract no. DC/2009/10.

   - Contract no. DC/2007/23 – Construction of Sewage Conveyance System from North Point to Stonecutters Island;
   - Contract no. DC/2009/05 – Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW;
   - Contract no.DE/2009/02 – Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at SCISTW;
   - Contract no. DC/2009/17 – Upgrading Works at Stonecutters Island Sewage Treatment Works – Sludge Dewatering Facilities;
   - Contract no. DC/2009/10 – Upgrading Works at Stonecutters Island Sewage Treatment Works – Main Pumping Station, Sedimentation Tanks and Ancillary Facilities; and
   - Contract no. DC/2009/18 – Upgrading Works at Stonecutters Island Sewage Treatment Works –Effluent Tunnel and Disinfection Facilities.

2. The above-mentioned Contracts are under the same Environmental Permit (EP) No. EP-322/2008/E and separate ETs were appointed under each contract pursuant to Condition 2.1 of the EP.

3. This report is a contractual requirement under Contract No. DC/2009/10 to provide a consolidated monthly summary of the EM&A works at SCISTW for ease of reference. Each contract is administered under their respective contract by different project teams including the Engineer, the Engineer's Representatives, the Contractor, and the ET.

4. No amendment of the information in the EM&A reports for each individual contract was made in this consolidated monthly report.

5. This Report documents the findings of EM&A Works for the Project covering the period from 1 July to 31 July 2012.

6. The details of the EM&A for individual contracts can be found in the separate EM&A monthly reports. In case of ambiguity and discrepancy, the individual EM&A report shall prevail. The Executive Summaries and Web Sites for the individual contracts are shown below:

Table I Summary Table for Executive Summaries and Web Sites:

Contract no.	ES/Web Site	Details:
DC/2007/23	Executive Summary	At SCISTW, air quality monitoring station AM6 and noise monitoring station NM5 were monitored by ET for Contract no. DC/2007/23.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DC200723/EM&A%20Report-DC200723.html

DC/2009/05	Executive Summary	At SCISTW, air quality monitoring station AM7 and noise monitoring station NM6 were monitored by ET for Contract no. DC/2009/05.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DC200905/EM&A%20Report-DC200905.html
DE/2009/02	Executive Summary	At SCISTW, air quality monitoring station AM8 was monitored by ET for Contract no. DE/2009/02.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DE200902/EM&A%20Report-DE200902.html
DC/2009/17	Executive Summary	The air quality and noise monitoring stations under this contract were covered by other contracts at SCISTW. The monitoring data would be summarized in this monthly EM&A report.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DC200917/EM&A%20Report-DC200917.html
DC/2009/10	Executive Summary	The air quality and noise monitoring stations under this contract were covered by other contracts at SCISTW. The monitoring data would be summarized in this monthly EM&A report.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DC200910/EM&A%20Report-DC200910.html
DC/2009/18	Executive Summary	At SCISTW, air quality monitoring station AM9 and noise monitoring station NM7 were monitored by ET for Contract no. DC/2009/18.
	Web Site	http://www.hats2a-ema.com/RP_EMA/DC200918/EM&A%20Report-DC200918.html

Environmental Monitoring and Audit Works

7. The environmental monitoring works in the Project were covered by the ETs for the Contracts: DC/2007/23, DC/2009/05 and DE/2009/02. Since the construction works of Contract DC/2009/05 was scheduled to be substantially completed at the end of July 2012. The environmental monitoring works at air quality monitoring station AM7 and the construction noise monitoring station NM6 will be handed over from the ET of Contract DC/2009/05 to Cinotech, the ET of Contract DC/2009/10 from August 2012.

8. Site audits were conducted once per week for each contract by their ETs.

9. Summary of the non-compliance of the reporting month is tabulated in **Table II**.

Table II Summary Table for Non-compliance Recorded in the Reporting Month

Monitored By	Monitoring Station	Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
			Action Level	Limit Level	Action Level	Limit Level	
DC/2007/23	AM6	1-hr TSP	0	0	0	0	N/A
		24-hr TSP	0	0	0	0	N/A
DC/2009/05	AM7	1-hr TSP	0	0	0	0	N/A
		24-hr TSP	0	0	0	0	N/A
DE/2009/02	AM8	1-hr TSP	0	0	0	0	N/A
		24-hr TSP	0	0	0	0	N/A
DC/2007/23	NM5	Noise	0	0	0	0	N/A
DC/2009/05	NM6		0	0	0	0	N/A
DC/2009/18	AM9	1-hr TSP	0	0	0	0	N/A
		24-hr TSP					
	NM7	Noise	0	0	0	0	N/A

1-hour TSP Monitoring

10. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

11. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

12. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance for normal working hours and restricted hours were recorded in the reporting month.

Key Information in the Reporting Month

13. Summary of key information in the reporting month is tabulated in **Table III**.

Table III Monthly Consolidated Summary Table for Key Information

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Status of submissions under EP	1	Monthly Consolidation EM&A Report for Stonecutters Island Sewage Treatment Works for June 2012	Submitted to EPD	No comment	---
Notifications of any summons & prosecutions received	0	--	N/A	N/A	---

Key Information in the EIA Report

14. According to the EIA Report, air quality, noise, water quality, ecology and landscape and visual would be the key environmental issues during the construction of the project. Details of the implementation of mitigation measures for six contracts are provided in the **Appendix J**.

Termination of EM&A Programme of Contract No. DC/2009/05

15. According to executive summary of the EM&A monthly report of Contract DC/2009/05, the construction works (Contract No. DC/2009/05) had been substantially completed on 6 July 2012 and merely some outstanding works are short-term and minor in nature, significant environmental impact are not anticipated. Besides, no monitoring exceedance, complaint and prosecution have been recorded between May and July 2012. In this regard, the construction phase EM&A programme of the Project (Contract No. DC/2009/05) had been proposed to terminate on 31 July 2012. Verification and approval of Termination from the Contractor, IEC, RE and DSD were confirmed in the end of July 2012 and early August 2012 respectively. The related correspondences are provided in **Appendix M** in this consolidated monthly EM&A report.

1. INTRODUCTION

Background

1.1 Harbour Area Treatment Scheme (HATS) Stage 2A is a designated project (Register No. : AEIAR-121/2008). The Environmental Permit (Permit No. EP-322/2008/E) for the Project was issued on 24th November 2010 to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.

1.2 The general location plan for the Contracts: DC/2007/23, DE/2009/02, DC/2009/05, DC/2009/10, DC/2009/17 and DC/2009/18 are shown in **Figures 1 to Figure 3**.

1.3 The environmental permit (EP) was issued for the whole HATS Stage 2A construction works. The ET for the Contract DC/2009/10 is contractually responsible for consolidating the key information from all monthly EM&A reports from the ETs of other Contracts at SCISTW into a single monthly summary for ease of reference.

1.4 The 1st to 11th consolidated monthly EM&A reports were prepared by Ove Arup & Partners Hong Kong Ltd (Arup) and submitted to EPD. From November 2010 onwards, the 12th and subsequent consolidated monthly EM&A report will be prepared and submitted by Cinotech Consultant Limited, the ET for the Contracts DC/2009/10, DC/2009/17 and DC/2009/18.

1.5 This is the 32nd consolidated monthly EM&A report summarizing the EM&A works conducted for the Project at SCISTW from 1 July to 31 July 2012.

1.6 The monthly EM&A reports for each contract were prepared and certified by separate ETs and subsequently verified by the Independent Environmental Checker (IEC) for the Project. All individual monthly EM&A Reports are provided in the Project Website.

1.7 Since the construction works (Contract No. DC/2009/05) had been substantially completed on 6 July 2012, the construction phase EM&A programme of the Project (Contract No. DC/2009/05) had been proposed to terminate on 31 July 2012. Verification and approval of Termination from the Contractor, IEC, RE and DSD were confirmed in the end of July 2012 and early August 2012 respectively.

1.8 The environmental monitoring works in the Project covered by the ET of Contract No. DC/2009/05, i.e., the Air Quality Monitoring at AM7 and the Construction Noise Monitoring at NM6 will be handed over from the ET of Contract DC/2009/05 to Cinotech, the ET of Contract DC/2009/10 from August 2012.

Current Contracts at SCISTW

1.9 The major Contracts at SCISTW and their scope of works are provided below:

Contract no. DC/2007/23

- Construction of sewage conveyance system between Sai Ying Pun junction shaft and Stonecutters Island Sewage Treatment Works;
- Construction of riser shaft at Stonecutters Island Sewage Treatment Works;
- Construction of Stage 2 Connecting Adit between the riser shaft and Stage 2 Main Pumping Station side chamber (by others) at Stonecutters Island Sewage Treatment Works.

Contract no. DE/2009/02

- Construction of covers for flocculation tanks, prototype tanks, main distribution channels, sedimentation tanks, scum chambers and effluent drop structures
- Two deodourisation facilities;
- Piling Works of Foundation;
- Construction of Foundation for Deodourisation facilities;
- Erection of Structure of Control Room at DOU Foundation;
- Construction of public access road with footpath;
- Water main laying works;
- Associated ancillary works; and
- Tree transplanting, landscaping works; and all other works as required under the Contract.

Contract no. DC/2009/05

- Construction of diaphragm wall, base slab and pile cap for the Main Pumping Station and its Inlet Chamber;
- Excavation within the diaphragm walls for the Main Pumping Station and its Inlet Chamber to founding levels;
- Piling works for the Main Pumping Station;
- Construction of Temporary launching shaft;
- Construction of Interconnection Tunnel with concrete lining between the Inlet Chamber of the Main Pumping Station and the existing Riser Shaft.

Contract no. DC/2009/10

- Construction of a main pumping station;
- The extension of chemically enhanced primary treatment tanks; and
- The construction of other ancillary facilities at Stonecutters Island Sewage Treatment Works.

Contract no. DC/2009/17

- Demolition of the existing structures including vehicle washing facilities, Sludge Silo Building, Sludge Dewatering Building, process water storage tanks, polyelectrolyte storage tanks, ADF barging facilities and all associated plant and equipment;
- Construction of Sludge Dewatering Building, Sludge Cake Silos, Sludge Conveyor Bridges, Sludge Storage Tank, Deodourisation Units, Workshop Building, Process Water Storage Tanks and Pumping System;
- Construction of roof landscaping including irrigation system for the Sludge Dewatering Building and Workshop Building;
- Construction of chemical unloading facilities and the chemical pipe trench for the Disinfection Facilities; and
- Construction of associated Electrical, Mechanical, Building Services, Fire Services and Process Installation, Odour Control System and Temporary Vehicle Wash Facilities.

Contract no. DC/2009/18

- The Construction of an 880m long effluent tunnel at Stonecutters Island; and
- The Construction of disinfection facilities at Stonecutters Island Sewage Treatment Works (SCISTW).

Project Organizations

1.10 The key contacts of current contracts are provided in Table 1.1.

Table 1.1 Key Project Contacts

Contract No./ Position	DC/2007/23	DE/2009/02	DC/2009/05
Contract Title:	Construction of Sewage Conveyance System from North Point to Stonecutters Island;	Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at SCISTW.	Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW
Consultant	Metcalf & Eddy – AECOM JV	Ove Arup & Partners HK Ltd	Ove Arup & Partners HK Ltd
The Engineer	Keith Tsang (Tel:2605 6262)	S.Y.Chan (Tel: 2528 3031)	S.Y.Chan (Tel: 2528 3031)
The Engineer Representative	Y.H. Fung (Tel: 3713 3110)	Ted Tang (Tel: 2990 6982)	Ted Tang (Tel: 2990 6982)
ER's Coordinator	Y.H. Fung (Tel: 3713 3110)	William Yu (Tel: 9705 9566)	William Yu (Tel: 9705 9566)
Independent Environmental Checker	Dr. Anne Kerr (Tel:28285757)	Dr. Anne Kerr (Tel:28285757)	Dr. Anne Kerr (Tel:28285757)
Contractor	Gammon Construction Ltd	ATAL Engineering Ltd.	China State- Shanghai Tunnel Joint Venture
Site Agent	Max Ko (Tel: 9033 1292)	Barry Lee (Tel:2565 7638)	Chris Leung (Tel: 23703166)
Environmental Officer	Leo Chow (Tel:9300 2013)	Gary Chow (Tel: 2743 1205)	Gary Hong (Tel: 2370 2086)
Environmental Team	Environmental Resources Management Ms.Winnie Ko (Tel: 2271 3000)	Action- United Environmental services and Consulting Mr. T.W.Tam (Tel: 2959 6059)	AECOM Asia Co Ltd Ms. Edith Ng (Tel: 2317 7609)

Table 1.1(cont'd) Key Project Contacts

Contract No.	DC/2009/10	DC/2009/17	DC/2009/18
Contract Title:	Upgrading Works at SCISTW - Main Pumping Station, Sedimentation Tanks and Ancillary Facilities	Upgrading Works at Stonecutters Island Sewage Treatment Works – Sludge Dewatering Facilities	Upgrading Works at Stonecutters Island Sewage Treatment Works – Effluent Tunnel and Disinfection Facilities
Consultant	Ove Arup & Partners HK Ltd	Ove Arup & Partners HK Ltd	Ove Arup & Partners HK Ltd
The Engineer	S.Y.Chan (Tel: 2528 3031)	S.Y.Chan (Tel: 2528 3031)	S.Y.Chan (Tel: 2528 3031)
The Engineer Representative	Ted Tang (Tel: 2990 6982)	Ted Tang (Tel: 2990 6982)	Ted Tang (Tel: 2990 6982)
ER's Coordinator	Natalie Kwok (Tel: 6794 8844)	Natalie Kwok (Tel: 6794 8844)	Natalie Kwok (Tel: 6794 8844)
Independent Environmental Checker	Dr. Anne Kerr (Tel:28285757)	Dr. Anne Kerr (Tel:28285757)	Dr. Anne Kerr (Tel:28285757)
Contractor	Sun Fook Kong – Biwater Joint Venture	China State- ATAL Joint Venture	Chun Wo – CEC Joint Venture
Site Agent	Mr. Ivan Tse (Tel: 6200 2149)	Mr. Tony Wong (Tel: 23703166)	Mr. Daniel Tai (Tel: 6688 5680)

Contract No.	DC/2009/10	DC/2009/17	DC/2009/18
Environmental Officer	Mr. Leo Lau (Tel:9209 2703)	Mr. H.S.Lui (Tel: 9050 2212)	Mr. Shelton Chan (Tel: 5395 5470)
Environmental Team	Cinotech Consultant Limited Dr. Priscilla Choy (Tel: 2151 2089)	Cinotech Consultant Limited Dr. Priscilla Choy (Tel: 2151 2089)	Cinotech Consultant Limited Dr. Priscilla Choy (Tel: 2151 2089)

Construction Programme

1.11 The construction program for the six Contracts at SCISTW are provided in **Appendix L**. Major construction works undertaken during the reporting month include:

Table 1.2 Construction Works in the Reporting Month

Contract No.	Construction Works in the Reporting Month
DC/2007/23	Riser Shaft • Stage 2 pumping test; and • Commission of drilling for pre-excavation grouting. Production Shaft • Shaft excavation by drill & blast method; • Bunton, services and FSD ladderway installation; and • Shaft sump construction.
DC/2009/05	• Construction at Launching Shaft Mined Tunnel and Inlet Chamber (Base Slab); • Ground freezing at Launching Shaft and Existing Riser Shaft; • Dismantle of tunnel boring machine shield; and • Site clearance.
DE/2009/02	• Installation of FRP handrails at CEPT Tank; • Installation of FRP air ducts at CEPT Tank; • Installation of FRP covers at Rapid Mix Chamber; • Testing and commissioning of DOU No. 1; and • Site acceptance tests for instruments and equipment at DOU No. 2.
DC/2009/17	Portion 3: • Concreting of columns from level B3A to B3C between GL. 1-3/ B-D were completed; • Concreting of beams at (i) level B3A between GL. 1-4/ A-B & GL. 1-2/ B-E and (ii) level B4 between GL. 4-8/ B-D were completed. Portion 4: • Concreting of corbels, external walls and columns from 1/F to +16.6mPD between GL. 5-9/ A1-D were completed; • Concreting of beams and slabs of 1/F between GL. 1-5/ A1-D were completed; • Concreting of walls and top slab of Control Room between GL. 2-5/ B were completed; • Concreting of wall, top slab and parapet wall of Stair No. 2 from R/F to +22.5mPD between GL. 12-13/ A1-A were completed. Portion 5: • Concreting for Pour 2 of SST No. 7 was completed; • Rebar fixing and formwork & falsework erection for Pour 3 of SST No. 7 were in progress. External Works: • SWAC Submission and implementation of TTA for the commencement of external works was in progress; • Excavation works at Areas C2 and C4 were in progress.
DC/2009/10	• Chemical pipe trench (Bay 11) and CLP cable trench Bay B1 was completed; • All RC construction of Storage Building was completed at Portion 9; • 21 out 48 nos of prebored H-pile at distribution channel was completed (44% completed) and 54 out of 95 nos of prebored H-pile at flocculation tank was completed (56% completed); • Re-Excavation and lateral support for cofferdam No. 6 and 1 were completed, sheetpile installation at cofferdam 5 was completed; • 3rd Concreting of wet well wall (from -26.45 to -26.45mPD) was completed on 8

	July 2012. Concreting of external wall for staircase ST1 and ST2 was completed up to -22.0mPD; and • Driven H-pile foundation works for switchgear building was ongoing at Portion 4. 141 out of 155 nos. of H-piles have been driven and 26 out of 155 were driven final set (15% completed).
DC/2009/18	• Portion 3: ring beam installation and rock excavation; 1st blast at Riser Shaft; • Portion 7: FDC2 H-piling works; Noise Enclosure footing construction; soft ground excavation, and pre-excavation grouting works; and • Portion 9: stage pavement works for access road; footpath construction; construction of run-in.

Summary of EM&A Requirements

1.12 The EM&A programme requires construction phase monitoring for air quality and noise, as well as site audits covering environmental mitigation measures, including landscape and visual impact, waste/chemicals management, and general compliance with the EM&A Manual and relevant permits/licenses. The EM&A requirements for each parameter 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.

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

1.14 This report summarized the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely dust, noise levels, and audit works conducted for the Project from 1 July to 31 July 2012, and the methodology and QA/QC procedures of the monitoring parameters.

2. AIR QUALITY

Monitoring Requirements

2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Four designated monitoring stations, AM6, AM7, AM8 and AM9 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in **Figures 1 and 3**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored under Contract No.	Location of Measurement
AM6	DC/2007/23	Works site boundary of DC/2007/23
AM7	DC/2009/05	North West Kowloon Sewage Pumping Station
AM8	DE/2009/02	Block A of Government Dockyard
AM9	DC/2009/18	Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)

Monitoring Equipment

2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates were shown in **Appendix C**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make			
Contract No.	DC/2007/23	DE/2009/02	DC/2009/05	DC/2009/18
Laser Dust Monitor	N/A*	TSI Dust Trak Model 8520	Sibata Digital Dust Monitor (Model No. LD-3 and LD-3B)	Sibata; Model no. LD-3B
HVS Sampler	GMW GS-2310	Grasby Anderson GMWS 2310 HVS	Graseby Andersen Total Suspended Particulate Mass Flow Controlled Sampling System (Model No.GMWS2310)	TISCH Model no. TE-5170
Calibrator	CM-AIR-43	TISCH Model TE-5025A	TEOM Monitor, Series 1400ab(For 1-hour TSP meter) TISCH Model TE-5025A(For HVS Sampler)	TISCH Model TE-5025A

N/A*: 1-hr TSP monitoring by DC/2007/23 was carried by using HVS sampler.

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring

for the whole construction period. The air quality monitoring schedule for the reporting period is shown in **Appendix B**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency
All monitoring locations	1-hour TSP	0700-1900 hrs	3 times/ every 6 days
	24-hour TSP	0000-2400 hrs	once in every 6 days

Monitoring Methodology and QA/QC Procedure

2.5 The monitoring methodology and QA/QC procedure for monitoring equipments are presented in the monthly reports for Contracts DC/2007/23, DC/2009/05, DE/2009/02 and DC/2009/18.

Results and Observations

2.6 **Table 2.4** summaries the air quality monitoring results at AM6, AM7, AM8 and AM9 in reporting month.

Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Results in Reporting Month

Air Quality Monitoring Station	Average* μgm^{-3}	Range μgm^{-3}	Action Level μgm^{-3}	Limit Level μgm^{-3}
1 hour TSP				
AM6	165	142-199	346	500
AM7	77	59-89	322	
AM8	41	20-82	307	
AM9	69	60-77	318	
24 hours TSP				
AM6	83	75-94	196	260
AM7	14	7-20	207	
AM8	73	23-155	158	
AM9	73	48-94	169	

Note*: The average of 1-hour and 24-hour TSP result in μgm^{-3} is the arithmetic mean of the monitoring results in that reporting month.

2.7 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.

2.8 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix G**.

2.9 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix D**.

2.10 According to the field observations, the identified dust sources at the monitoring stations were mainly from loading of material, vehicles movement and construction works in site.

3. NOISE

Monitoring Requirements

3.1 Three noise monitoring stations, namely NM5, NM6 and NM7 were designated in the EM&A Manual for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Noise monitoring was conducted at three designated monitoring stations as listed in Table 3.1. **Figures 1 and 3** shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Station	Monitored under Contract No.	Location of Measurement
NM5	DC/2007/23	Near FSD Diving Rescue and Training Centre
NM6	DC/2009/05	Customs' Marine Base
NM7	DC/2009/18	Open Area near Naval Base Barrack

Monitoring Equipment

3.3 Table 3.2 summarizes the noise monitoring equipment. Copies of calibration certificates were shown in **Appendix C**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model No.		
Contract No.	DC/2007/23	DC/2009/05	DC/2009/18
Sound Level Meter	Rion NL-31	B&K Model No. 2238 and Rion NL-31	SVANTEK Model no: SVAN 955
Calibrator	Rion NC-73	Rion NC-73 and B&K 4231	SVANTEK Model no: SV 30A

Monitoring Parameters, Frequency and Duration

3.4 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix B**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NM5 NM6 NM7	L_{eq}(30 min.) dB(A)	0700-1900 hrs on weekdays	Once per week
	L_{eq}(5 min.) dB(A)	During restricted hours	Weekly monitoring to be conducted during the construction works

Monitoring Methodology and QA/QC Procedures

3.5 The monitoring methodology and QA/QC procedure are presented in the monthly reports of the Contract DC/2007/23, DC/2009/05 and DC/2009/18.

Results and Observations

3.6 **Table 3.4** summaries the noise monitoring results at NM5, NM6 and NM7 in reporting month.

Table 3.4 Summary of Noise Monitoring Results in Reporting Month

For the time period 0700-1900 hrs. on weekdays		
Monitoring Station	Range, dB(A) L_{eq}(30 min.)	Limit Level ,dB(A) L_{eq}(30 min.)
NM5	60.1-62.8	75.0
NM6	64.8-69.7	
NM7	65.6-70.1	
For the time period 1900-2300 hrs on Normal Weekdays, And 0700-2300 of Sundays and Public Holidays		
NM5	56.9-62.0	70.0
NM6	64.0-66.3	
NM7	63.8-67.4	

3.7 All construction noise monitoring at three designated locations were conducted by their ETs as scheduled in the reporting month.

3.8 No Action/Limit Level exceedance for normal working hours and restricted hours was recorded in the reporting month. Summary of exceedance is presented in **Appendix G**.

3.9 Noise monitoring results and graphical presentations are shown in **Appendix E**.

3.10 The major noise sources identified at the designated noise monitoring stations were the traffic noise and those generated from construction activities.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the each Project site.

4.2 Environmental site audits were conducted in the reporting month for each Contract is the following. No non-compliance was observed during the site audits.

Table 4.1 Summary of Date of Site Inspection

Contract No.	Date of Site Inspection
DC/2007/23	5, 12, 19 and 26 July 2012
DE/2009/02	6, 13, 17 and 26 July 2012
DC/2009/05	3, 10,17, 26 and 31 July 2012
DC/2009/10	6, 13, 18 and 27 July 2012
DC/2009/17	5, 12, 20 and 26 July 2012
DC/2009/18	4, 11, 18 and 27 July 2012

4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of landscape and visual mitigation measures are being properly carried out in the reporting month in accordance to section 11.10 of the EM&A Manual. No non-compliance was observed during the site inspections.

4.4 The summaries of site audits for six contracts are attached in **Appendix H**.

Review of Environmental Monitoring Procedures

4.5 The monitoring works conducted by the monitoring teams of respective Contracts and were inspected regularly by their ETs.

Status of Environmental Licensing and Permitting

4.6 All permits/licenses obtained for the each Contract are summarized in **Appendix F**.

Status of Waste Management

4.7 The amount of wastes generated by the activities of six contracts in the reporting month is the following:

Table 4.2 Summary of Amount of Waste Generated in Reporting Month

Contract	Inert C&D[1] Materials	Other C&D[2] Waste	Chemical Waste (L)	Marine Deposit (m^3)		
				Type 1 (Tonnes)	Type 2 (Tonnes)	Type 3 (Tonnes)
DC/2007/23	13,216.2* (Tonnes)	36.39* (Tonnes)	800	0*	0*	0*
DC/2009/05	662.26 (Tonnes)	91.11 (Tonnes)	0	0*	0*	0*
DE/2009/02	0(m^3)	200(m^3)	0	0	0	0
DC/2009/17	323.13(m^3)	37.51 (Tonnes)	0	0	0	0
DC/2009/10	1488(m^3)	520(kg) and 13 (m^3)	0	0	0	0
DC/2009/18	518(m^3)	22.85(m^3) of general refuse and 10010(kg) of recycled metal	0	0	0	0

*: The amount of waste generated is from all sites in this Contract.
1: Inert C&D Materials includes Broken Concrete/Rock, Inert C&D waste reused in the Contract/other Project and those disposed to Public Fill.
2: Other C&D Waste includes Metals, Paper Cardboard packaging, plastic and other General Refuse.

4.8 The disposal location of wastes generated by the activities of six contracts is the following:

Table 4.3 Summary of Disposal Location of Waste Generated in Reporting Month

Contract No.	Disposal Location of Wastes in Report Month
DC/2007/23	Tuen Mun Area 38 Fill Bank/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point and SENT Landfill. No plastics, but 8,356 kg of steels and 55kg of paper/cardboard packaging was sent to recyclers for recycling during the reporting period.
DC/2009/05	Tuen Mun Area 38 Fill Bank, Tseung Kwan O Area137 Fill Bank, NENT Landfill
DE/2009/02	NENT Landfill.
DC/2009/17	Tuen Mun Area 38 Fill Bank and NENT Landfill.
DC/2009/10	Tuen Mun Area 38 Fill Bank and NENT Landfill
DC/2009/18	Tuen Mun Area 38 Fill Bank and NENT Landfill and Tseung Kwan O Area137 Fill Bank, 10010kg of metal was sent to recyclers for recycling during the reporting period.

4.9 The summaries of amount of waste generated in six contracts could be referred to respective monthly report.

Implementation Status of Environmental Mitigation Measures

4.10 Details of the implementation of mitigation measures for six contracts are provided in the **Appendix J**.

4.11 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations and recommendations for the Projects are summarized in **Appendix H**.

Implementation Status of Event Action Plans

4.12 The Event Action Plans for air quality and noise are presented in **Appendix I.**

1-hr TSP

4.13 No Action/Limit Level exceedance was recorded.

24-hr TSP

4.14 No Action/Limit Level exceedance was recorded.

Construction Noise

4.15 No Action/Limit Level exceedance for normal working hours and restricted hours was recorded in the reporting month. Summary of exceedance is presented in **Appendix G**.

Landscape and Visual

4.16 No non-compliance was recorded.

Summary of Complaints and Prosecutions

4.17 No environmental complaint and prosecution was received at SCISTW for six contracts in the reporting month.

4.18 There were no environmental complaint and prosecution received since the commencement of six contracts. The Complaint Log is presented in **Appendix K**.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key environmental issues in the coming month include:

- Generation of dust from stockpiles of excavated and dusty materials, unpaved site area and vehicle movement, roadworks, excavation works and loading and unloading dusty materials on-site;
- Noise from operation of equipment and machinery on-site;
- Storage of chemicals/fuel and chemical waste/waste oil on-site;
- Ponding water generated in pre-drillings;
- Drainage system should be well designed and maintained to prevent flooding and silty water getting into the public area during and after rainstorm;
- Silty surface runoff generated from the site area;
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities; and
- Proper tree and shrub protection works should be provided when carrying out works near existing trees and shrubs.

Monitoring Schedule for the Next Month

5.2 The tentative environmental monitoring schedules for the next month are shown in **Appendix B**.

Construction Program for the Next Month

5.3 The tentative construction programs are provided in **Appendix L**.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 Environmental monitoring and audit works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hour TSP Monitoring

6.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

6.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

6.4 No Action/Limit Level exceedance for normal working hours and restricted hours wasrecorded in the reporting month. Summary of exceedance is presented in **Appendix G**.

Environmental Audit

6.5 Environmental site audits were conducted on weekly basis in the reporting month. No non-compliance was recorded.

Complaint and Prosecution

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

Recommendations for the coming reporting month:

6.7 The following recommendations were made for the coming reporting month:

Air Quality

- To prohibit any open burning on site;
- To regularly maintain the machinery and vehicles on site;
- To follow up any exceedance caused by the construction works; and
- To implement dust suppression measures on all haul roads, stockpiles, dried/unpaved surfaces and excavation/road breaking works.

Noise

- To inspect the noise sources inside the site;
- To follow up any exceedance caused by the construction works;
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;

- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location;
- To provide adequate lubricant on mechanical equipments to reduce frictional noise; and
- To well maintain the mechanical equipments / machineries to avoid abnormal noise nuisance.

Water Quality

- To identify any discharge of wastewater from the construction site;
- To regularly maintain the sediment control measures after rainstorms; and
- To avoid water from accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed.

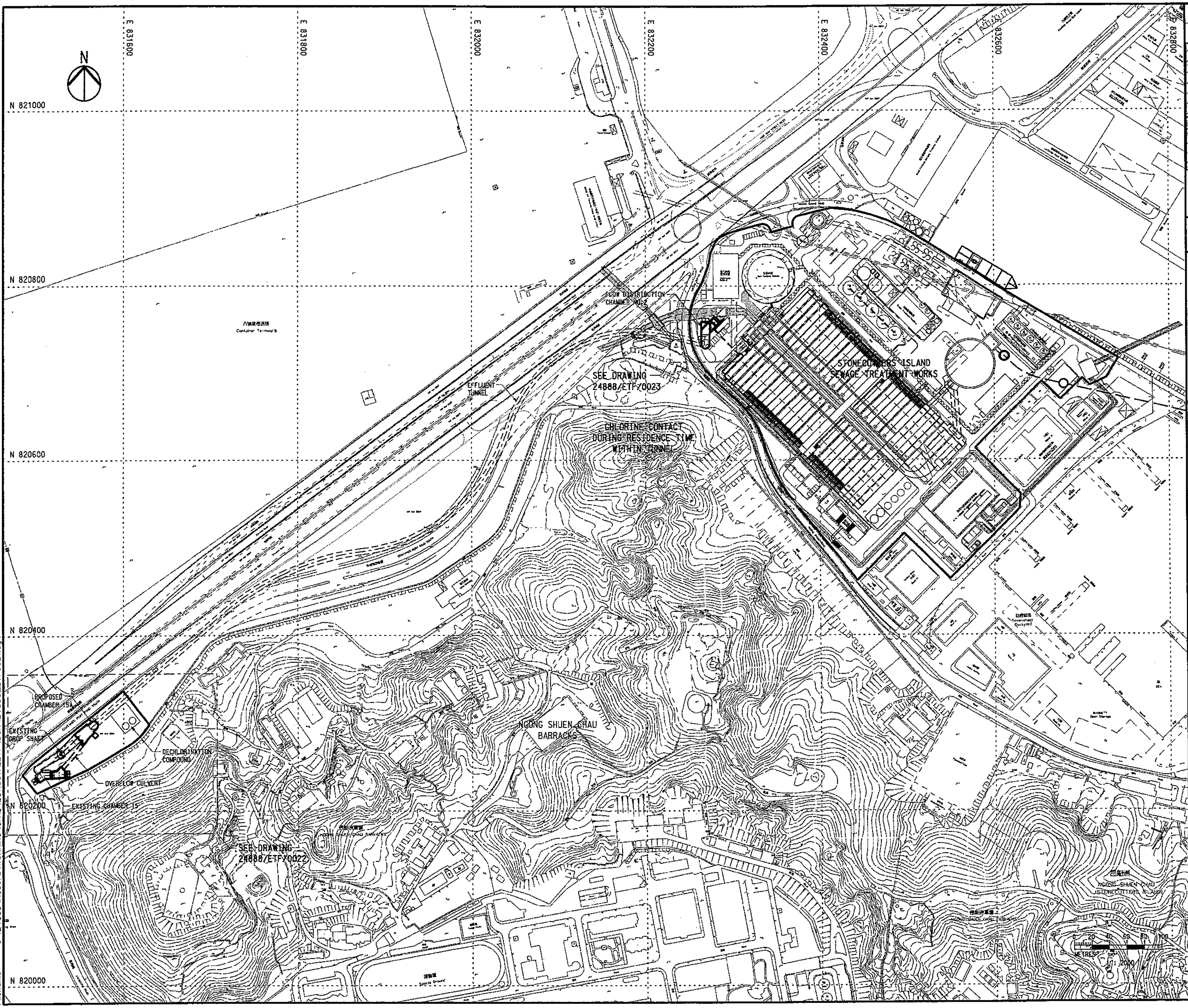
Waste/Chemical Management

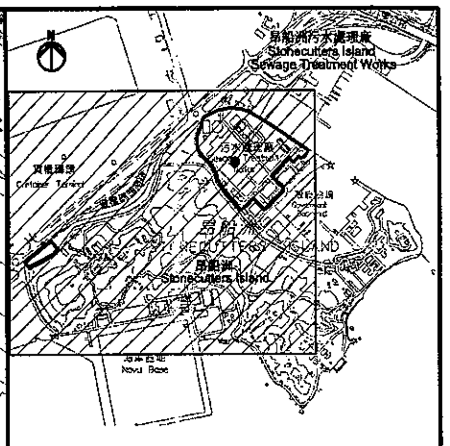
- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide proper storage area or drip trays for oil containers/ equipment on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly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

Landscape and Visual

- To erect and maintain the protection fence around the retaining tree;and
- To avoid any heavy materials placed into tree protection zone.

FIGURES





KEY PLAN

LEGEND:

BOUNDARY OF SCISTW

ALIGNMENT OF EFFLUENT TUNNEL

Rev	Description	By	Date
0	ISSUE FOR CONSTRUCTION	PW	06/11

Consultant

ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

Project title

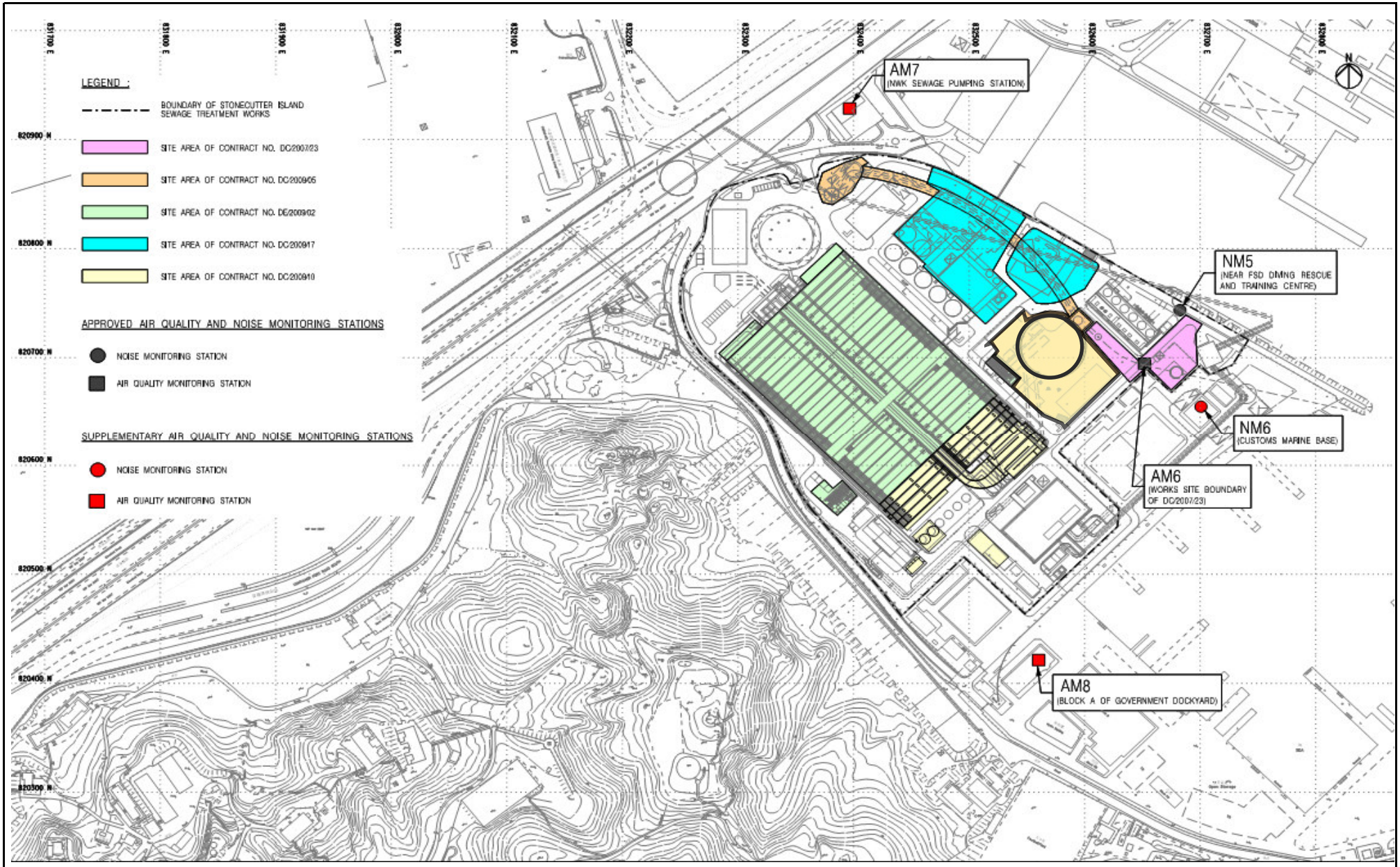
Contract No. DC/2009/18
Harbour Area Treatment Scheme Stage 2A-
Upgrading Works at
Stonecutters Island Sewage Treatment Works-
Effluent Tunnel and Disinfection Facilities

Drawing title

GENERAL LAYOUT
(SHEET 1)

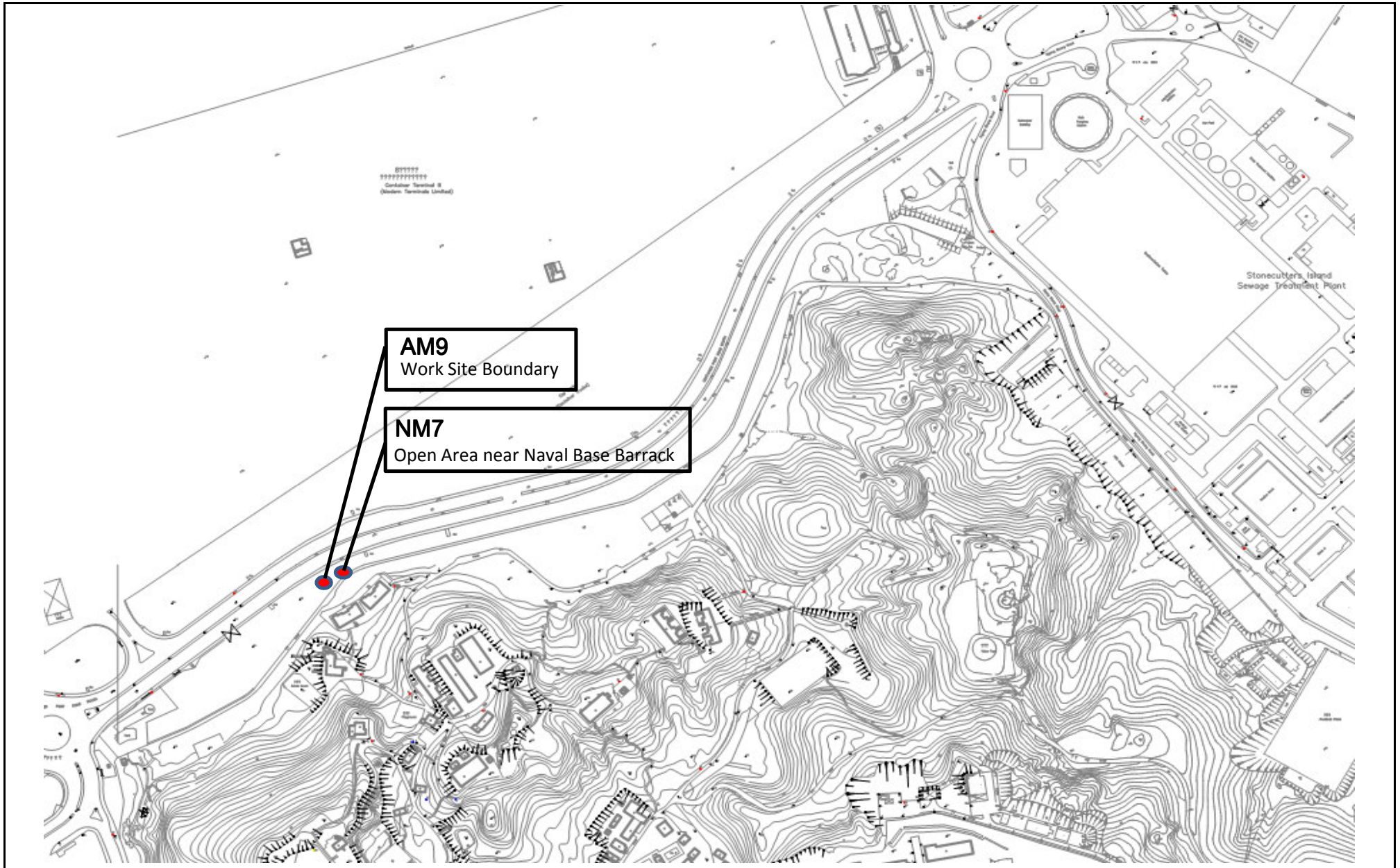
Drawing no.			Rev.
24888/ETF/0021			0
Drawn: WM	Date: 08/10	Checked: PW	Approved: DP
Scale: 1:2000 @A1		Status: WORKING	

香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



Title	Contract No: DC/2009/10 HATS 2A - Upgrading Main Pumping Station,Sedimentation Tanks and Ancillary Facilities at SISTW	Scale N.T.S	Project No. MA11007
	General Location Plan of the Project and Locations of Air Quality and Noise Monitoring Stations	Date 8/2011	Figure 1

CINOTECH



Title	Contract No. DC/2009/18 HATS 2A -Upgrading Works at Stonecutters Island Sewage Treatment Works - Effluent Tunnel and Disinfection Facilities	Scale N.T.S	Project No. MA11043	CINOTECH
	Locations of Impact Air Quality and Noise Monitoring Stations	Date 12/2011	Figure 3	

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP

Monitoring Stations	Action Level ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	1-hour	24-hour	1-hour	24-hour
AM6	346	196	500	260
AM7	322	207	500	260
AM8	307	158	500	260
AM9	138	169	500	260

Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
NM5 NM6 NM7	0700-1900 hours on normal weekdays	When one documented complaint is received	75
	Restricted Hours (Evening Time) All days during the evening (1900 to 2300 hours), and general holidays (including Sundays) during the day-time and evening (0700 to 2300 hours)	N/A	70(1)
	Restricted Hours (Night Time) All days during the night-time (2300 to 0700 hours)	N/A	55(1)

Note(1): Construction Noise Criteria for activity other than Percussive Pilling.

APPENDIX B
ENVIRONMENTAL MONITORING SCHEDULES

Annex G3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM6 - Works Site Boundary
Monitoring Month : July 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul
	The day following Hong Kong Special Administrative Region Establishment Day				1-hr and 24-hr Monitoring	
8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul
				1-hr and 24-hr Monitoring		
15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
			1-hr and 24-hr Monitoring			
22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
		1-hr and 24-hr Monitoring				
29-Jul	30-Jul	31-Jul				
	1-hr and 24-hr Monitoring					

Monitoring Month : August 2012

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

Annex G3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23

Harbour Area Treatment Scheme Stage 2A

Construction of Sewage Conveyance System from North Point to Stonecutters Island

Impact Construction Noise Quality Monitoring Schedule

NM5 - A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary

Monitoring Month : July 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Jul	02-Jul	03-Jul	04-Jul	05-Jul	06-Jul	07-Jul
	The day following Hong Kong Special Administrative Region Establishment Day				Noise Monitoring	
08-Jul	09-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul
		Noise Monitoring (evening time)		Noise Monitoring		
15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
Noise Monitoring (during daytime of sundays/ public holidays)			Noise Monitoring			
22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
		Noise Monitoring (Daytime and Evening time)				
29-Jul	30-Jul	31-Jul				
Noise Monitoring (during daytime of sundays/ public holidays)	Noise Monitoring					

Monitoring Month : August 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			01-Aug	02-Aug	03-Aug	04-Aug
05-Aug	06-Aug	07-Aug	08-Aug	09-Aug	10-Aug	11-Aug
		Noise Monitoring (evening time)		Noise Monitoring		
12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug
Noise Monitoring (during daytime of sundays/ public holidays)			Noise Monitoring			
19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug
		Noise Monitoring (Day time and evening time)				
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	
Noise Monitoring (during daytime of sundays/ public holidays)	Noise Monitoring					

DC/2009/05 - HATS Stage 2A Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW
Impact Air Quality and Noise Monitoring Schedule for July 2012

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

Monitoring Schedule in Reporting Month

Date		Dust Monitoring	
		1-hour TSP	24-hour TSP
Sun	1-July-12		
Mon	2-July-12		
Tue	3-July-12		
Wed	4-July-12		
Thu	5-July-12		
Fri	6-July-12		
Sat	7-July-12		
Sun	8-July-12		
Mon	9-July-12		
Tue	10-July-12		
Wed	11-July-12		
Thu	12-July-12		
Fri	13-July-12		
Sat	14-July-12		
Sun	15-July-12		
Mon	16-July-12		
Tue	17-July-12		
Wed	18-July-12		
Thu	19-July-12		
Fri	20-July-12		
Sat	21-July-12		
Sun	22-July-12		
Mon	23-July-12		
Tue	24-July-12		
Wed	25-July-12		
Thu	26-July-12		
Fri	27-July-12		
Sat	28-July-12		
Sun	29-July-12		
Mon	30-July-12		
Tue	31-July-12		

Remarks: 1-hour TSP monitoring is conducted between 0700-1900 hours.

	Monitoring Day
	Sunday or Public Holiday

Tentative Monitoring Schedule in Forthcoming Month

Date		Dust Monitoring	
		1-hour TSP	24-hour TSP
Wed	1-Aug-12		
Thu	2-Aug-12		
Fri	3-Aug-12		
Sat	4-Aug-12		
Sun	5-Aug-12		
Mon	6-Aug-12		
Tue	7-Aug-12		
Wed	8-Aug-12		
Thu	9-Aug-12		
Fri	10-Aug-12		
Sat	11-Aug-12		
Sun	12-Aug-12		
Mon	13-Aug-12		
Tue	14-Aug-12		
Wed	15-Aug-12		
Thu	16-Aug-12		
Fri	17-Aug-12		
Sat	18-Aug-12		
Sun	19-Aug-12		
Mon	20-Aug-12		
Tue	21-Aug-12		
Wed	22-Aug-12		
Thu	23-Aug-12		
Fri	24-Aug-12		
Sat	25-Aug-12		
Sun	26-Aug-12		
Mon	27-Aug-12		
Tue	28-Aug-12		
Wed	29-Aug-12		
Thu	30-Aug-12		
Fri	31-Aug-12		

Remarks: 1-hour TSP monitoring is conducted between 0700-1900 hours.

	Monitoring Day
	Sunday or Public Holiday

Contract No. DC/2009/18

HATS 2A -Upgrading Works at Stonecutters Island Sewage Treatment Works - Effluent Tunnel and Disinfection Facilities

Impact Air Quality and Noise Monitoring Schedule (July 2012)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jul	**2-Jul**	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul
					Noise 3 x 1 hr TSP 24 hr TSP (Noise, Restricted Hours)	
8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul
(Noise, Restricted Hours)				Noise 3 x 1 hr TSP 24 hr TSP		
15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
(Noise, Restricted Hours)			Noise 3 x 1 hr TSP 24 hr TSP			
22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul
(Noise, Restricted Hours)		Monitoring was cancelled due to adverse wearther				
29-Jul	30-Jul	31-Jul				
(Noise, Restricted Hours)	Noise 3 x 1 hr TSP 24 hr TSP					

Air Quality Monitoring Location:
AM9 : Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)

Noise Monitoring Location:
NM7 - Open Area near Naval Base Barrack

Contract No. DC/2009/18

HATS 2A -Upgrading Works at Stonecutters Island Sewage Treatment Works - Effluent Tunnel and Disinfection Facilities

Impact Air Quality and Noise Monitoring Schedule (August 2012)

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

Air Quality Monitoring Location:

AM9 : Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)

Noise Monitoring Location:

NM7 - Open Area near Naval Base Barrack

APPENDIX C
CALIBRATION CERTIFICATES OF THE ENVIRONMENTAL MONITORING EQUIPMENT

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	20/07/2012

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1378
Service Date	:	22 Feb 2012
Slope (m)	:	1.99405
Intercept (b)	:	-0.00397
Correlation Coefficient(r)	:	0.99984

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1007
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	9.1	2.983	1.498	62	61.3
2	13 holes	7.4	2.690	1.351	55	54.4
3	10 holes	5.8	2.381	1.196	49	48.4
4	7 holes	3.8	1.927	0.969	39	38.6
5	5 holes	2.2	1.467	0.737	29	28.7

Sampler Calibration Relationship

Slope(m):42.604 Intercept(b): -2.728 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 23/07/2012

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	20/05/2012

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1378
Service Date	:	22 Feb 2012
Slope (m)	:	1.99405
Intercept (b)	:	-0.00397
Correlation Coefficient(r)	:	0.99984

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	9.2	3.011	1.512	64	63.5
2	13 holes	7.1	2.645	1.328	55	54.6
3	10 holes	5.8	2.390	1.201	48	47.6
4	7 holes	3.7	1.909	0.959	37	36.7
5	5 holes	2.2	1.472	0.740	26	25.8

Sampler Calibration Relationship

Slope(m):48.707 Intercept(b): -10.263 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 24/05/2012

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C124012
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1674)

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00320533
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 9 July 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 10 July 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C124012
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (After Adjustment) was performed before the test form 6.1.1.2 to 6.4.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	* 91.6	± 0.7

* Out of Mfr's Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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Certificate of Calibration
校正證書

Certificate No. : C124012
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 -110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	$L_A$max				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	$L_A$max				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	31.5 Hz	54.4	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5; -3.0)
					12.5 kHz	90.0	-4.3 (+3.0; -6.0)

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6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	31.5 Hz	90.7	-3.0 ± 1.5
					63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5; -3.0)
					12.5 kHz	88.2	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.0	± 0.5
			60 sec.			$1/10^3$		80	80.0	± 1.0
			5 min.			$1/10^4$		70	70.0	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C113973

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00320533

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C113973.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 18 July 2011

Certified by : H C Chan

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C105886

Calibration Report

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	:	63 Hz - 125 Hz	: ± 0.35 dB
		250 Hz - 500 Hz	: ± 0.30 dB
		1 kHz	: ± 0.20 dB
		2 kHz - 4 kHz	: ± 0.35 dB
		8 kHz	: ± 0.45 dB
		12.5 kHz	: ± 0.70 dB
104 dB	:	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	:	1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C105886

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.6	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.2	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	90.1	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.4	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.3	-6.2 (+3.0 ; -6.0)

Report No. : C113827

Calibration Report

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	:	63 Hz - 125 Hz	: ± 0.35 dB
		250 Hz - 500 Hz	: ± 0.30 dB
		1 kHz	: ± 0.20 dB
		2 kHz - 4 kHz	: ± 0.35 dB
		8 kHz	: ± 0.45 dB
		12.5 kHz	: ± 0.70 dB
104 dB	:	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	:	1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C113827

Calibration Report

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	90.1	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.2	-6.2 (+3.0 ; -6.0)

Report No. : C113827

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C110018
CL281	Multifunction Acoustic Calibrator	C1006860

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			93.9	± 0.3

Report No. : C113827

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00603867

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 7 July 2011 ***JOB NO.*** : IC11-1657

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : K C Lee *Date : 8 July 2011*

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C113827

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00603867

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C113827.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 8 July 2011

Certified by : H C Chan

Calibration and Testing Laboratory of Sun Creation Engineering Limited
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Certificate of Calibration
校正證書

Certificate No. : C124012
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	31.5 Hz	90.7	-3.0 ± 1.5
					63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5; -3.0)
					12.5 kHz	88.2	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.0	± 0.5
			60 sec.			$1/10^3$		80	80.0	± 1.0
			5 min.			$1/10^4$		70	70.0	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Certificate of Calibration
校正證書

Certificate No. : C124012
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6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 -110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	$L_A$max				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	$L_A$max				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	31.5 Hz	54.4	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5; -3.0)
					12.5 kHz	90.0	-4.3 (+3.0; -6.0)

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Certificate of Calibration
校正證書

Certificate No. : C124012
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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (After Adjustment) was performed before the test form 6.1.1.2 to 6.4.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	* 91.6	± 0.7

* Out of Mfr's Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C124012
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1674)

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00320533
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 9 July 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 10 July 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :	94 dB :	63 Hz - 125 Hz	:	± 0.35 dB
		250 Hz - 500 Hz	:	± 0.30 dB
		1 kHz	:	± 0.20 dB
		2 kHz - 4 kHz	:	± 0.35 dB
		8 kHz	:	± 0.45 dB
		12.5 kHz	:	± 0.70 dB
	104 dB :	1 kHz	:	± 0.10 dB (Ref. 94 dB)
	114 dB :	1 kHz	:	± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.9	-26.2 ± 1.5
					125 Hz	78.1	-16.1 ± 1.5
					250 Hz	85.6	-8.6 ± 1.4
					500 Hz	91.1	-3.2 ± 1.4
					1 kHz	94.4	Ref.
					2 kHz	95.7	+1.2 ± 1.6
					4 kHz	95.5	+1.0 ± 1.6
					8 kHz	93.4	-1.1 (+2.1 ; -3.1)
					12.5 kHz	90.5	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	93.5	-0.8 ± 1.5
					125 Hz	94.2	-0.2 ± 1.5
					250 Hz	94.4	0.0 ± 1.4
					500 Hz	94.4	0.0 ± 1.4
					1 kHz	94.4	Ref.
					2 kHz	94.3	-0.2 ± 1.6
					4 kHz	93.8	-0.8 ± 1.6
					8 kHz	91.5	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.7	-6.2 (+3.0 ; -6.0)

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Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.4	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.4 (Ref.)
				104.00		104.4
				114.00		114.5

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.4	Ref.
			Slow			94.4	± 0.3

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-0154)

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00983400
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 21 January 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : H C Chan

Date of Issue 簽發日期 : 30 January 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4 F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

RION CO., LTD.

3-20-41 Higashimotomachi Kokubunji Tokyo 185-8533
Phone:042(359)7888, Facsimile:042(359)7442

Certificate of Calibration

Name : **Precision sound level meter**

Model : **NL-52** **S/No. : 00710259**
(NX-42EX installed)

Microphone : **UC-59** **S/No. : 02695**

Preamplifier : **NH-25** **S/No. : 10253**

Date of Calibration : **September, 20, 2011**

We hereby certify that the above product was tested and calibrated according to the prescribed Rion procedures, and that it fulfills specification requirements.

The measuring equipment and reference devices used for testing and calibrating this unit are managed under the Rion traceability system and are traceable according to official Japanese standards and official standards of countries belonging to the International Committee of Weights and Measures.

RION CO., LTD.

Manager, Quality Control Department

Certificate of Calibration
校正證書

Certificate No. : C124011
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C123541
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.990	1 kHz ± 2 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C124011
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1674)

Description / 儀器名稱	:	Sound Level Calibrator
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NC-73
Serial No. / 編號	:	10997142
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 9 July 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K. Ly
L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 10 July 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
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Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.4	-16.1 ± 1.5
					250 Hz	85.0	-8.6 ± 1.4
					500 Hz	90.4	-3.2 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.7	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	92.8	-0.8 ± 1.5
					125 Hz	93.5	-0.2 ± 1.5
					250 Hz	93.7	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.1	-0.8 ± 1.6
					8 kHz	90.8	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB
  250 Hz - 500 Hz : ± 0.30 dB
  1 kHz : ± 0.20 dB
  2 kHz - 4 kHz : ± 0.35 dB
  8 kHz : ± 0.45 dB
  12.5 kHz : ± 0.70 dB
  104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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輝創工程有限公司 – 校正及檢測實驗所
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Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.7	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.7	Ref.
			Slow			93.6	± 0.3

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1472)

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410224
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 June 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 15 June 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
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High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	20/05/2012

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1378
Service Date	:	22 Feb 2012
Slope (m)	:	1.99405
Intercept (b)	:	-0.00397
Correlation Coefficient(r)	:	0.99984

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	9.2	3.011	1.512	64	63.5
2	13 holes	7.1	2.645	1.328	55	54.6
3	10 holes	5.8	2.390	1.201	48	47.6
4	7 holes	3.7	1.909	0.959	37	36.7
5	5 holes	2.2	1.472	0.740	26	25.8

Sampler Calibration Relationship

Slope(m):48.707 Intercept(b): -10.263 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 24/05/2012

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location : Sai Ying Pun
Calibrated by : K.F.Ho
Date : 14/05/2012

Sampler
Model : TE-5170
Serial Number : S/N 2146

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1378
Service Date : 22 Feb 2012
Slope (m) : 1.99405
Intercept (b) : -0.00397
Correlation Coefficient(r) : 0.99984

Standard Condition
Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition
Pa (hpa) : 1007
Ta(K) : 301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.8	3.260	1.637	57	56.5
2	13 holes	9.4	3.042	1.527	53	52.6
3	10 holes	7.7	2.753	1.383	47	46.6
4	7 holes	4.5	2.103	1.057	35	34.7
5	5 holes	2.6	1.6008	0.804	25	24.8

Sampler Calibration Relationship

Slope(m):38.056 Intercept(b): -5.720 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 18/05/2012

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C113972

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C113972.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 18 July 2011

Certified by : H C Chan

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C113972

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-73
SERIAL NO. : 10786708

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 16 July 2011 ***JOB NO.*** : IC11-1746

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested by : *K C Lee* *Date : 18 July 2011*

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C113972

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
TST150A	Measuring Amplifier	C101008
CL130	Universal Counter	C113350
CL281	Multifunction Acoustic Calibrator	C1006860

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.9	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.991	1 kHz ± 2 %	± 1

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-1472)

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410224
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 June 2012

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : L K Yeung

Certified By 核證 : K C Lee

Date of Issue 簽發日期 : 15 June 2012

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.7	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.7	Ref.
			Slow			93.6	± 0.3

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Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C123580
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.4	-16.1 ± 1.5
					250 Hz	85.0	-8.6 ± 1.4
					500 Hz	90.4	-3.2 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	95.0	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.7	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	92.8	-0.8 ± 1.5
					125 Hz	93.5	-0.2 ± 1.5
					250 Hz	93.7	0.0 ± 1.4
					500 Hz	93.8	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.1	-0.8 ± 1.6
					8 kHz	90.8	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB
  250 Hz - 500 Hz : ± 0.30 dB
  1 kHz : ± 0.20 dB
  2 kHz - 4 kHz : ± 0.35 dB
  8 kHz : ± 0.45 dB
  12.5 kHz : ± 0.70 dB
  104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Block A of Government Dockyard Offices
Location ID : AM8

Date of Calibration: 27-Jun-12
Next Calibration Date: 27-Aug-12
Technician: Mr. Ben Tam

CONDITIONS

Sea Level Pressure (hPa)	1005.1	Corrected Pressure (mm Hg)	753.825
Temperature (°C)	29.4	Temperature (K)	302

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.02742
Model->	5025A	Qstd Intercept ->	0.02027
Calibration Date->	17-May-12	Expiry Date->	17-May-13

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.5	5.5	11	1.607	57	55.94	Slope = 33.9035
13	4.2	4.2	8.4	1.403	49	48.09	Intercept = 1.2993
10	3.1	3.1	6.2	1.204	44	43.18	Corr. coeff. = 0.9977
7	2.2	2.2	4.4	1.013	36	35.33	
5	1.6	1.6	3.2	0.862	31	30.42	

Calculations :

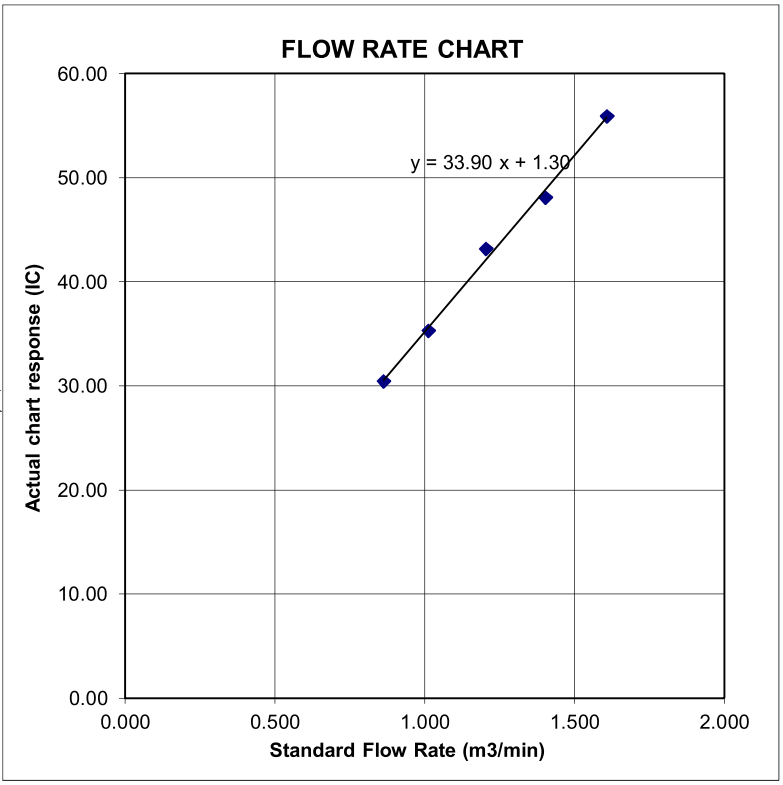
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K
Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 17, 2012 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 1483 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4140	3.2	2.00
2	NA	NA	1.00	0.9960	6.4	4.00
3	NA	NA	1.00	0.8910	7.9	5.00
4	NA	NA	1.00	0.8510	8.7	5.50
5	NA	NA	1.00	0.7020	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0018	0.7085	1.4185		0.9957	0.7042	0.8829
0.9976	1.0016	2.0061		0.9915	0.9955	1.2486
0.9955	1.1173	2.2429		0.9894	1.1105	1.3959
0.9945	1.1686	2.3524		0.9884	1.1615	1.4641
0.9890	1.4088	2.8371		0.9830	1.4003	1.7657
Qstd slope (m) =	2.02742			Qa slope (m) =	1.26953	
intercept (b) =	-0.02027			intercept (b) =	-0.01262	
coefficient (r) =	0.99996			coefficient (r) =	0.99996	
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

CERTIFICATE OF CALIBRATION AND TESTING

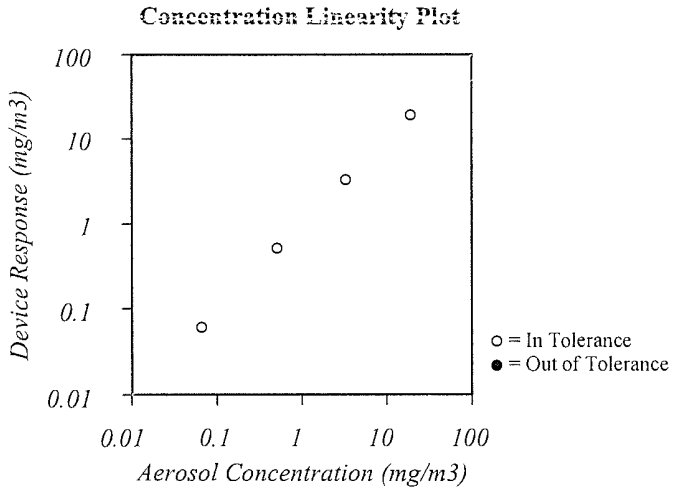
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Condition		
Temperature	68.7 (20.4)	°F (°C)
Relative Humidity	41	%RH
Barometric Pressure	28.98 (981.4)	inHg (hPa)

Model	**8520**
Serial Number	**23079**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance



System ID: DTII01-02

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	4:00 :hrs.

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1, A1 test dust (Arizona dust) Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Barometric Pressure	E003733	01-15-11	02-15-12
Humidity	E002873	11-24-10	11-24-11
DC Voltage	E003315	01-05-11	01-05-12
Microbalance	E001324	01-04-11	01-04-12
Flowmeter	E003769	06-13-11	06-13-12

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-24-10	11-24-11
DC Voltage	E003314	01-05-11	01-05-12
Photometer	E003319	07-25-11	01-25-12
Pressure	E003511	11-12-10	11-12-11

T. Thao
Calibrated

☑ Final Function Check

September 13, 2011
Date

TSI P/N 2300157

AECOM Asia Company Limited
TSP High Volume Sampler
Field Calibration Report

Station	Rooftop of West Kowloon No.2 Sewage Pumping Station (AM2)	Operator:	Shum Kam Yuen
Cal. Date:	18-May-12	Next Due Date:	18-Jul-12
Equipment No.:	A.001.12T	Serial No.	10373

Ambient Condition			
Temperature, Ta (K)	300.2	Pressure, Pa (mmHg)	756.1

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	2.00834	Intercept, bc	-0.02923
Last Calibration Date:	15-Nov-11	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	15-Nov-12	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	9.8	3.11	1.56	49.0	48.69
13	7.7	2.76	1.39	44.0	43.73
10	5.5	2.33	1.18	37.0	36.77
7	3.4	1.83	0.93	30.0	29.81
5	2.4	1.54	0.78	23.0	22.86

By Linear Regression of Y on X

Slope , mw = 32.2448 **Intercept, bw =** -1.2533

Correlation Coefficient* = 0.9934

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

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

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

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **40.92**

Remarks:

QC Reviewer: K. H. CHEK Signature: Mike Date: 21 May 12

Station	Rooftop of West Kowloon No.2 Sewage Pumping Sta
Cal. Date:	18-May-12
Next Due Date:	18-Jul-12
Set Point (IC)	40.92

IC (CFM)	Qstd (m^3/min)
24	0.783
25	0.814
26	0.845
27	0.876
28	0.907
29	0.938
30	0.969
31	1.000
32	1.031
33	1.062
34	1.093
35	1.124
36	1.155
37	1.186
38	1.217
39	1.248
40	1.279
41	1.310
42	1.341
43	1.372
44	1.403
45	1.434
46	1.465
47	1.496
48	1.527
49	1.558
50	1.590
51	1.621
52	1.652
53	1.683
54	1.714
55	1.745
56	1.776
57	1.807
58	1.838
59	1.869
60	1.900
61	1.931
62	1.962
63	1.993
64	2.024
65	2.055

AECOM Asia Company Limited
TSP High Volume Sampler
Field Calibration Report

Station	Rooftop of West Kowloon No.2 Sewage Pumping Station (AM2)	Operator:	Shum Kam Yuen
Cal. Date:	17-Jul-12	Next Due Date:	17-Sep-12
Equipment No.:	A.001.12T	Serial No.	10373

Ambient Condition			
Temperature, Ta (K)	305	Pressure, Pa (mmHg)	753.3

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	2.00834	Intercept, bc	-0.02923
Last Calibration Date:	15-Nov-11	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	15-Nov-12	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	9.4	3.02	1.52	46.0	45.27
13	7.5	2.70	1.36	40.0	39.36
10	5.3	2.27	1.14	36.0	35.43
7	3.4	1.81	0.92	30.0	29.52
5	2.2	1.46	0.74	26.0	25.59

By Linear Regression of Y on X

Slope , mw = 24.6492 **Intercept, bw =** 7.0549

Correlation Coefficient* = 0.9914

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

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

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

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **39.73**

Remarks: _____

QC Reviewer: _____ Signature: _____ Date: 18-Jul-12

Station	Rooftop of West Kowloon No.2 Sewage Pumping Sta
Cal. Date:	17-Jul-12
Next Due Date:	17-Sep-12
Set Point (IC)	39.73

IC (CFM)	Qstd (m^3/min)
24	0.687
25	0.728
26	0.769
27	0.809
28	0.850
29	0.890
30	0.931
31	0.971
32	1.012
33	1.053
34	1.093
35	1.134
36	1.174
37	1.215
38	1.255
39	1.296
40	1.337
41	1.377
42	1.418
43	1.458
44	1.499
45	1.539
46	1.580
47	1.621
48	1.661
49	1.702
50	1.742
51	1.783
52	1.823
53	1.864
54	1.905
55	1.945
56	1.986
57	2.026
58	2.067
59	2.107
60	2.148
61	2.189
62	2.229
63	2.270
64	2.310
65	2.351

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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Nov 15, 2011 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 0843 Pa (mm) - 748.03

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3810	3.2	2.00
2	NA	NA	1.00	0.9810	6.4	4.00
3	NA	NA	1.00	0.8760	7.8	5.00
4	NA	NA	1.00	0.8370	8.8	5.50
5	NA	NA	1.00	0.6890	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9934	0.7193	1.4125		0.9957	0.7210	0.8866
0.9891	1.0083	1.9976		0.9915	1.0107	1.2538
0.9871	1.1269	2.2334		0.9895	1.1295	1.4018
0.9859	1.1779	2.3424		0.9882	1.1807	1.4703
0.9807	1.4233	2.8251		0.9830	1.4267	1.7732
Qstd slope (m) =		2.00834		Qa slope (m) =		1.25759
intercept (b) =		-0.02923		intercept (b) =		-0.01835
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.08a***
Sensitivity Adjustment Scale Setting:	***702 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*5 May 2012*		

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *702* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *702* CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration[1] (mg/m^3) **Y-axis**	Total Count[2]	Count/ Minute[3] **X-axis**
			Temp (°C)	R.H. (%)			
1	*02-07-12*	*13:30 - 14:30*	*28.9*	*73*	*0.04127*	*1545*	*25.75*
2	*02-07-12*	*14:30 - 15:30*	*29.0*	*73*	*0.04163*	*1566*	*26.10*
3	*02-07-12*	*15:30 - 16:30*	*29.0*	*73*	*0.04334*	*1630*	*27.17*
4	*02-07-12*	*16:30 - 17:30*	*29.1*	*74*	*0.04426*	*1665*	*27.74*

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
2. Total Count was logged by Laser Dust Monitor
3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
Slope (K-factor): *0.0016*
Correlation coefficient: *0.9952*

Validity of Calibration Record: *1 July 2013*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 3 July 2012

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.09a***
Sensitivity Adjustment Scale Setting:	***797 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*5 May 2012*		

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *797* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *797* CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration[1] (mg/m^3) **Y-axis**	Total Count[2]	Count/ Minute[3] **X-axis**
			Temp (°C)	R.H. (%)			
1	*02-06-12*	*13:30 - 14:30*	*27.9*	*63*	*0.04070*	*1626*	*27.10*
2	*02-06-12*	*14:30 - 15:30*	*27.9*	*63*	*0.04167*	*1667*	*27.78*
3	*02-06-12*	*15:30 - 16:30*	*28.2*	*64*	*0.04283*	*1708*	*28.47*
4	*02-06-12*	*16:30 - 17:30*	*28.1*	*63*	*0.04146*	*1659*	*27.65*

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
2. Total Count was logged by Laser Dust Monitor
3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
Slope (K-factor): *0.0015*
Correlation coefficient: *0.9949*

Validity of Calibration Record: *1 June 2013*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 4 June 2012

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3B***
Equipment No.:	***A.005.14a***
Sensitivity Adjustment Scale Setting:	***786 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*5 May 2012*		

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *786* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *786* CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration[1] (mg/m^3) **Y-axis**	Total Count[2]	Count/ Minute[3] **X-axis**
			Temp (°C)	R.H. (%)			
1	*02-06-12*	*13:15 - 14:15*	*27.9*	*63*	*0.04073*	*1746*	*29.10*
2	*02-06-12*	*14:15 - 15:15*	*27.9*	*63*	*0.04154*	*1778*	*29.63*
3	*02-06-12*	*15:15 - 16:15*	*28.1*	*64*	*0.04269*	*1830*	*30.50*
4	*02-06-12*	*16:15 - 17:15*	*28.1*	*64*	*0.04136*	*1769*	*29.48*

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
2. Total Count was logged by Laser Dust Monitor
3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
Slope (K-factor): *0.0014*
Correlation coefficient: *0.9963*

Validity of Calibration Record: *1 June 2013*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 4 June 2012

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3B***
Equipment No.:	***A.005.15a***
Sensitivity Adjustment Scale Setting:	***786 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*5 May 2012*		

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *734* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *734* CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration[1] (mg/m^3) **Y-axis**	Total Count[2]	Count/ Minute[3] **X-axis**
			Temp (°C)	R.H. (%)			
1	*02-06-12*	*13:15 - 14:15*	*27.9*	*63*	*0.04073*	*1748*	*29.13*
2	*02-06-12*	*14:15 - 15:15*	*27.9*	*63*	*0.04154*	*1780*	*29.67*
3	*02-06-12*	*15:15 - 16:15*	*28.1*	*64*	*0.04269*	*1826*	*30.43*
4	*02-06-12*	*16:15 - 17:15*	*28.1*	*64*	*0.04136*	*1773*	*29.55*

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
2. Total Count was logged by Laser Dust Monitor
3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X
Slope (K-factor): *0.0014*
Correlation coefficient: *0.9949*

Validity of Calibration Record: *1 June 2013*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 4 June 2012

綜合試驗有限公司
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E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 12CA0321 01-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2285692 / N.009.04	,	2250420
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	21-Mar-2012

Date of test: 21-Mar-2012

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	09-May-2012	CIGISMEC
Signal generator	DS 360	33873	30-May-2012	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI

Ambient conditions

Temperature:	(22 ± 1) °C
Relative humidity:	(60 ± 10) %
Air pressure:	(1005 ± 5) hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 23-Mar-2012 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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E-mail: smec@cigismec.com Website: www.cigismec.com

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 11CA1221 01-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone	Preamp
Manufacturer:	Rion Co., Ltd.	,	Rion Co., Ltd.	Rion Co., Ltd.
Type/Model No.:	NL-31	,	UC-53A	NH-21
Serial/Equipment No.:	00320534 / N.007.02A	,	90526	03581
Adaptors used:	-	,	-	-

Item submitted by

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 21-Dec-2011

Date of test: 23-Dec-2011

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	09-May-2012	CIGISMEC
Signal generator	DS 360	33873	30-May-2012	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI

Ambient conditions

Temperature: (22 ± 1) °C
Relative humidity: (60 ± 10) %
Air pressure: (1000 ± 5) hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 16-Jan-2012 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
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Fax : (852) 2555 7533
HOKLAS 028

CERTIFICATE OF CALIBRATION

Certificate No.: 11CA0711 01-04 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	B & K
Type/Model No.:	BK4231
Serial/Equipment No.:	1790985 / N.004.01
Adaptors used:	Yes

Item submitted by

Curstomer:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	11-Jul-2011

Date of test: 11-Jul-2011

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	18-May-2012	SCL
Preamplifier	B&K 2673	2239857	14-Dec-2011	CEPREI
Measuring amplifier	B&K 2610	2346941	15-Dec-2011	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI
Digital multi-meter	34401A	US36087050	09-Dec-2011	CEPREI
Audio analyzer	8903B	GB41300350	27-May-2012	CEPREI
Universal counter	53132A	MY40003662	30-May-2012	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 5 %
Air pressure:	990 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 13-Jul-2011 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

綜合試驗有限公司
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CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 12CA0321 01-04 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10186482 / N.004.09
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	21-Mar-2012

Date of test: 21-Mar-2012

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	18-May-2012	SCL
Preamplifier	B&K 2673	2239857	05-Jan-2013	CEPREI
Measuring amplifier	B&K 2610	2346941	29-Dec-2012	CEPREI
Signal generator	DS 360	61227	30-May-2012	CEPREI
Digital multi-meter	34401A	US36087050	16-Dec-2012	CEPREI
Audio analyzer	8903B	GB41300350	27-May-2012	CEPREI
Universal counter	53132A	MY40003662	30-May-2012	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 23-Mar-2012 **Company Chop:**

SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11043/63/0005

Project No. AM9 - Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)

Operator: WK

Date: 11-Jun-12 Next Due Date: 10-Aug-12

Equipment No.: A-01-63 Serial No. 2356

Ambient Condition			
Temperature, Ta (K)	303.3	Pressure, Pa (mmHg)	759.5

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0568	Intercept, bc	-0.0432
Last Calibration Date:	9-Oct-11	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Oct-12	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.4	3.49	62.19	7.6	2.73
2	11.6	3.37	60.18	6.7	2.56
3	8.6	2.91	51.92	5.2	2.26
4	5.2	2.26	40.54	3.3	1.80
5	3.3	1.80	32.45	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0429 **Intercept, bw =** 0.0288

Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.58

Remarks:

Conducted by: Ivan Tang Signature: Kwan Date: 11/6/12

Checked by: [signature] Signature: [signature] Date: 11 June 2012

WELLAB 匯力 Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

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

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

Test Report No.:	C/120703/1
Date of Issue:	2012-07-03
Date Received:	2012-06-29
Date Tested:	2012-06-29
Date Completed:	2012-07-03
Next Due Date:	2012-09-02
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 65%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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TEST REPORT

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

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

Test Report No.:	C/120703/4
Date of Issue:	2012-07-03
Date Received:	2012-06-29
Date Tested:	2012-06-29
Date Completed:	2012-07-03
Next Due Date:	2012-09-02
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 65%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/120430/4
Date of Issue:	2012-05-02
Date Received:	2012-04-30
Date Tested:	2012-04-30
Date Completed:	2012-05-02
Next Due Date:	2012-07-01

ATTN: **Mr. W. K. Tang** Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 69%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0032

****

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.:	C/N/110923/4
		Date of Issue:	2011-09-24
		Date Received:	2011-09-23
		Date Tested:	2011-09-23
		Date Completed:	2011-09-24
		Next Due Date:	2012-09-23
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse
PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/N/110923/2
Date of Issue:	2011-09-24
Date Received:	2011-09-23
Date Tested:	2011-09-23
Date Completed:	2011-09-24
Next Due Date:	2012-09-23

ATTN: **Mr. Henry Leung**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10929
Equipment No.	: N-09-01

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 59%

Methodology:

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

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

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

PATRICK TSE
Laboratory Manager

APPENDIX D
1-HOUR AND 24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Annex G5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Jul-12	13:40	14:40	Sunny	142	346	500	Construction work in progress	32	<5	1254	4607
	14:42	15:42	Sunny	142	346	500	Construction work in progress	32	<5	1254	4608
	15:44	16:44	Sunny	160	346	500	Construction work in progress	32	<5	1254	4609
12-Jul-12	13:00	14:00	Sunny	152	346	500	Construction work in progress	30	<5	1254	4611
	14:02	15:02	Sunny	153	346	500	Construction work in progress	32	<5	1254	4612
	15:04	16:04	Sunny	169	346	500	Construction work in progress	32	<5	1254	4613
18-Jul-12	13:10	14:10	Sunny	194	346	500	Construction work in progress	31	<5	1254	4615
	14:12	15:12	Sunny	180	346	500	Construction work in progress	31	<5	1254	4616
	15:14	16:14	Sunny	199	346	500	Construction work in progress	31	<5	1254	4617
24-Jul-12	13:30	14:30	Rainy	163	346	500	Construction work in progress	27	<5	1254	4621
	14:32	15:32	Rainy	155	346	500	Construction work in progress	27	<5	1254	4622
	15:34	16:34	Rainy	159	346	500	Construction work in progress	27	<5	1254	4623
30-Jul-12	13:20	14:20	Sunny	183	346	500	Construction work in progress	32	<5	1254	4807
	14:22	15:22	Sunny	169	346	500	Construction work in progress	32	<5	1254	4808
	15:24	16:24	Sunny	161	346	500	Construction work in progress	32	<5	1254	4809
			Min.	**142**							
			Max.	**199**							
			Average	**165**							

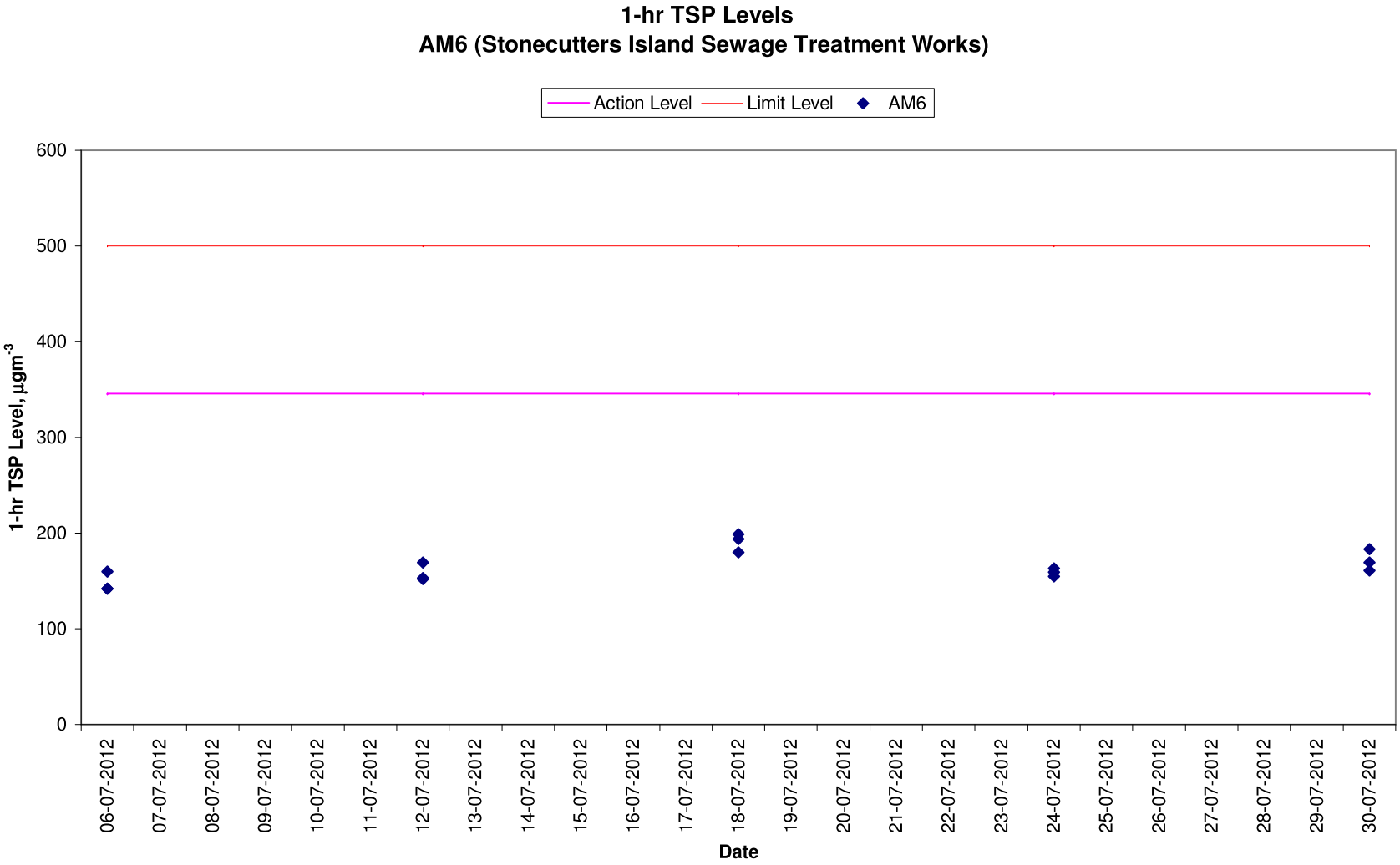
* Wind Speed data is presented in the Meteorological Data table

Annex G5 24-hour and 1-hour TSP Monitoring Results

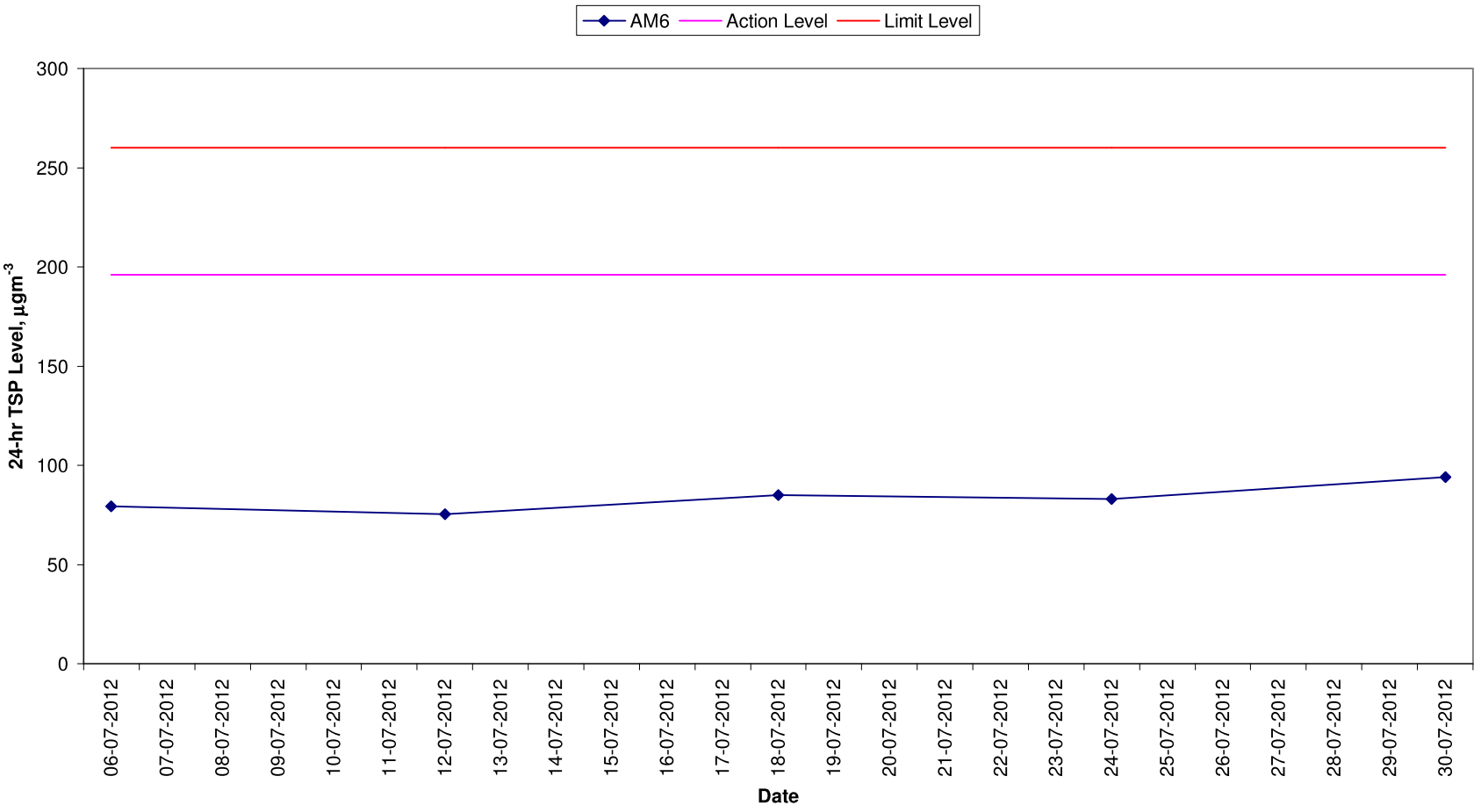
24-hour TSP Monitoring Results

Station AM6

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
06-Jul-12	16:46	07-Jul-12	16:46	Sunny	2.6795	2.8211	10086.03	10110.03	24.00	1.24	1.24	1.24	79	196	260	Construction work in progress	1254	4610
12-Jul-12	16:06	13-Jul-12	16:06	Sunny	2.6878	2.8224	10113.03	10137.03	24.00	1.24	1.24	1.24	75	196	260	Construction work in progress	1254	4614
18-Jul-12	16:16	19-Jul-12	16:16	Sunny	2.6890	2.8406	10140.03	10164.03	24.00	1.24	1.24	1.24	85	196	260	Construction work in progress	1254	4618
24-Jul-12	16:36	25-Jul-12	16:36	Rainy	2.6771	2.8255	10167.03	10191.03	24.00	1.24	1.24	1.24	83	196	260	Construction work in progress	1254	4624
30-Jul-12	16:26	31-Jul-12	16:26	Sunny	2.6844	2.8521	10194.03	10218.03	24.00	1.24	1.24	1.24	94	196	260	Construction work in progress	1254	4810
												Min.	**75**					
												Max.	**94**					
												Average	**83**					


1-hr TSP Levels
AM6 (Stonecutters Island Sewage Treatment Works)
Action Level
Limit Level
AM6
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
06-07-2012
07-07-2012
08-07-2012
09-07-2012
10-07-2012
11-07-2012
12-07-2012
13-07-2012
14-07-2012
15-07-2012
16-07-2012
17-07-2012
18-07-2012
19-07-2012
20-07-2012
21-07-2012
22-07-2012
23-07-2012
24-07-2012
25-07-2012
26-07-2012
27-07-2012
28-07-2012
29-07-2012
30-07-2012
Date

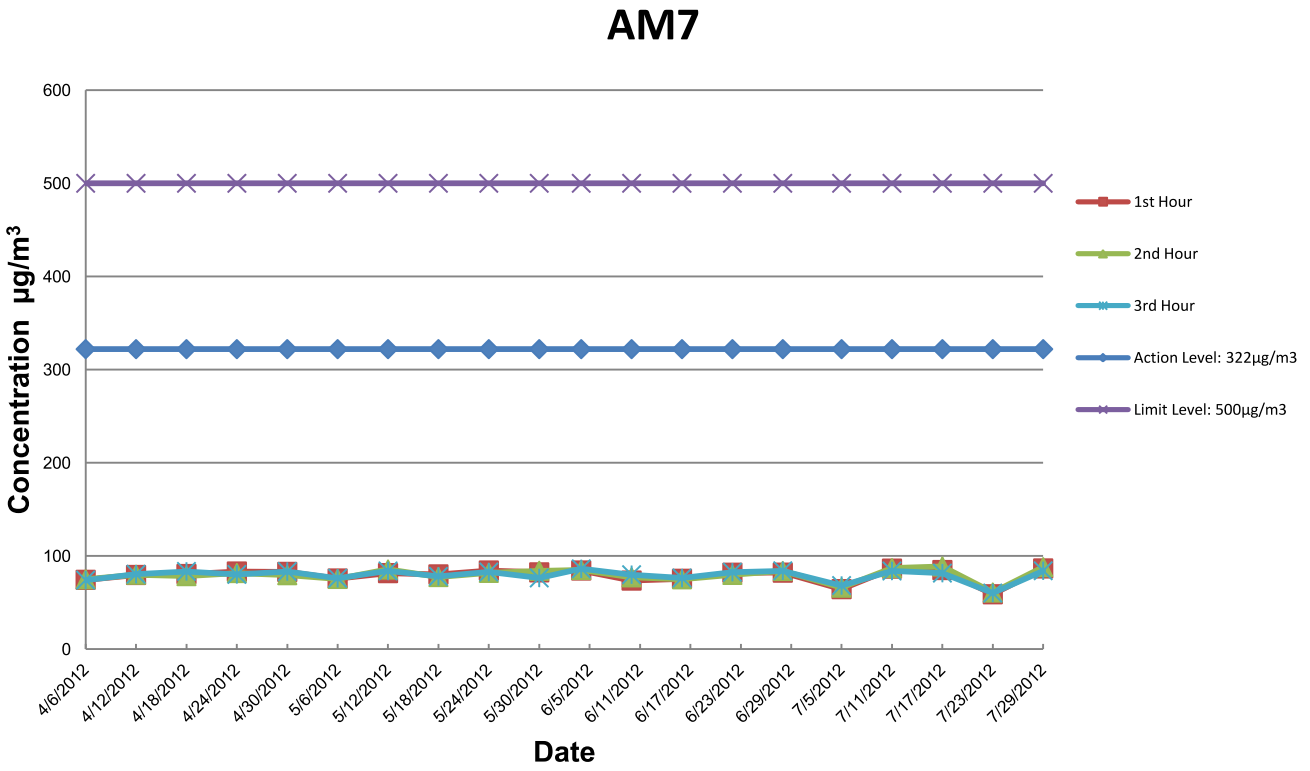
24-hr TSP Levels
AM6 (Stonecutters Island Sewage Treatment Works)



Appendix G Air Quality Monitoring Results

1-hour TSP Monitoring Results at Station AM7 (Rooftop of West Kowloon No.2 Sewage Pumping Station)

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Mean Temperature (°C)	Mean Wind Speed (km/h)	Sampler ID	Filter ID
5-Jul-12	10:25	11:25	Cloudy	**64**	322	500	Dust from Project site, traffic emission and dust from other construction sites	27.8	7.8	A005-15a	-
	11:25	12:25	Cloudy	**66**							
	12:25	13:25	Cloudy	**68**							
11-Jul-12	9:49	10:49	Sunny	**86**	322	500	Dust from Project site, traffic emission and dust from other construction sites	30.0	11.5	A005-09a	-
	10:49	11:49	Sunny	**87**							
	11:49	12:49	Sunny	**84**							
17-Jul-12	13:20	14:20	Sunny	**85**	322	500	Dust from Project site, traffic emission and dust from other construction sites	30.0	10.9	A005-08a	-
	14:20	15:20	Sunny	**89**							
	15:20	16:20	Sunny	**82**							
23-Jul-12	11:20	12:20	Cloudy	**59**	322	500	Dust from Project site, traffic emission and dust from other construction sites	26.4	14.9	A005-09a	-
	12:20	13:20	Cloudy	**61**							
	13:20	14:20	Cloudy	**60**							
29-Jul-12	10:30	11:30	Sunny	**87**	322	500	Dust from Project site, traffic emission and dust from other construction sites	28.9	4.5	A005-14a	-
	11:30	12:30	Sunny	**88**							
	12:30	13:30	Sunny	**84**							
			Min.	**59**							
			Max.	**89**							
			Average	**77**							

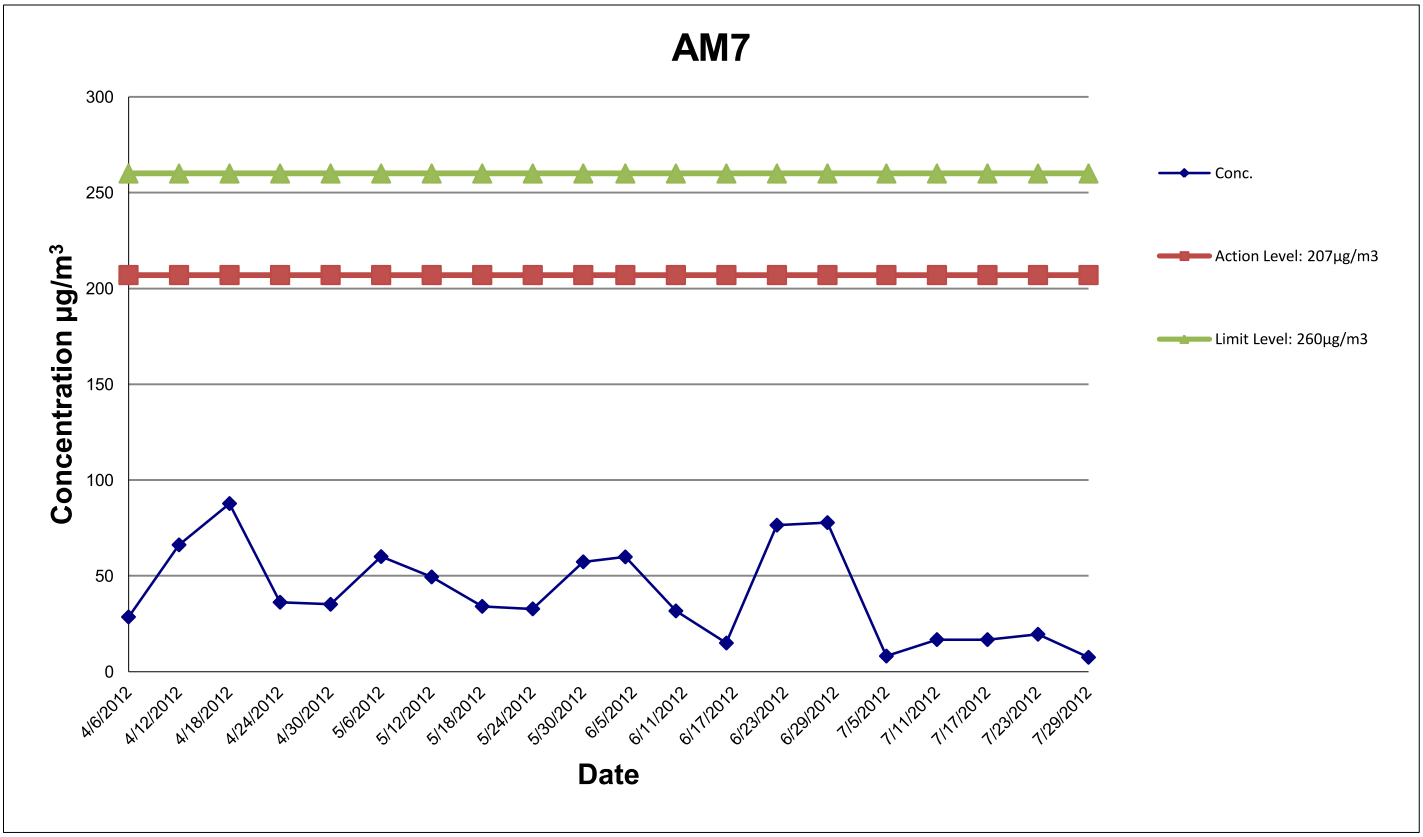


AECOM	HATS Stage 2A - Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW	SCALE	N.T.S.	DATE	Aug-12
		CHECK	ENFL	DRAWN	PWYN
	Graphical Presentation of 1-hour TSP Monitoring Results	JOB NO.	60143571	APPENDIX No. G	Rev. -

Appendix G Air Quality Monitoring Results

24-hour TSP Monitoring Results at Station AM7 (Rooftop of West Kowloon No.2 Sewage Pumping Station)

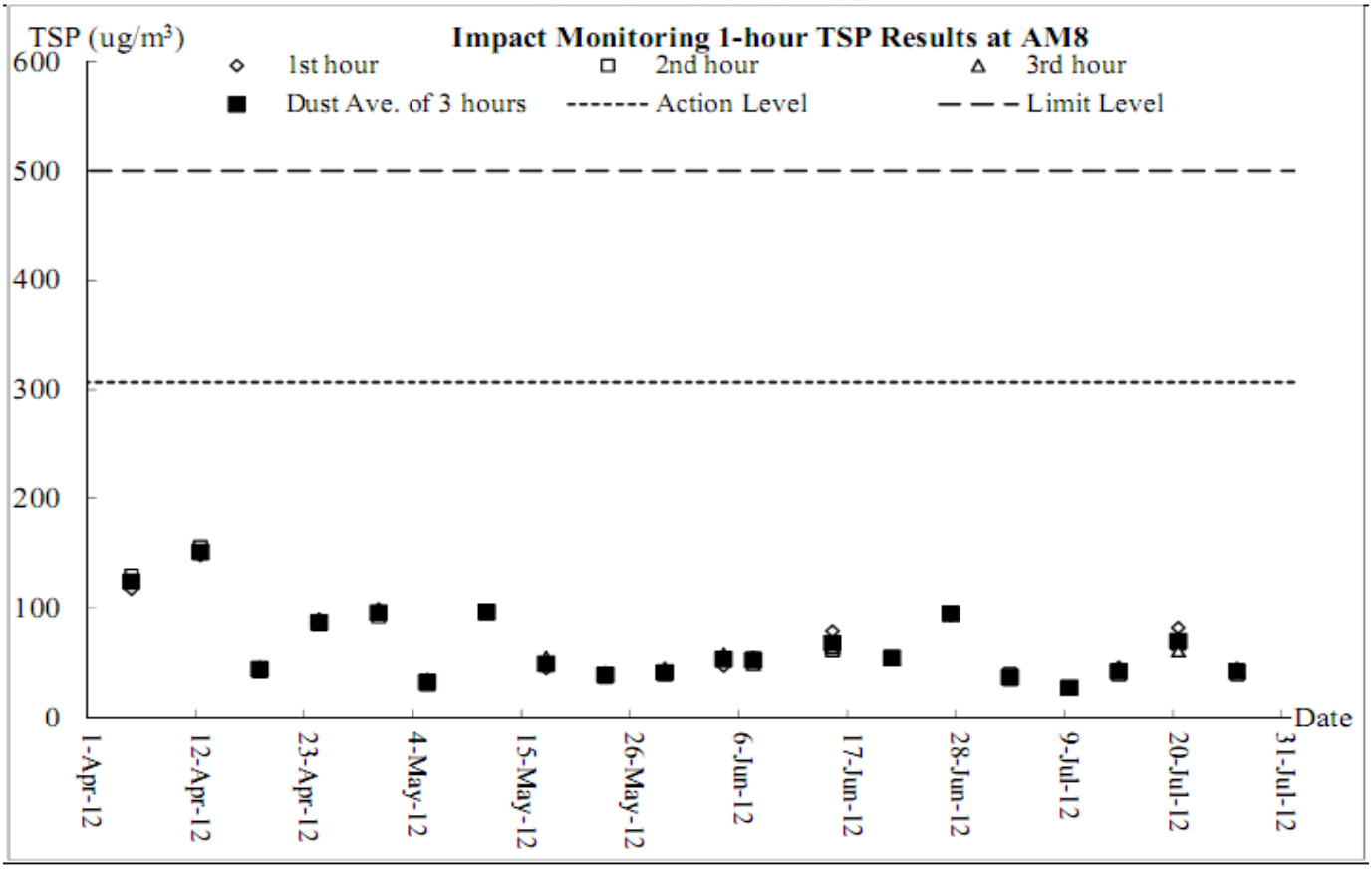
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
4-Jul-12	16:00	5-Jul-12	16:00	Rainy	2.7424	2.7581	10390.84	10414.84	24.00	1.3370	1.3370	1.3370	8	207	260	Dust from Project site, traffic emission and dust from other construction sites	A.001.12T	14824
10-Jul-12	16:00	11-Jul-12	16:00	Sunny	2.7972	2.8297	10414.84	10438.84	24.00	1.3470	1.3470	1.3470	17	207	260	Dust from Project site, traffic emission and dust from other construction sites	A.001.12T	15004
16-Jul-12	16:00	17-Jul-12	16:00	Sunny	2.7633	2.7954	10438.84	10462.84	24.00	1.3310	1.3310	1.3310	17	207	260	Dust from Project site, traffic emission and dust from other construction sites	A.001.12T	14825
22-Jul-12	16:00	23-Jul-12	16:00	Sunny	2.7320	2.7710	10462.84	10486.84	24.00	1.3870	1.3870	1.3870	20	207	260	Dust from Project site, traffic emission and dust from other construction sites	A.001.12T	15169
28-Jul-12	16:00	29-Jul-12	16:00	Sunny	2.8664	2.8809	10486.84	10510.84	24.00	1.3430	1.3430	1.3430	7	207	260	Dust from Project site, traffic emission and dust from other construction sites	A.001.12T	15284
												Min.	**7**					
												Max.	**20**					
												Average	**14**					



AECOM	HATS Stage 2A - Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW	SCALE	N.T.S.	DATE	Aug-12
		CHECK	ENFL	DRAWN	PWYN
	Graphical Presentation of 24-hour TSP Monitoring Results	JOB NO.	60143571	APPENDIX No. G	Rev. -

Summary of 1-hour TSP Monitoring Results – AM8 as Monitored by DE/2009/02

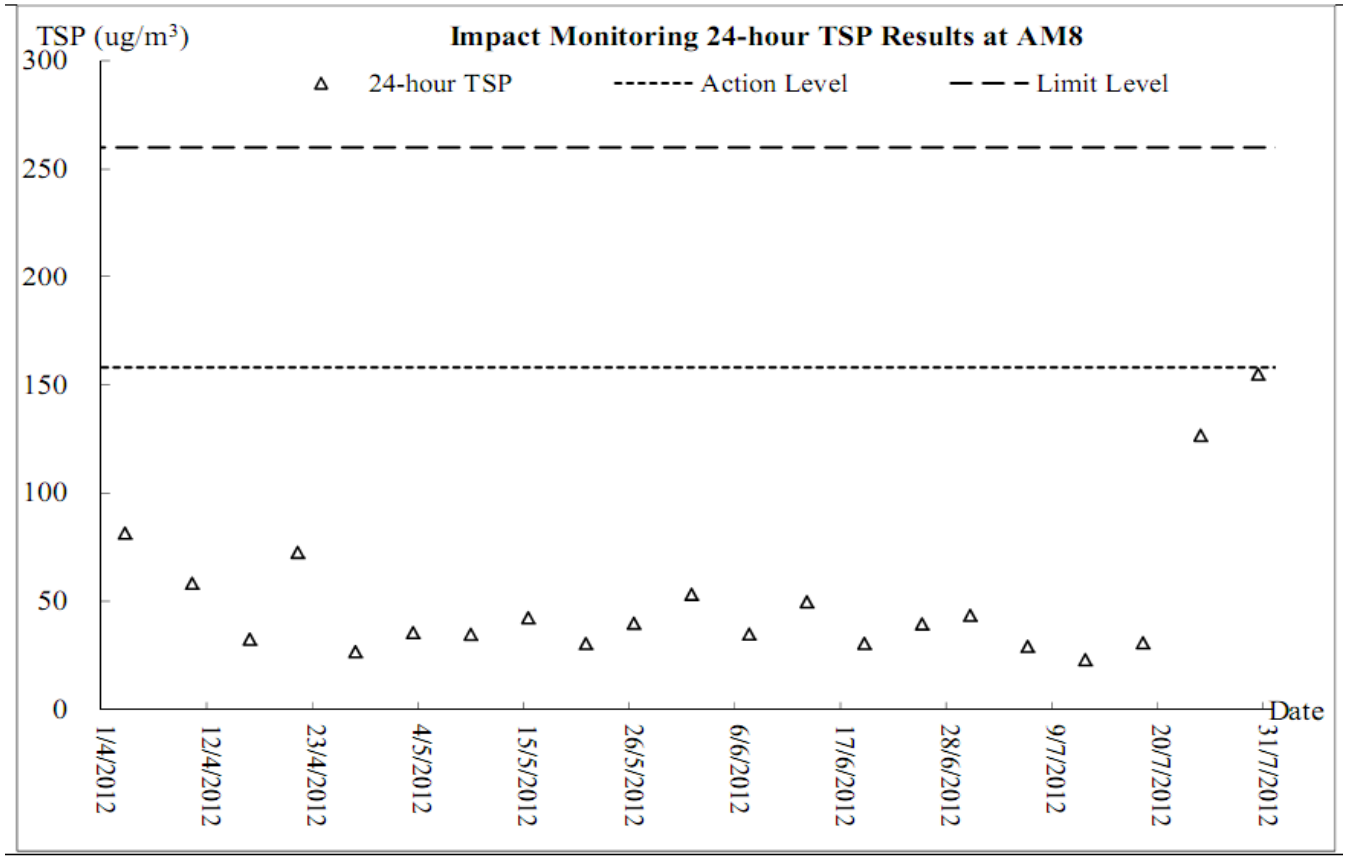
1-hour TSP (μg/m³)				
Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
3-Jul-12	15:30	28	26	28
9-Jul-12	14:45	46	39	42
14-Jul-12	10:00	82	67	61
20-Jul-12	14:45	45	39	42
26-Jul-12	14:30	20	25	24
Average (Range)		**41 (20 - 82)**		



AUES

Summary of 24-hour TSP Monitoring Results – AM8 as Monitored by DE/2009/02

DATE	SAMPLE NUMBER	ELAPSED TIME INITIAL	ELAPSED TIME FINAL	ELAPSED TIME (min)	MIN CHART READING	MAX CHART READING	AVG CHART READING	AVG TEMP (°C)	STANDARD AVG PRESS (hPa)	STANDARD FLOW RATE (m^3/min)	STANDARD AIR VOLUME (std m^3)	INITIAL FILTER WEIGHT (g)	FINAL FILTER WEIGHT (g)	WEIGHT DUST COLLECTED (g)	DUST 24-hour TSP IN AIR (ug/m^3)
6-Jul-12	24866	11439.43	11463.24	1428.60	33	35	34.0	28.5	1006.1	0.96	1364	2.7353	2.7751	0.0398	29
12-Jul-12	24868	11463.24	11486.59	1401.00	32	33	32.5	30	1006.9	0.91	1274	2.7166	2.746	0.0294	23
18-Jul-12	24876	11486.59	11510.42	1429.80	33	35	34.0	30.2	1006.6	0.95	1362	2.7423	2.7844	0.0421	31
24-Jul-12	24901	11510.42	11534.68	1455.60	35	38	36.5	26.9	996.5	1.03	1493	2.7038	2.8929	0.1891	127
30-Jul-12	24903	11524.82	11548.37	1413.00	35	38	36.5	29.4	1001.2	1.02	1447	2.7476	2.9717	0.2241	155



Appendix D - 1-hour TSP Monitoring Results

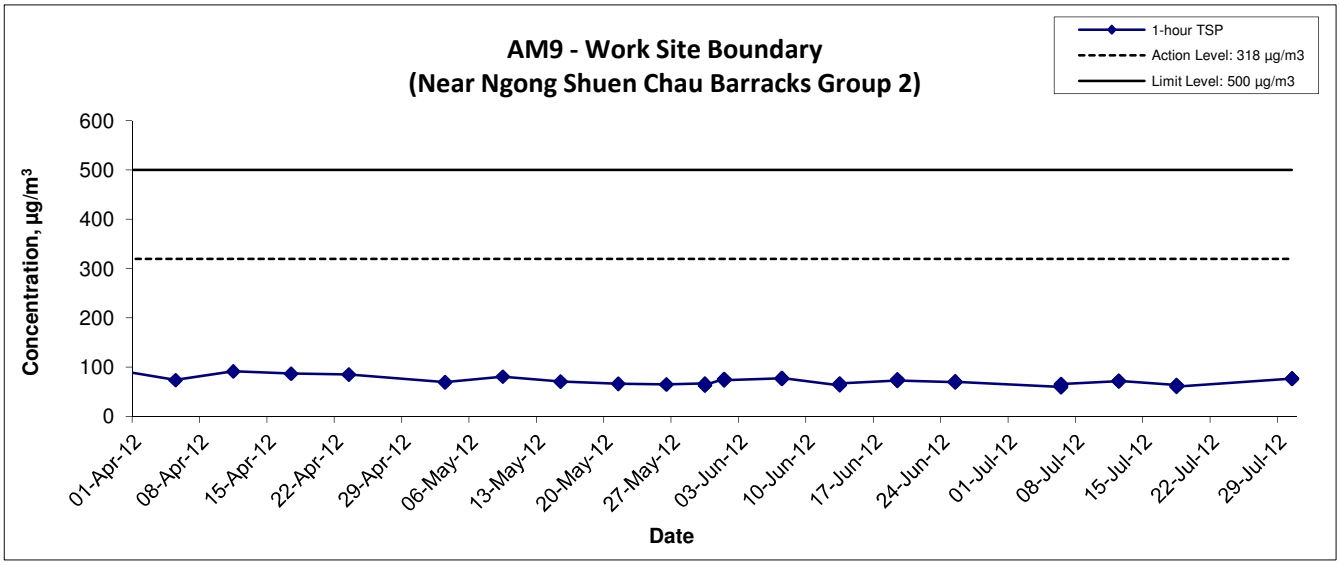
Location AM9 - Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
6-Jul-12	9:00	Cloudy	59.8
6-Jul-12	10:00	Cloudy	63.4
6-Jul-12	11:00	Cloudy	65.8
12-Jul-12	13:00	Sunny	71.5
12-Jul-12	14:00	Sunny	72.4
12-Jul-12	15:00	Sunny	72.5
18-Jul-12	14:00	Cloudy	64.1
18-Jul-12	15:00	Cloudy	63.4
18-Jul-12	16:00	Cloudy	60.7
30-Jul-12	13:00	Sunny	76.9
30-Jul-12	14:00	Sunny	77.4
30-Jul-12	15:00	Sunny	76.8
		Average	68.7
		Maximum	77.4
		Minimum	59.8

Appendix D - 24-hour TSP Monitoring Results

Location AM9 - Work Site Boundary (Near Ngong Shuen Chau Barracks Group 2)

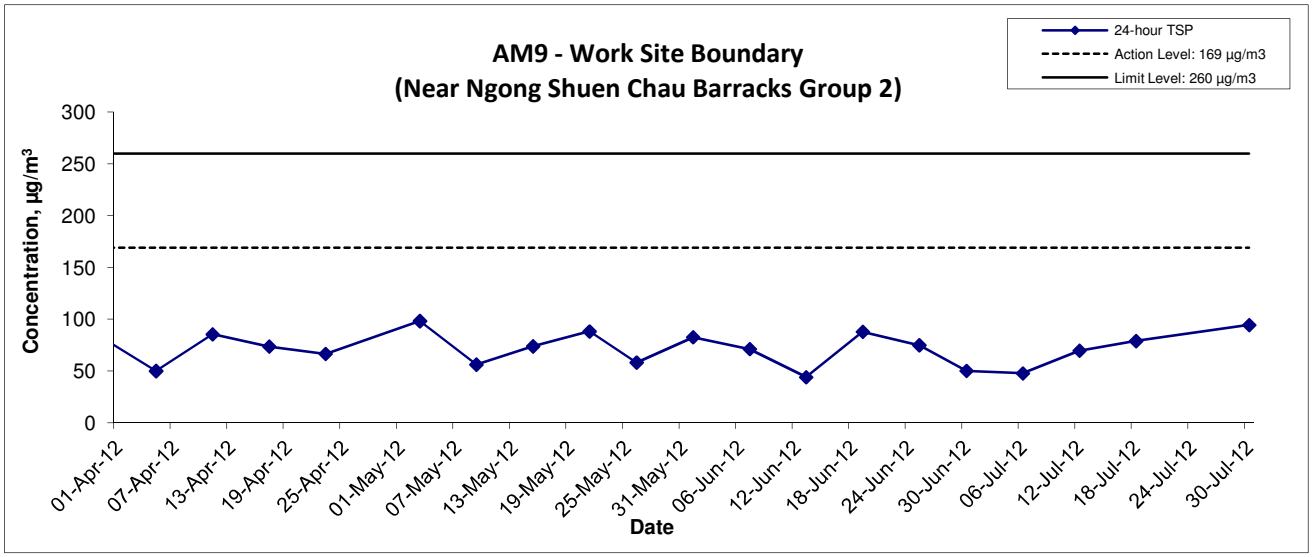
Start Date	Weather Condition	Air Temp. (K)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
			Initial	Final		Initial	Final		Initial	Final			
6-Jul-12	Cloudy	301.0	3.5713	3.6554	0.0841	1639.7	1663.7	24.0	1.23	1.21	1.22	1758.8	47.8
12-Jul-12	Sunny	303.5	3.8467	3.9678	0.1211	1663.7	1687.7	24.0	1.21	1.20	1.21	1739.3	69.6
18-Jul-12	Cloudy	301.0	3.4751	3.6144	0.1393	1687.7	1711.7	24.0	1.22	1.23	1.22	1763.5	79.0
30-Jul-12	Sunny	301.5	3.2699	3.4384	0.1685	1711.7	1735.7	24.0	1.24	1.23	1.24	1784.2	94.4
												Min	47.8
												Max	94.4
												Average	72.7

1-hr TSP Concentration Levels



Title: Contract No. DC/2009/18 HATS 2A – Upgrading Works at SCISTW– Effluent Tunnel and Disinfection Facilities Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Jul 12	Project No.: MA11043 Appendix: D	CINOTECH

24-hr TSP Concentration Levels



Title	Contract No. DC/2009/18 HATS 2A – Upgrading Works at SCISTW– Effluent Tunnel and Disinfection Facilities Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S Date Jul 12	Project No. MA11043 Appendix D	CINOTECH

APPENDIX E
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Annex G6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Jul-12	14:45	15:15	Sunny	61.8	63.6	59.1	Drill rig	Traffic Noise	-	32	0.4	RION- NL31 (S/N 00320533)	RION - NC73 (S/N 10786708)
12-Jul-12	14:10	14:40	Sunny	61.7	63.7	59.2	Drill rig	Traffic noise & Aircraft noise	-	32	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
18-Jul-12	13:20	13:50	Sunny	62.8	64.5	59.4	Drill rig	Traffic noise	-	31	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
24-Jul-12	13:35	14:05	Cloudy	61.8	63.8	59.5	Drill rig	Traffic noise	-	27	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
30-Jul-12	14:30	15:00	Sunny	60.1	61.3	58.8	Drill rig	Traffic noise	-	32	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
			Min.	**60.1**									
			Max.	**62.8**									

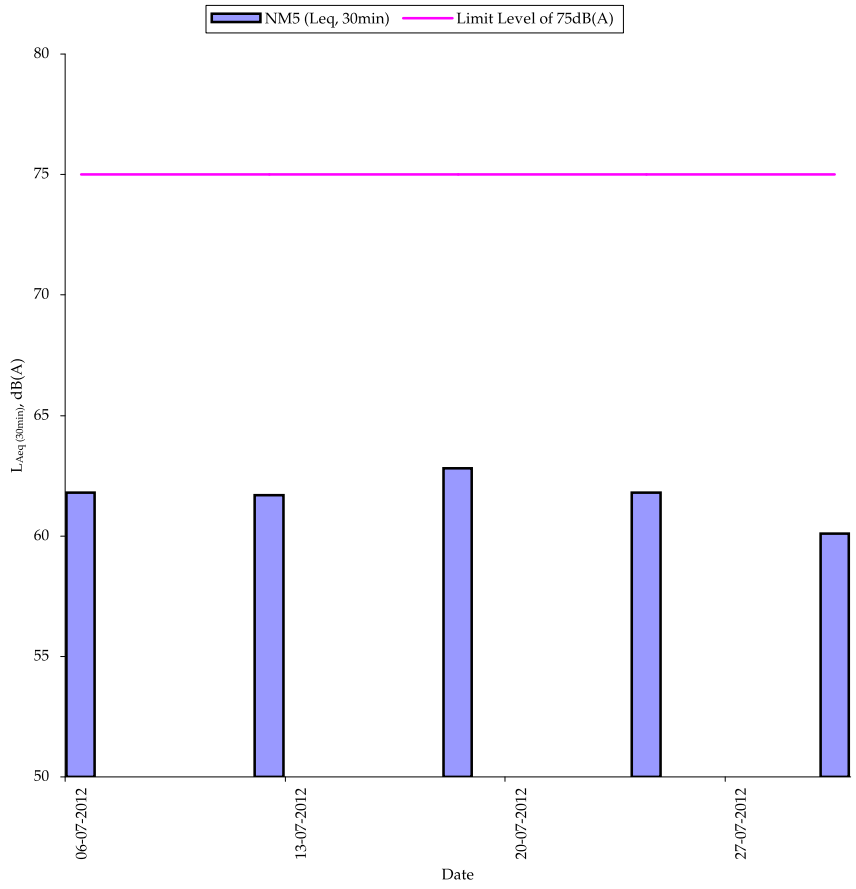
Annex G6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM5

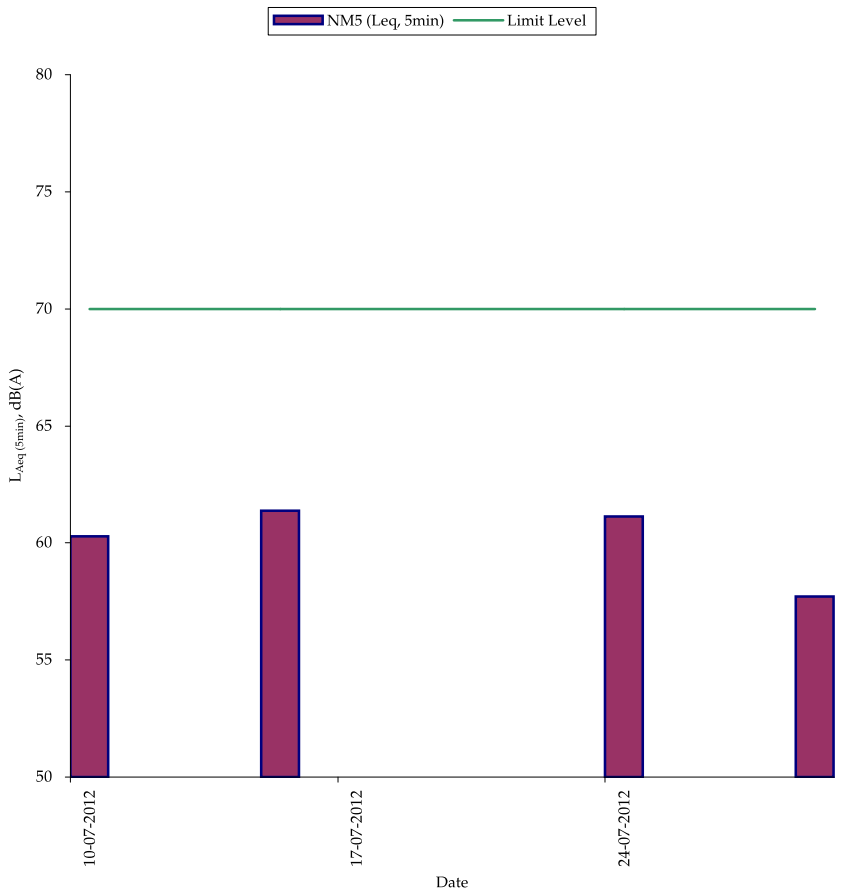
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s)	Other Noise Source(s)	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
10-Jul-12	20:02	20:07	Fine	60.0	61.4	58.5	Drill rig	Traffic noise	-	31	0.7	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	20:07	20:12	Fine	60.2	61.8	58.3			-				
	20:12	20:17	Fine	60.6	62.1	58.6			-				
	20:02	20:17	Fine	60.3	61.8	58.5			-				
15-Jul-12	16:10	16:15	Sunny	60.6	62.3	58.8	Drill rig	Traffic noise & aircraft noise	-	31	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	16:15	16:20	Sunny	61.4	63.1	59.1			-				
	16:20	16:25	Sunny	62.0	64.0	59.4			-				
	16:10	16:25	Sunny	61.4	63.2	59.1			-				
24-Jul-12	19:02	19:07	Cloudy	60.6	61.9	59.1	Drill rig	Traffic noise	-	27	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:07	19:12	Cloudy	60.9	62.5	59.4			-				
	19:12	19:17	Cloudy	61.8	63.4	59.6			-				
	19:02	19:17	Cloudy	61.1	62.6	59.4			-				
29-Jul-12	11:10	11:15	Sunny	57.7	59.0	56.1	-	Traffic noise & aircraft noise	-	32	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	11:15	11:20	Sunny	56.9	57.8	56.0			-				
	11:20	11:25	Sunny	58.4	60.4	56.3			-				
	11:10	11:25	Sunny	57.7	59.2	56.1			-				
			Min.	**56.9**									
			Max.	**62.0**									

Normal Weekdays Noise Monitoring Results at NM5 ($L_{eq, 30min}$)



Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period

Restricted Hours Noise Monitoring Results at NM5 ($L_{eq, 5min}$)



Remark:
- 70dB(A) was adopted as the Limit Level during restricted hours in the reporting period

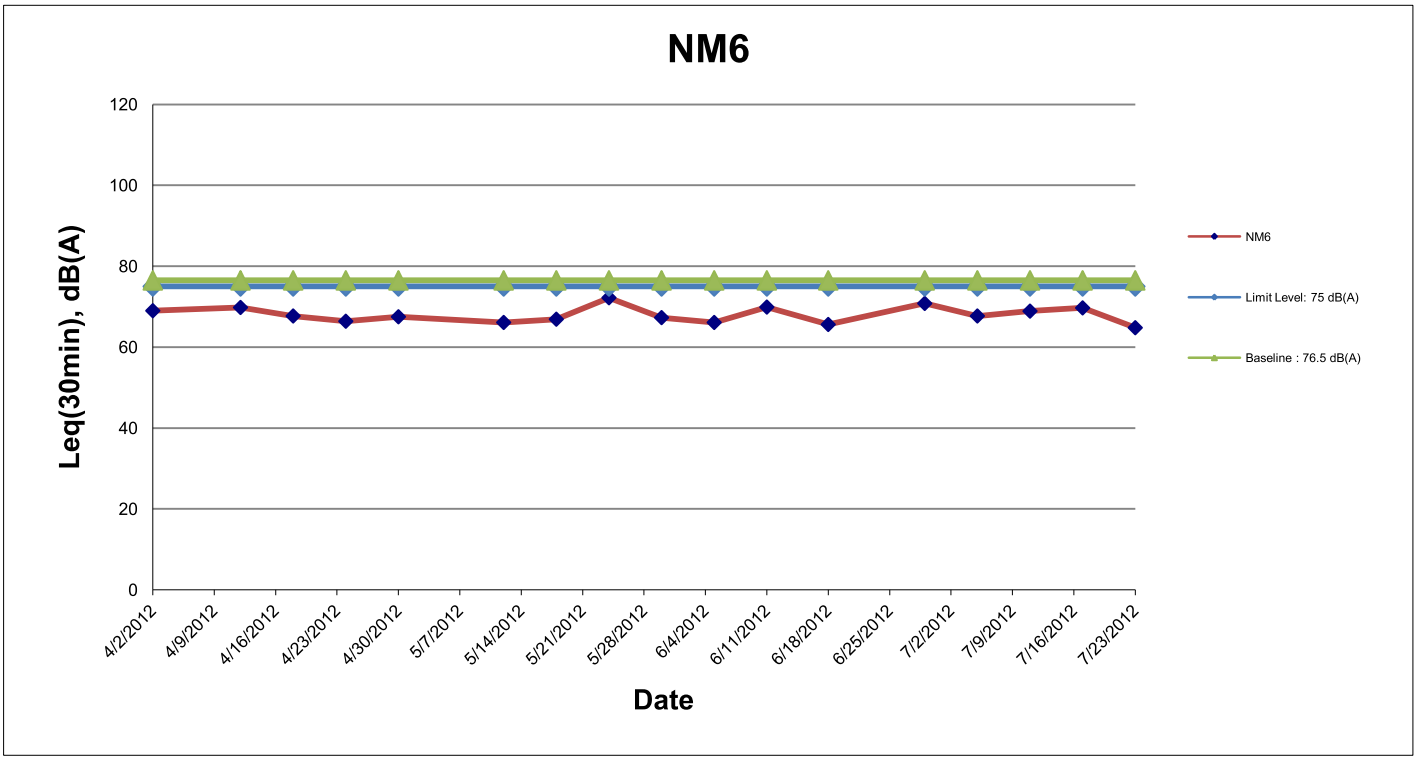
Appendix H Noise Monitoring Results

Location : NM6 Customs' Marine Base (Block H of Government Dockyard) Rooftop

Daytime (07:00-19:00 hrs) Noise Monitoring Results on Normal Weekdays

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min[+]			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Mean Temp. (°C)	Mean Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
5-Jul-12	10:45	11:15	Cloudy	67.7	69.2	66.3	excavation in process; crane in operation	other construction site nearby; road traffic noise	-	27.8	<5 m/s	Rion NL-31	Rion NC-73
11-Jul-12	10:15	10:45	Sunny	68.9	70.8	66.2	excavation in process; crane in operation	other construction site nearby; road traffic noise	-	30.0	<5 m/s	Rion NL-31	Rion NC-73
17-Jul-12	15:15	15:45	Sunny	69.7	71.0	67.2	excavation in process; crane in operation	other construction site nearby; road traffic noise	-	30.0	<5 m/s	Rion NL-31	Rion NC-73
23-Jul-12	10:28	10:58	Rainy	64.8	66.8	62.2	excavation in process; crane in operation	other construction site nearby; road traffic noise	-	26.4	<5 m/s	Rion NL-31	Rion NC-73
			Min.	**64.8**									
			Max.	**69.7**									

[+] - Façade measurement



AECOM	HATS Stage 2A - Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW	SCALE	N.T.S.	DATE	Aug-12
		CHECK	ENFL	DRAWN	PWYN
	Graphical Presentation of Daytime Noise Monitoring Results on Normal Weekdays	JOB NO.	60143571	APPENDIX No. H	Rev. -

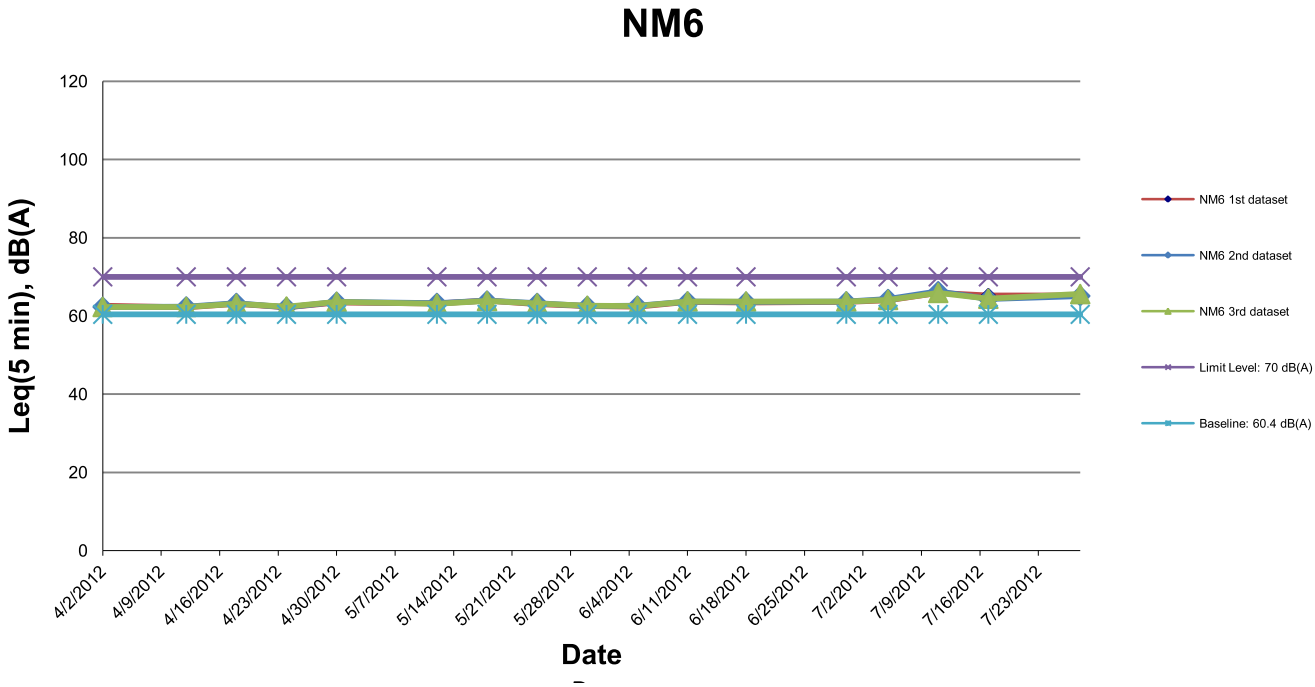
Appendix H Noise Monitoring Results

Location : NM6 Customs' Marine Base (Block H of Government Dockyard) Rooftop

Evening time (19:00-23:00 hrs) Noise Monitoring Results on Normal Weekdays

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min+			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Mean Temp. (°C)	Mean Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
5-Jul-12	19:01	19:06	Fine	64.0	64.5	63.0	excavation in process	traffic noise from nearby pier; other construction site nearby	-	27.8	<5 m/s	B&K 2238	B&K 4231
	19:06	19:11		64.3	64.5	63.5							
	19:11	19:16		64.1	65.0	63.5							
11-Jul-12	19:03	19:08	Fine	65.9	66.4	65.3	excavation in process	traffic noise from nearby pier; other construction site nearby	-	30.0	<5 m/s	Rion NL-31	Rion NC-73
	19:08	19:13		66.3	66.9	65.7							
	19:13	19:18		65.9	66.4	65.3							
17-Jul-12	19:01	19:06	Fine	65.2	65.6	64.7	excavation in process	traffic noise from nearby pier; other construction site nearby	-	30.0	<5 m/s	Rion NL-31	Rion NC-73
	19:06	19:11		64.3	65.5	62.9							
	19:11	19:16		64.4	65.1	63.6							
28-Jul-12	19:00	19:05	Sunny	65.2	66.2	64.8	excavation in process	traffic noise from nearby pier; other construction site nearby	-	27.7	<5 m/s	Rion NL-31	Rion NC-73
	19:05	19:10		65.1	65.4	64.9							
	19:10	19:15		65.6	66.0	65.0							
			Min.	**64.0**									
			Max.	**66.3**									

+ - Façade measurement



AECOM	HATS Stage 2A - Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at SCISTW	SCALE	N.T.S.	DATE	Aug-12
		CHECK	ENFL	DRAWN	PWYN
	Graphical Presentation of Evening Noise Monitoring Results on Normal Weekdays	JOB NO.	60143571	APPENDIX No. H	Rev. -

Appendix E - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

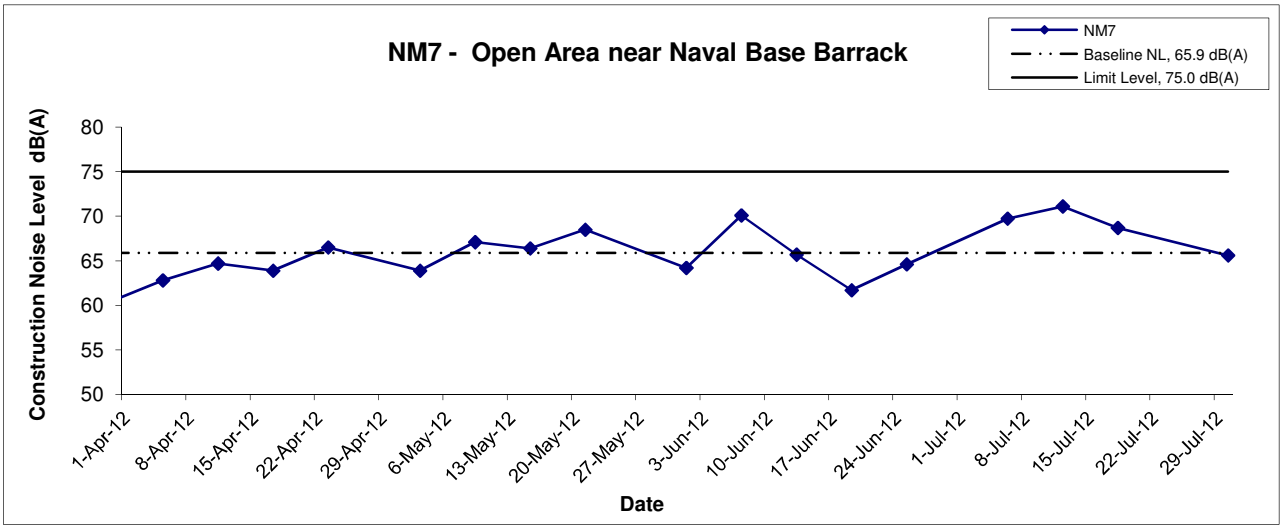
Location NM7 - Open Area near Naval Base Barrack					
Date	Time	Weather	Unit: dB (A) (30-min) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
6-Jul-12	10:00	Cloudy	67.7	69.2	66.8
12-Jul-12	15:00	Sunny	70.1	71.8	68.2
18-Jul-12	16:00	Cloudy	68.7	69.5	65.7
30-Jul-12	09:30	Sunny	65.6	67.2	62.1

Restricted Hours
(1900-0700 hrs on Normal Weekdays, Public Holidays and Sundays)

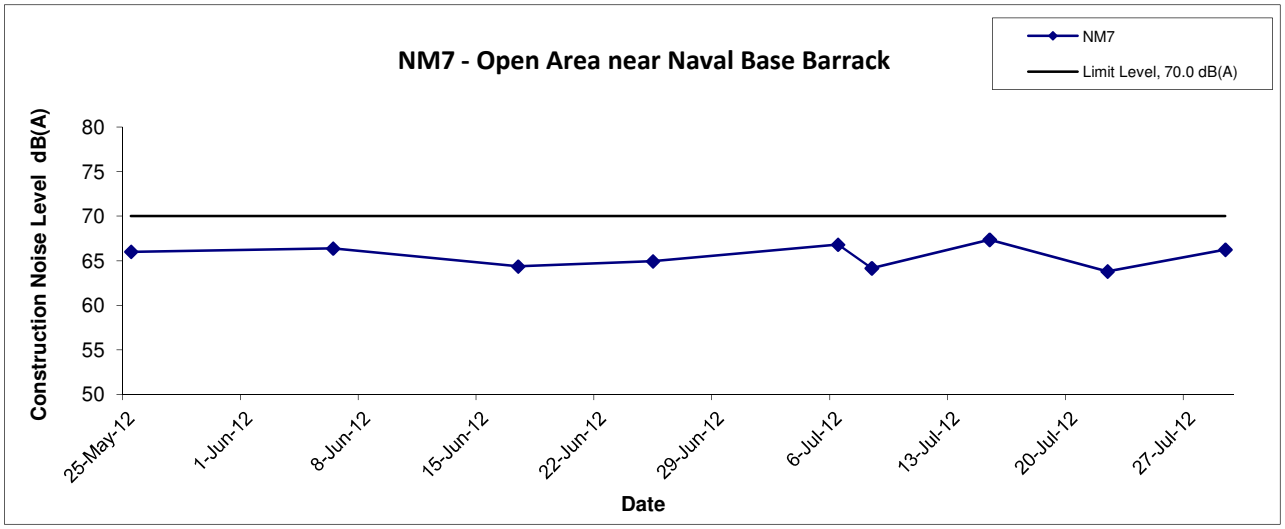
Location NM7 - Customs' Marine Base (Block H of Government Dockyard) Rooftop						
Date	Time	Weather	dB (A) (5-min)			
			L_{eq}	L_{10}	L_{90}	Average L_{eq}
6-Jul-12	20:45	Fine	65.4	66.2	62.9	66.8
	20:50		67.2	66.7	64.7	
	20:55		67.4	66.9	65.8	
8-Jul-12	20:15	Fine	64.7	66.4	63.1	64.2
	20:20		63.1	65.7	63.8	
	20:25		64.5	65.0	65.9	
15-Jul-12	20:00	Fine	67.8	68.4	65.4	67.4
	20:05		67.4	68.1	65.3	
	20:10		66.8	67.5	64.8	
22-Jul-12	21:00	Fine	63.1	65.1	61.4	63.8
	21:05		63.8	65.2	62.7	
	21:10		64.4	67.1	62.8	
29-Jul-12	21:30	Fine	66.8	67.8	63.8	66.2
	21:35		66.4	67.8	64.2	
	21:40		65.4	66.5	63.1	

Noise Levels

(0700-1900 hrs on Normal Weekdays)



Restricted Hours -
(1900-0700 hrs on Normal Weekdays, Public Holidays and Sundays)



Title	Contract No. DC/2009/18 HATS 2A – Upgrading Works at SCISTW– Effluent Tunnel and Disinfection Facilities Graphical Presentation of Noise Monitoring Result (NM7)	Scale N.T.S Date Jul 12	Project No. MA11043 Appendix E	CINOTECH

APPENDIX F
ENVIRONMENTAL PERMITS AND LICENSES

APPENIDX F –Environmental Permits and Licenses

Table F.1 Summary of Environmental Licensing and Permit Status for Contract DC/2007/23

Permit No.	Valid Period		Details	Status
	From	To		
Wastewater Discharge License				
WT00005069-2009	11/8/2010	31/10/2014	Location: Stonecutters Island Production Shaft and Riser Shaft	Valid
Chemical Waste Producer Registration				
5213-269-G2449-07	--	--	Location: Stonecutters Island Production Shaft and Riser Shaft	Valid
Construction Noise Permit				
GW-RW0523-12	4/7/2012	27/12/2012	Location: Stonecutters Island Production Shaft and Riser Shaft	Valid

Table F.2 Summary of Environmental Licensing and Permit Status for Contract DC/2009/05

Permit No.	Valid Period		Details	Status
	From	To		
Wastewater Discharge License				
WT00005755-2010	21/4/2011	31/1/2015	Discharge of Construction Runoff from Contract DC/2009/05	Valid
Registered Chemical Waste Producer				
WPN5213-269-C3572-01	23/10/2009	N/A	Whole Construction Site for Contract DC/2009/05	Valid
Air Pollution Control Ordinance				
NA notification	09/11/09	--	Whole Construction Site for Contract DC/2009/05	Valid
Construction Noise Permit				
GW-RW0903-12	08/02/11	05/08/12	Construction Site at Portion 2,3, 4 and 6 for Contract DC/2009/05	Valid
GW-RW0163-12	09/03/12	08/09/12	Construction Site at Portion K for Contract DC/2009/05	Valid
GW-RW0469-12	22/06/12	21/12/12	- Construction Site at Portion 2, 3, 4 and 5 for Contract DC/2009/05	Valid
Billing Account for Disposal of Construction Waste				
7009440	N/A	N/A	Whole Construction Site for Contract DC/2009/05	Valid

Table F.3 Summary of Environmental Licensing and Permit Status for Contract DE/2009/02

Permit No.	Valid Period		Details	Status
	From	To		
Wastewater Discharge License				
WT00006432-2010	--	30/4/2015	--	Valid
Registered Chemical Waste Producer				
5213-269-A2605-01	--	--	--	Valid
Air Pollution Control Ordinance				
NA Notification	N/A	N/A	Notified EPD on 9 March 2010	N/A
Billing Account for Disposal of Construction Waste				
A/C No:7009673	N/A	N/A	Approved by EPD on 9 November 2009	N/A

Table F.4 Summary of Environmental Licensing and Permit Status for Contract DC/2009/17

Permit No.	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00007763-2010	22/10/2010	31/10/2015	Location: Portion 5	Valid
WT00007921-2010	23/11/2010	30/11/2015	Location: Portion C	Valid
WT00007982-2010	3/12/2010	31/12/2015	Location: Portion 3&4	Valid
Registered Chemical Waste Producer				
5213-239-C3388-02	19/10/2010	N/A	Major chemical waste types are: Spent battery, waste mechanical oil and spent lubricant.	Valid
Billing Account for Disposal of Construction Waste				
A/C No.7011408	16/09/2010	N/A	N/A	Valid
Notification of Works Under APCO				
Ref:321235	7/09/2010	N/A	--	Valid
Construction Noise Permit				
GW-RW0242-12	21/4/2012	20/10/2012	Location: Portion 4	Valid

Table F.5 Summary of Environmental Licensing and Permit Status for Contract DC/2009/10

Reference Number	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00009245-2011	1/6/2011	30/6/2016	The application was approved on 1-6-2011.	Valid
WT00012151-2012	28/2/2012	28/2/2017	The application was approved on 28-2-2012.	Valid
Registered Chemical Waste Producer				
WPN5213-269-S3584-01	N/A	N/A	The application was approved on 4-5-2011.	Valid
Billing Account for Disposal of Construction Waste				
CSW01444	16/3/2011	N/A	The application was approved on 16-3-2011.	Valid
Notification of Works Under APCO				
327427	N/A	N/A	Notice form received by EPD on 2-3-2011.	N/A
Construction Noise Permit for Percussive Piling(driving steel pile)				
PP-RW0018-11	2/11/2011	1/8/2012	The application was approved on 1-11-2011.	Valid
PP-RW0004-12	10/4/2012	9/1/2013	The application was approved on 21-3-2012.	Valid
GW-RW0204-12	4/4/2012	3/10/2012	Renewal of CNP GW-RW0651-11.	Valid
GW-RW0080-12	3/2/2012	31/7/2012	The application was approved on 2-2-2012	Valid
GW-RW0285-12	23/5/2012	13/11/2012	The application was approved on 22-5-2012	Valid
Construction Noise Permit for use of mechanical equipment outside permitted working hours				
GW-RW0504-12	30/6/2012	24/12/2012	Location: Portion 4	Valid
GW-RW0503-12	28/6/2012	24/12/2012	Location: Portion B	Valid
Application of Admission Ticket for Disposal of Special Waste (Grit) at Landfills				
No.9756	1/2/2012	31/7/2012	Valid from 1-2-2012 to 31-7-2012	Valid

Table F.6 Summary of Environmental Licensing and Permit Status for Contract DC/2009/18

Permit/ A/C Number	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00010571-2011	13/10/2011	31/10/2016	Location: Portion 7A and 15A	Valid
Registered Chemical Waste Producer				
5213-269-C3689-01	8/9/2011	N/A	Site Area under the Project	Valid
Billing Account for Disposal of Construction Waste				
7013233	18/7/2011	N/A	N/A	Valid
Notification of Works Under APCO				
Ref: 332427	15/7/2011	N/A	N/A	N/A
Construction Noise Permit				
GW-RW0142-12	1/3/2012	31/8/2012	Location: Construction site at Stonecutters Island Sewage treatment works.	Valid
GW-RW0344-12	4/5/2012	3/11/2012	Location: Construction site at Stonecutters Island Sewage treatment works.	Valid
GW-RW0441-12	6/6/2012	30/11/2012	Location: Construction site at Stonecutters Island Sewage treatment works (Portion 7)	Valid

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: July 2012

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

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

c) Exceedance Report for Construction Noise (NIL)

No Exceedance of Action/Limit Level for normal working hours and restricted hours was recorded.

APPENDIX H
SITE AUDIT SUMMARY

7.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 5, 12, 19 and 26 July 2012. The representative of the IEC joined the site inspection on 26 July 2012. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarised as follows:

Riser Shaft

- Nil.

Production Shaft

- On 5 July, oil spillage was still observed inside the chemical store. Also, oily water was also observed on the ground in front of the chemical storage. The Contractor was reminded to remove the oil spillage and oily water as chemical waste properly and immediately.
- On 19 July, stagnant water was observed in the drip tray near the riser shaft. The Contractor was reminded to remove the stagnant water properly to prevent breeding of mosquito.
- On 26 July, a chemical drum without lid, drip tray and impervious sheet covered was stored outside the noise enclosure of production shaft. The Contractor was reminded to put a lid on the top to prevent accumulating of stormwater and to store it on the drip tray and covered by impervious sheet or in a designated area for chemical storage.
- On 26 July, a plastic chemical drum without label, drip tray and impervious sheet was observed stored behind the noise enclosure of production shaft. The Contractor was reminded to label the drum properly and provide drip tray and impervious sheet as cover during raining days for the chemical drum. In addition, the chemical drums should be stored at a designated chemical storage.

7.7 ENVIRONMENTAL NON-CONFORMANCE

7.7.1 *Summary of Monitoring Exceedance*

No exceedance of the Action and Limit Levels of 1-hour average TSP and 24-hour average TSP was recorded at monitoring station during the reporting period.

No exceedance of the Noise Limit Levels was recorded at monitoring station during both normal working hours and restricted hours in the reporting period.

7.7.2 *Summary of Environmental Non-Compliance*

No non-compliance event was recorded during the reporting period.

6 SITE INSPECTION

According to the Project Environmental Monitoring and Audit Manual, the environmental site inspection should be formulated by the ET Leader. Regular environmental site inspections had been carried out by the ET to confirm the environmental performance. **Four** site inspections were carried out on **6, 13, 17 and 26 July 2012** with the Representatives of the Engineer and the Contractor to evaluate the site environmental performance in this Reporting Month. No non-compliance was noted.

Observations for the site inspections and monthly audit within this Reporting Month are summarized in ***Table 6-1*** and inspection checklist is attached in ***Annex M***.

Table 6-1 Observations for weekly site inspection in the Reporting Month

Date	Findings / Deficiencies	Follow-Up Status
6 July 2012	• No environmental issue was observed during the site inspection.	N.A.
13 July 2012	• C&D and general refuse was observed at the site area, the contractor was reminded to clear more frequency.	Rectified on 17 July 2012
17 July 2012	• Rubbish bin at DOU 1 was full, the contractor was reminded to clean to maintain the environmental hygiene on site.	Rectified on 26 July 2012
26 July 2012	• No environmental issue was observed during the site inspection.	N.A.

5 ENVIRONMENTAL SITE INSPECTION AND AUDIT

5.1 Site Inspection

5.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. In the reporting month, 5 site inspections were carried out on 3, 10, 17, 26 and 31 July 2012. Particular observations are described below.

5.1.2 The Contractor has rectified all observations as identified during environmental site inspection in the reporting month within agreed time frame.

5.1.3 Quality Impact

- Nil.

5.1.4 Construction Noise Impact

- No invalid noise emission label was observed in the air compressor at Inlet Chamber Works Area. The Contractor was reminded to provide valid noise emission labels for all air compressors before operation.

5.1.5 Water Quality Impact

- Mitigation measure for mud storage area at Inlet Chamber Works Area was observed insufficient. The Contractor was reminded to enhance the height of bunds/sand bags at the mud storage area. Mud accumulated outside the bunds at Inlet Chamber Works Area should be removed as soon as possible. Proper mitigation measure should be also provided for all storage area to prevent any muddy water runoff from the area to the public drain due to rainfall. Moreover, the Contractor was recommended to review the effectiveness of bunds/sand bags/channels at the mud storage area, site boundaries, soil stockpile area and works areas regularly.

- Insufficient Mitigation measure for mud storage area at Inlet Chamber Works Area was observed. The Contractor was reminded to provide bunds/sand bags at the mud storage area to intercept the muddy water running off from the area to the public drain. Muddy water at Inlet Chamber Works Area should be removed as soon as possible.

- Mitigation measures provided in the works area were still insufficient. Proper bunds/sand bags/channels at the site boundaries, soil stockpile areas and works area, cover the gullies or other means should be provided to intercept storm runoff and construction runoff from construction works flowing outside the works area and discharging to public drain. The Contractor was also recommended to maintain the drainage system properly.

- Broken sandbags were observed near the gullies in Inlet Chamber Works Area and Launching Shaft Works Area respectively. The Contractor was reminded to replace the broken sandbags as soon as possible to prevent any silty water surface run off to the gullies.

5.1.6 Chemical and Waste Management

- C&D wastes were still accumulated in Dilution Water Pumping Station Work Area. The Contractor was reminded to remove the C&D wastes regularly and maintain the site cleanness and tidiness.

- Debris was still accumulated inside and near the tree protection zone at Launching Shaft Works Area. The Contractor was reminded to remove the C&D material as soon as possible and maintain the tree protection zone properly.

- Oil drum was observed placed on ground without drip tray. The Contractor was reminded to provide drip tray for all oil drums on site.

- Oily water was still accumulated inside drip trays placed at Inlet Chamber Works Area. The Contractor was reminded to clear the oil water and handle it as chemical waste. The Contractor was also reminded to remove the oil water inside the drip trays regularly to prevent any overflow occurred. The Contractor was recommended to provide skirt curtains for drip trays to prevent rainy water accumulated inside the drip tray during rainfall.

- The Contractor was reminded to sort the construction wastes properly.

5.1.7 Landscape and Visual Impact

- Nil.

5.1.8 Other

- Nil.

5.2 Advice on the Solid and Liquid Waste Management Status

5.2.1 The Contractor is registered as a chemical waste producer for this Project. C & D material and waste sorting was carried out on site. Receptacles were available for general refuse and C&D wastes collection.

5.2.2 As advised by the Contractor, a total of 662.29 tonnes of inert C&D materials were generated on site in the reporting month. 386.7 tonnes of soil and slurry were generated on site and disposed of at Public Fill (Tuen Mun Area 38 Fill Bank) by dump trucks. 155.06 tonnes of mixed rock and soil were generated on site and disposed of at Public Fill (Tuen Mun Area 38 Fill Bank) by dump trucks. No building debris were generated on site and disposed of at Public Fill (Tuen Mun Area 38 Fill Bank) by dump trucks. 102.97 tonnes broken concrete and rock were generated on site and disposed of at Public Fill (Tuen Mun Area 38 Fill Bank) by dump trucks. 17.56 tonnes were used bentonite slurry and were disposed of at Public Fill (Tseung Kwan O Area 137 Fill Bank). No mixed rock and soil were reused in other Project (Contract HY/2009/15) via barge.

No excavated marine sediment were generated from the Project site and disposed of at South Cheung Chau Spoil Disposal Area (MP13) via barge in the reporting month.

No metals was generated and collected by registered recycling collector. No paper cardboard packing and plastic were generated on site and collected by registered recycling collector. No chemical waste was generated and collected by licensed chemical waste collector. 91.11 tonnes of other types of wastes (e.g. general refuse) were generated on site and disposed of at North East New Territories (NENT) Landfill.

5.2.3 The Contractor is advised to properly maintain on site C&D material and waste sorting, collection and recording system and maximize reuse / recycle of C&D material and waste. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

4.2 Environmental site audits were conducted on 5, 12, 20 and 26 July 2012 for the Project. No non-compliance was observed during the site audits.

4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.

4.4 The summaries of site audits are attached in **Appendix C**.

Implementation Status of Environmental Mitigation Measures

4.5 Details of the implementation of mitigation measures are provided in the **Appendix F.**

4.6 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.1.**

Table 4.1 Observations of Site Audit

Parameters	Date/Ref. Number	Observations	Follow Up Action
Water Quality	**12/7/2012 R-01**	To properly handle the oil and clear the oil stain in Portion 5.	Oil container was removed and oil stain was cleared by the Contractor.
Air Quality	**5/7/2012 R-01**	To properly collect the wood debris from the wood cutting machine. (Portion 4).	Bag was provided and receiving the wood debris from the wood cutting machine.
	20/7/2012 R-01	To properly cover the cement bags (>20s) in Portion 4.	The cements bags were removed by the Contractor.
	26/7/2012 R-01	To clear the mud/sand at the site exit of Portion 4.	
Waste/ Chemical Management	N/A	There was no observation in the reporting period.	N/A
Landscape and Visual	N/A	There was no observation in the reporting period.	N/A
Noise	N/A	There was no observation in the reporting period.	N/A
Permit/ Licenses	N/A	There was no observation in the reporting period.	N/A

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

4.2 Environmental site audits were conducted on 6, 13, 18 and 27 July 2012 for the Project. No non-compliance was observed during the site audits.

4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.

4.4 The summaries of site audits are attached in **Appendix C**.

Implementation Status of Environmental Mitigation Measures

4.5 Details of the implementation of mitigation measures are provided in the **Appendix F**.

4.6 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.1**.

Table 4.1 Observations of Site Audit

Parameters	Date/Ref. Number	Observations	Follow Up Action
Water Quality	6/7/2012 O-02	Bund should be provided to protect the gully outside Portion 4 from wastewater entering.	Sand bad bund has been provided to protect the gully outside Portion 4 from wastewater entering.
	13/7/2012 R-01	Sand bag bund should be provided to surround the excavated materials near CMB.	Excavated materials have been covered with tarpaulin near CMB.
	13/7/2012 R-03	Stagnant water should be cleared and flowing out of wastewater should be blocked at Portion 4.	Pump was used to remove stagnant water and flowing out of wastewater has been blocked at Portion 4.
	18/7/2012 R-01	Ponding water should be pumped out at the storage area of Portion 4 and Portion 5.	Ponding water has been cleared at the storage area of Portion 4 and Portion 5.
	18/7/2012 R-03	Oil on water should be removed as chemical waste at Portion 4.	Oil on water was not observed in the sedimentation tank at Portion 4.
	27/7/2012 R-01	Overflow of water from the sedimentation tank should be avoided during rainy season at Portion 4.	No overflow was observed during the site inspection.
	27/7/2012 R-02	Excavated materials and silty water should be cleared near the gully at Portion 4.	Materials surrounding the gully at Portion 4 were cleared by the Contractor.
Air Quality	N/A	There was no observation in the reporting month.	N/A

Waste/ Chemical Management	**6/7/2012 O-01**	Chemical containers should be properly contained by drip tray and the stagnant water should be cleared regularly in wet season.	Chemical containers have been stored properly contained by drip tray and the stagnant water has been cleared.
	6/7/2012 O-03	To properly dispose of the oil drum in Portion 4.	The improper disposal of oil drum was not observed in Portion 4.
	6/7/2012 O-05	General refuse on the roof of Portion 9 should be disposed of regularly.	General refuse on the roof of Portion 9 has been disposed.
	13/7/2012 O-02	Oil leakage should be prevented and worn drip tray should be replaced at Portion 3.	Oil leakage was not observed and worn drip tray has been replaced at Portion 3.
	18/7/2012 R-02	Oil drums should be stored properly on drip tray at Portion 4.	Oil drums have been stored properly on drip tray at Portion 4.
	18/7/2012 R-04	Drip tray should be well-maintained and oil leakage should be prevented at Portion 3.	Drip tray has been repaired and oil leakage was not observed at Portion 3.
	27/7/2012 R-03	Water accumulated at the drip tray for storing water treatment chemicals should be cleared at Portion 4.	Stagnant water in the drip tray of water treatment facility was cleared by the Contractor.
Landscape and Visual	N/A	There was no observation in the reporting month.	N/A
Noise	**6/7/2012 O-04**	Noise Labels should be provided to air compressor in Portion 3.	Noise Labels has been provided to air compressor in Portion 3.
Permit/ Licenses	N/A	There was no observation in the reporting month.	N/A

Review of Environmental Monitoring Procedures

4.7 The monitoring works conducted by the monitoring teams of Contracts DC/2007/23, DC/2009/05 and DE/2009/02. The monitoring procedures were reviewed by their respective ETs.

Status of Environmental Licensing and Permitting

4.8 All permits/licenses obtained for the Contract DC/2009/10 are summarized in **Table 4.2**.

4 ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

4.2 Environmental site audits were conducted on 4, 11, 18 and 27 July 2012 for the Project. No non-compliance was observed during the site audits.

4.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of mitigation measures for Air Quality, Noise, Water Quality, Waste Management, Landscape and Visual are being properly carried out in the reporting month in accordance to section 14.1 of the EM&A Manual. No non-compliance was observed during the site inspections.

4.4 The summaries of site audits are attached in **Appendix G**.

Review of Environmental Monitoring Procedures

4.5 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

4.6 All permits/licenses obtained for the Contract DC/2009/18 are summarized in **Table 4.1**.

Table 4.1 Summary of Environmental Licensing and Permit Status for Contract DC/2009/18

Permit/ A/C Number	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00010571-2011	13/10/2011	31/10/2016	Location: Portion 7A and 15A	Valid
Registered Chemical Waste Producer				
5213-269-C3689-01	8/9/2011	N/A	Site Area under the Project	Valid
Billing Account for Disposal of Construction Waste				
7013233	18/7/2011	N/A	N/A	Valid
Notification of Works Under APCO				
Ref: 332427	15/7/2011	N/A	N/A	N/A
Construction Noise Permit				
GW-RW0142-12	1/3/2012	31/8/2012	Location: Construction site at Stonecutters Island Sewage treatment works.	Valid
GW-RW0344-12	4/5/2012	3/11/2012	Location: Construction site at Stonecutters Island Sewage treatment works.	Valid
GW-RW0441-12	6/6/2012	30/112012	Location: Construction site at Stonecutters Island Sewage treatment works (Portion 7)	Valid

Status of Waste Management

4.7 The amount of wastes generated by the activities of the Project in the reporting month is shown in **Appendix H**.

Implementation Status of Environmental Mitigation Measures

4.8 Details of the implementation of mitigation measures are provided in the **Appendix J**.

4.9 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.2**.

Table 4.2 Observations of Site Audit

Parameters	Ref. Number	Observations	Follow Up Action
Water Quality	120704-O02	To repair the bund at the exit of Portion 7 for better prevention of wastewater spillage.	The bund at the exit of Portion 7 was paved with concrete for better protection.
	120711-O02	Regular maintenance should be provided in the U-channel in Portion 3 and 7.	This item was found outstanding and will be followed up in the next site inspection.
	120711-O03	Bund should be properly formed in Portion 7 to prevent wastewater spillage.	Bund was provided by the Contract and item120718-O02 reminded that the accumulated slurry should be cleared regularly.
	120711-O05	Stagnant water in the Chemical waste container in Portion 3 should be cleared regularly to prevent Mosquito breeding.	Stagnant water was cleared by the Contractor.
	120718-O01	Sedimentation tanks in Portion 3 should be maintained regularly and free from silt and sediment.	The slurry in the sedimentation tank was cleared by the Contractor.

	120718-O02	Slurry in Portion 7 should be cleared regularly and wastewater should be properly collected to prevent flooding.	This item was found outstanding and will be followed up in the next site inspection.
	120718-O03	Regular maintenance and stand-by water pumper should be provided for U-channel in Portion 3 and 7.	This item was found outstanding and will be followed up in the next site inspection.
	120718-O04	Stagnant water in Portion 3 (Noise enclosure) should be cleared to prevent Mosquito breeding.	Stagnant water in Portion 3 was cleared by the Contractor.
	120727-O01	Accumulated slurry and water near the U-channel in site exit of Portion 3 and 7 should be cleared regularly to prevent overflow.	This item was found outstanding and will be followed up in the next site inspection.
	120727-O02	To repair the broken sand bags for bunding in Portion 3.	The broken sand bags were repaired by the Contractor.
	120727-O04	Slurry/Stockpile in Portion 7 should be stored properly to prevent spillage.	The area for stockpile storage was surrounded by sand bags to prevent runoff spillage.
Air Quality	120704-O01	Adequate water spraying should be provided at the unpaved area in Portion 3 to reduce dust generation.	Water spraying was observed during the site inspection.
	120727-O03	Grouting equipment in Portion 7 should be properly enclosed and the wasted cement bags should be disposed of regularly.	The grouting equipment was removed into the enclosure and covered by tarpaulin. And, there is no grouting work was observed during the site inspection.
Waste/ Chemical Management	N/A	There was no observation in the reporting period.	N/A
Landscape and Visual	120711-O04	Missing tree tag should be replaced in Portion 3.	Tree tag was repaired by the Contractor.
	120718-O05	To properly erect the tree protection fence at the area next to Portion 3.	Tree Protection fence was repaired by the Contractor.
Noise	N/A	There was no observation in the reporting period.	N/A
Permit/ Licenses	120711-O01	Updated Construction Noise Permit should be posted at the site entrance of Portion 3.	Updated Construction Noise Permit was shown at the site entrance of Portion 3.

Implementation Status of Event Action Plans

4.10 The Event Action Plans for air quality and noise are presented in **Appendix I.**

1-hr TSP

4.11 No Action/Limit Level exceedance was recorded.

24-hr TSP

4.12 No Action/Limit Level exceedance was recorded.

Construction Noise

APPENDIX I
EVENT ACTION PLANS

APPENDIX I – Event / Action Plans

Table I-1 Event / Action Plan For Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failurein writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring			
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table I-2 Event / Action Plan For Construction Noise

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action Level being exceeded	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals
Limit Level being exceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		until the exceedance is abated	the ER until the exceedance is abated

APPENDIX J
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

APPENDIX J IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
A	**Air Quality**							
3.74	Skip hoist for material transport should be totally enclosed by impervious sheeting.	All construction sites	^	^	^	^	^	^
	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.			N/A	^	N/A	N/A	N/A
	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 hour is the recommended limit.			^	^	^	^	^
	Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an			^	^	*	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
	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.			^	^	^	^	^
3.74	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.	All construction sites		^	^	^	^	^
B	**Airborne Noise**							
4.56–4.61	Use of quiet PME, movable barriers and acoustic mats.	All construction sites	^	^	^	^	^	^
4.67	Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.		^	@	^	^	^	^
	Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.		^	^	^	^	^	^
	Mobile plant, if any, shall be sited as far away from NSRs as possible.		^	^	^	^	^	^
	Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.		^	^	^	^	^	^
4.67	Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.		^	^	^	^	^	^
	Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.		^	^	^	^	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
C	**Water Quality**							
6.349 to 6.375	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All construction sites	^	@	^	^	*	*
6.376	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. 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. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.		^	^	^	^	*	*
6.377	Accidental Spillage of Chemicals 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.		<>	^	^	^	^	^
6.378	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		<>	^	^	^	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
	only be undertaken within the areas appropriately equipped to control these discharges.							
6.379	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.		^	@	^	*	^	*
6.380	Construction Works in Close Proximity of Storm Drains or Seafront To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during	All construction sites	^	@	^	^	*	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
	carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. Construction activities, which generate large amount of wastewater, should be carried out in a distance • away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea.							
D	**Waste Management**							
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimize wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All construction sites	^	^	^	^	^	^
9.109	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All construction sites	^	^	^	^	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals;		^	N/A	^	^	^	^
	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.		^	^	^	^	^	^
	Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.		^	^	^	^	^	^
	Any unused chemicals or those with remaining functional capacity shall be recycled.		^	^	^	^	^	^
	Proper storage and site practices to minimise the potential for damage or contamination of construction materials.		^	@	^	^	^	^
9.115	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 waste handling procedures.			^	^	^	*	^
	Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials.			^	^	^	^	^
	Provision of sufficient waste disposal points and regular collection of waste.			@	*	^	^	^
	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.			@	^	^	^	^
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage"	All construction sites	^	^	^	^	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.		^	^	^	^	^	^
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.		^	^	^	^	*	^
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.		^	^	^	^	^	^
9.137	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.		^	@	^	^	*	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.		^	^	^	N/A	N/A	N/A
E	**Terrestrial Ecology**							
10.94	To implement effective noise mitigation measures as recommended in Section 4 of EIA.	All construction sites	^	^	^	N/A	N/A	N/A
10.95	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3 of EIA, should be implemented.		^	^	^	^	^	^
10.96	Fences/hoardings should be erected and installed along the boundary of the works areas.		^	^	^	^	^	^
10.97	Standard good site practices as suggested in Section 10 of EIA should be implemented.		^	^	^	N/A	N/A	N/A
10.98	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.		^	@	^	^	^	^
F	**Landscape and Visual**							
Table 13.7	Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	All construction sites	^	N/A	N/A	^	^	^
	Existing trees to be retained on site should be carefully protected during construction.			@	^	^	^	*
	Trees unavoidably affected by the works should be transplanted where practical.			^	^	^	^	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Contract					
			DC/2007/23	DC/2009/05	DE/2009/02	DC/2009/17	DC/2009/10	DC/2009/18
	Compensatory tree planting should be provided to compensate for felled trees.			N/A	N/A	^	^	^
	Control of night-time lighting.			^	^	^	^	^
Table 13.7	Erection of decorative screen hoarding compatible with the surrounding setting.	All construction sites		N/A	N/A	N/A	N/A	N/A
G	**Marine Ecology**							
11.137	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	All construction sites	^	^	^	^	^	^
H	**Hazard to Life**							
14A.201	Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	Exact location will be determined on construction site by the engineer	^	^	^	^	^	^

Remarks:	^ Compliance of mitigation measure;
	<> Compliance of mitigation measure but need improvement';
	N/A Not Applicable;
	* Recommendation was made during site audit but improved/rectified by the contractor.
	@ partially implemented
	X Non-compliance of mitigation measure;
	• Non-compliance but rectified by the contractor;
	# Recommendation was made during site audit and to be improved / rectified by the contractor.

APPENDIX K
COMPLAINT LOG

APPENDIX K – COMPLAINT LOG

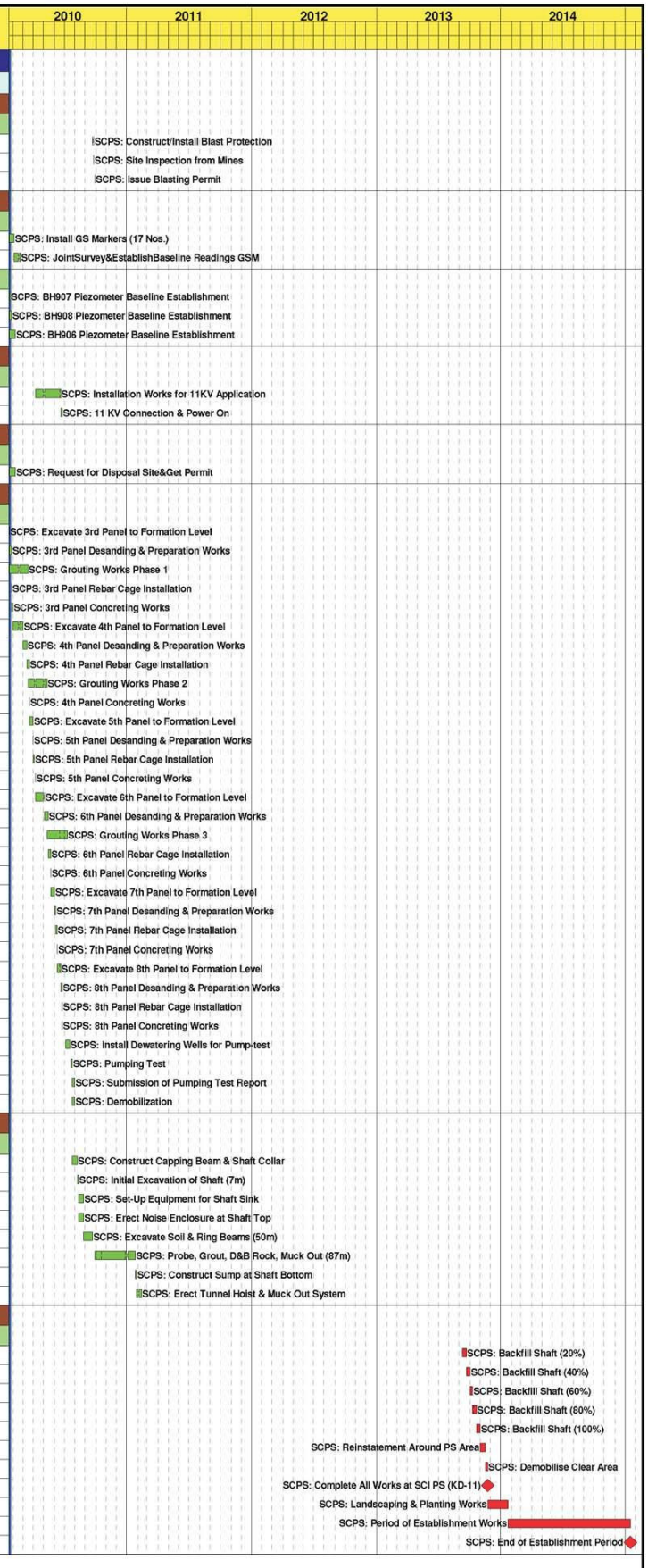
Reporting Month: July 2012

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.

APPENDIX L
CONSTRUCTION PROGRAMME

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Stonecutters Island STW Production Shaft					
Preliminaries Works					
SCPS10070	SCPS: Construct/Install Blast Protection	2	22SEP10	24SEP10	0
SCPS10075	SCPS: Site Inspection from Mines	1	25SEP10	25SEP10	0
SCPS10080	SCPS: Issue Blasting Permit	1	27SEP10	27SEP10	0
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
SCPS0391	SCPS: Install GS Markers (17 Nos.)	74	01SEP09A	01FEB10	85
SCPS0393	SCPS: JointSurvey&EstablishBaseline Readings GSM	14	02FEB10	20FEB10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
SCPS0375	SCPS: BH907 Piezometer Baseline Establishment	26	10NOV09A	23JAN10	85
SCPS0381	SCPS: BH908 Piezometer Baseline Establishment	26	10NOV09A	27JAN10	73
SCPS0387	SCPS: BH906 Piezometer Baseline Establishment	26	15JAN10A	06FEB10	40
Electrical & Mechanical Installations					
SCPS0620	SCPS: Installation Works for 11KV Application	60	08APR10	18JUN10	0
SCPS0625	SCPS: 11 KV Connection & Power On	4	19JUN10	23JUN10	0
Marine Dumping Permit					
SCPS0370	SCPS: Request for Disposal Site&Get Permit	24	02JAN10A	05FEB10	38
Diaphragm Wall					
SCPS0279	SCPS: Excavate 3rd Panel to Formation Level	12	16JAN10A	20JAN10	92
SCPS0281	SCPS: 3rd Panel Desanding & Preparation Works	4	21JAN10	25JAN10	0
SCPS0282	SCPS: Grouting Works Phase 1	45	21JAN10	17MAR10	0
SCPS0283	SCPS: 3rd Panel Rebar Cage Installation	3	26JAN10	28JAN10	0
SCPS0285	SCPS: 3rd Panel Concreting Works	1	29JAN10	29JAN10	0
SCPS0287	SCPS: Excavate 4th Panel to Formation Level	23	30JAN10	01MAR10	0
SCPS0289	SCPS: 4th Panel Desanding & Preparation Works	9	02MAR10	11MAR10	0
SCPS0291	SCPS: 4th Panel Rebar Cage Installation	6	12MAR10	18MAR10	0
SCPS0292	SCPS: Grouting Works Phase 2	45	18MAR10	11MAY10	0
SCPS0293	SCPS: 4th Panel Concreting Works	1	19MAR10	19MAR10	0
SCPS0297	SCPS: Excavate 5th Panel to Formation Level	8	20MAR10	29MAR10	0
SCPS0299	SCPS: 5th Panel Desanding & Preparation Works	3	30MAR10	01APR10	0
SCPS0301	SCPS: 5th Panel Rebar Cage Installation	2	02APR10	03APR10	0
SCPS0303	SCPS: 5th Panel Concreting Works	1	06APR10	06APR10	0
SCPS0307	SCPS: Excavate 6th Panel to Formation Level	23	07APR10	04MAY10	0
SCPS0309	SCPS: 6th Panel Desanding & Preparation Works	9	05MAY10	14MAY10	0
SCPS0310	SCPS: Grouting Works Phase 3	50	12MAY10	10JUL10	0
SCPS0311	SCPS: 6th Panel Rebar Cage Installation	6	15MAY10	21MAY10	0
SCPS0313	SCPS: 6th Panel Concreting Works	1	22MAY10	22MAY10	0
SCPS0317	SCPS: Excavate 7th Panel to Formation Level	8	24MAY10	01JUN10	0
SCPS0319	SCPS: 7th Panel Desanding & Preparation Works	3	02JUN10	04JUN10	0
SCPS0321	SCPS: 7th Panel Rebar Cage Installation	2	05JUN10	07JUN10	0
SCPS0323	SCPS: 7th Panel Concreting Works	1	08JUN10	08JUN10	0
SCPS0327	SCPS: Excavate 8th Panel to Formation Level	8	09JUN10	18JUN10	0
SCPS0329	SCPS: 8th Panel Desanding & Preparation Works	3	19JUN10	22JUN10	0
SCPS0331	SCPS: 8th Panel Rebar Cage Installation	2	23JUN10	24JUN10	0
SCPS0333	SCPS: 8th Panel Concreting Works	1	25JUN10	25JUN10	0
SCPS0335	SCPS: Install Dewatering Wells for Pump-test	12	05JUL10	17JUL10	0
SCPS0337	SCPS: Pumping Test	6	19JUL10	24JUL10	0
SCPS0338	SCPS: Submission of Pumping Test Report	6	26JUL10	31JUL10	0
SCPS0341	SCPS: Demobilization	6	26JUL10	31JUL10	0
Shaft Excavation					
SCPS0500	SCPS: Construct Capping Beam & Shaft Collar	12	26JUL10	07AUG10	0
SCPS0510	SCPS: Initial Excavation of Shaft (7m)	4	09AUG10	12AUG10	0
SCPS0520	SCPS: Set-Up Equipment for Shaft Sink	12	13AUG10	26AUG10	0
SCPS0525	SCPS: Erect Noise Enclosure at Shaft Top	12	13AUG10	26AUG10	0
SCPS0530	SCPS: Excavate Soil & Ring Beams (50m)	22	27AUG10	21SEP10	0
SCPS0575	SCPS: Probe, Grout, D&B Rock, Muck Out (87m)	100	28SEP10	26JAN11	0
SCPS0640	SCPS: Construct Sump at Shaft Bottom	2	27JAN11	28JAN11	0
SCPS0665	SCPS: Erect Tunnel Hoist & Muck Out System	10	29JAN11	12FEB11	0
Backfill, Reinstatement & Landscaping					
SCPS0910	SCPS: Backfill Shaft (20%)	8	12SEP13	21SEP13	0
SCPS0920	SCPS: Backfill Shaft (40%)	8	23SEP13	02OCT13	0
SCPS0930	SCPS: Backfill Shaft (60%)	8	03OCT13	11OCT13	0
SCPS0940	SCPS: Backfill Shaft (80%)	8	12OCT13	22OCT13	0
SCPS0950	SCPS: Backfill Shaft (100%)	8	23OCT13	31OCT13	0
SCPS0960	SCPS: Reinstatement Around PS Area	12	01NOV13	14NOV13	0
SCPS0970	SCPS: Demobilise Clear Area	6	15NOV13	21NOV13	0
SCPS0975	SCPS: Complete All Works at SCI PS (KD-11)	0		21NOV13	0
SCPS0980	SCPS: Landscaping & Planting Works	60	22NOV13*	20JAN14	0
SCPS0990	SCPS: Period of Establishment Works	360	21JAN14	15JAN15	0
SCPS1000	SCPS: End of Establishment Period	0		15JAN15	0



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Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:42

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

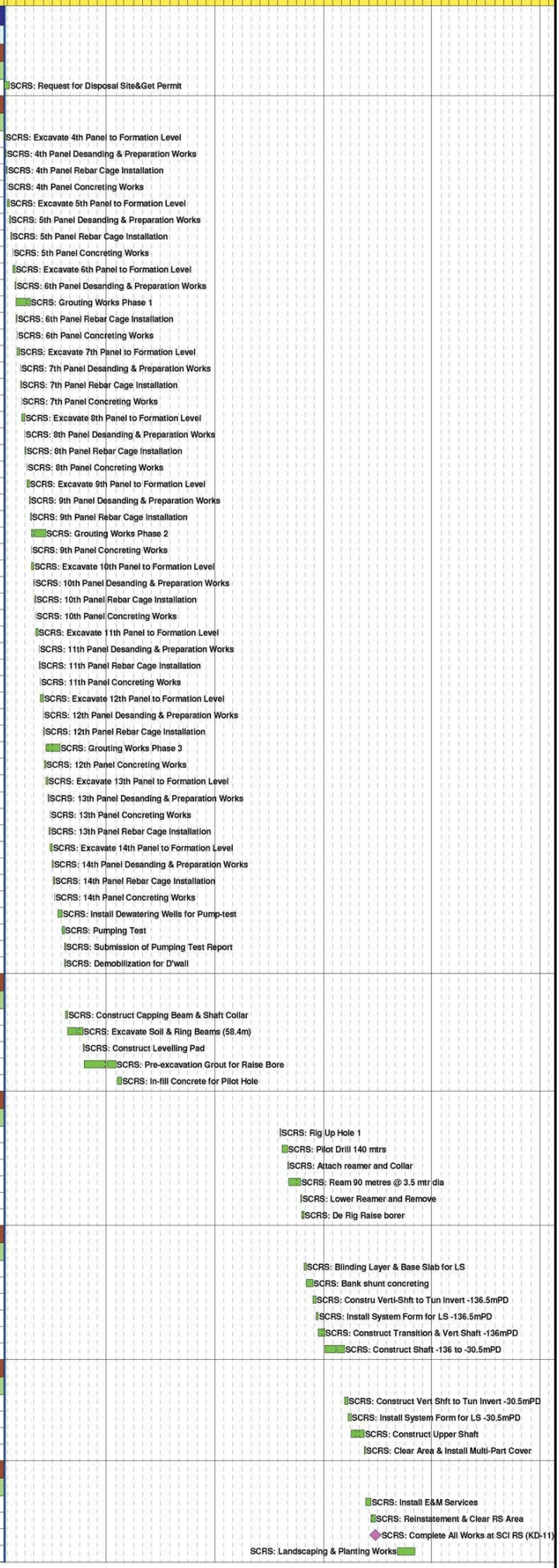
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Stonecutters Island STW Riser Shaft					
Marine Dumping Permit					
SCRS0370	SCRS: Request for Disposal Site&Get Permit	24	05JAN10A	06FEB10	33
Diaphragm Wall					
SCRS0287	SCRS: Excavate 4th Panel to Formation Level	7	09JAN10A	23JAN10	50
SCRS0289	SCRS: 4th Panel Desanding & Preparation Works	3	25JAN10	27JAN10	0
SCRS0291	SCRS: 4th Panel Rebar Cage Installation	2	28JAN10	29JAN10	0
SCRS0293	SCRS: 4th Panel Concreting Works	1	30JAN10	30JAN10	0
SCRS0295	SCRS: Excavate 5th Panel to Formation Level	7	01FEB10	08FEB10	0
SCRS0297	SCRS: 5th Panel Desanding & Preparation Works	3	09FEB10	11FEB10	0
SCRS0299	SCRS: 5th Panel Rebar Cage Installation	2	12FEB10	13FEB10	0
SCRS0301	SCRS: 5th Panel Concreting Works	1	18FEB10	18FEB10	0
SCRS0303	SCRS: Excavate 6th Panel to Formation Level	7	19FEB10	26FEB10	0
SCRS0305	SCRS: 6th Panel Desanding & Preparation Works	3	27FEB10	02MAR10	0
SCRS0306	SCRS: Grouting Works Phase 1	40	03MAR10	19APR10	0
SCRS0307	SCRS: 6th Panel Rebar Cage Installation	2	03MAR10	04MAR10	0
SCRS0309	SCRS: 6th Panel Concreting Works	1	05MAR10	05MAR10	0
SCRS0311	SCRS: Excavate 7th Panel to Formation Level	7	06MAR10	13MAR10	0
SCRS0313	SCRS: 7th Panel Desanding & Preparation Works	3	15MAR10	17MAR10	0
SCRS0315	SCRS: 7th Panel Rebar Cage Installation	2	18MAR10	19MAR10	0
SCRS0317	SCRS: 7th Panel Concreting Works	1	20MAR10	20MAR10	0
SCRS0319	SCRS: Excavate 8th Panel to Formation Level	7	22MAR10	29MAR10	0
SCRS0321	SCRS: 8th Panel Desanding & Preparation Works	3	30MAR10	01APR10	0
SCRS0323	SCRS: 8th Panel Rebar Cage Installation	2	02APR10	03APR10	0
SCRS0325	SCRS: 8th Panel Concreting Works	1	06APR10	06APR10	0
SCRS0327	SCRS: Excavate 9th Panel to Formation Level	7	07APR10	14APR10	0
SCRS0329	SCRS: 9th Panel Desanding & Preparation Works	3	15APR10	17APR10	0
SCRS0331	SCRS: 9th Panel Rebar Cage Installation	2	19APR10	20APR10	0
SCRS0332	SCRS: Grouting Works Phase 2	40	21APR10	07JUN10	0
SCRS0333	SCRS: 9th Panel Concreting Works	1	21APR10	21APR10	0
SCRS0335	SCRS: Excavate 10th Panel to Formation Level	7	22APR10	29APR10	0
SCRS0337	SCRS: 10th Panel Desanding & Preparation Works	3	30APR10	04MAY10	0
SCRS0339	SCRS: 10th Panel Rebar Cage Installation	2	05MAY10	06MAY10	0
SCRS0341	SCRS: 10th Panel Concreting Works	1	07MAY10	07MAY10	0
SCRS0343	SCRS: Excavate 11th Panel to Formation Level	7	08MAY10	15MAY10	0
SCRS0345	SCRS: 11th Panel Desanding & Preparation Works	3	17MAY10	19MAY10	0
SCRS0347	SCRS: 11th Panel Rebar Cage Installation	2	20MAY10	21MAY10	0
SCRS0349	SCRS: 11th Panel Concreting Works	1	22MAY10	22MAY10	0
SCRS0351	SCRS: Excavate 12th Panel to Formation Level	7	24MAY10	31MAY10	0
SCRS0353	SCRS: 12th Panel Desanding & Preparation Works	3	01JUN10	03JUN10	0
SCRS0355	SCRS: 12th Panel Rebar Cage Installation	2	04JUN10	05JUN10	0
SCRS0356	SCRS: Grouting Works Phase 3	40	08JUN10	26JUL10	0
SCRS0357	SCRS: 12th Panel Concreting Works	1	07JUN10	07JUN10	0
SCRS0359	SCRS: Excavate 13th Panel to Formation Level	7	08JUN10	15JUN10	0
SCRS0361	SCRS: 13th Panel Desanding & Preparation Works	3	17JUN10	19JUN10	0
SCRS0365	SCRS: 13th Panel Concreting Works	1	23JUN10	23JUN10	0
SCRS0366	SCRS: 13th Panel Rebar Cage Installation	2	21JUN10	22JUN10	0
SCRS0367	SCRS: Excavate 14th Panel to Formation Level	7	24JUN10	02JUL10	0
SCRS0369	SCRS: 14th Panel Desanding & Preparation Works	3	03JUL10	06JUL10	0
SCRS0371	SCRS: 14th Panel Rebar Cage Installation	2	07JUL10	08JUL10	0
SCRS0373	SCRS: 14th Panel Concreting Works	1	09JUL10	09JUL10	0
SCRS0380	SCRS: Install Dewatering Wells for Pump-test	12	20JUL10	02AUG10	0
SCRS0390	SCRS: Pumping Test	6	03AUG10	09AUG10	0
SCRS0392	SCRS: Submission of Pumping Test Report	6	10AUG10	16AUG10	0
SCRS0394	SCRS: Demobilization for D'wall	6	10AUG10	16AUG10	0
Shaft Excavation					
SCRS0400	SCRS: Construct Capping Beam & Shaft Collar	6	17AUG10	23AUG10	0
SCRS0410	SCRS: Excavate Soil & Ring Beams (58.4m)	42	24AUG10	13OCT10	0
SCRS0420	SCRS: Construct Levelling Pad	3	14OCT10	18OCT10	0
SCRS0430	SCRS: Pre-excavation Grout for Raise Bore	90	19OCT10	02FEB11	0
SCRS0440	SCRS: In-fill Concrete for Pilot Hole	12	07FEB11	19FEB11	0
Raised Boring					
SCRS0700	SCRS: Rig Up Hole 1	5	07AUG12	11AUG12	0
SCRS0710	SCRS: Pilot Drill 140 mtrs	16	13AUG12	30AUG12	0
SCRS0720	SCRS: Attach reamer and Collar	3	31AUG12	03SEP12	0
SCRS0730	SCRS: Ream 90 metres @ 3.5 mtr dia	35	04SEP12	16OCT12	0
SCRS0740	SCRS: Lower Reamer and Remove	3	17OCT12	19OCT12	0
SCRS0750	SCRS: De Rig Raise borer	5	20OCT12	26OCT12	0
Lower Shaft Construction					
SCRS0835	SCRS: Blinding Layer & Base Slab for LS	6	27OCT12	02NOV12	0
SCRS0840	SCRS: Bank shunt concreting	18	03NOV12	23NOV12	0
SCRS0875	SCRS: Constru Verti-Shft to Tun Invert -136.5mPD	9	24NOV12	04DEC12	0
SCRS0885	SCRS: Install System Form for LS -136.5mPD	9	05DEC12	14DEC12	0
SCRS0935	SCRS: Construct Transition & Vert Shaft -136mPD	15	15DEC12	03JAN13	0
SCRS0940	SCRS: Construct Shaft -136 to -30.5mPD	55	04JAN13	12MAR13	0
Upper Shaft Construction					
SCRS0975	SCRS: Construct Vert Shft to Tun Invert -30.5mPD	9	13MAR13	22MAR13	0
SCRS0995	SCRS: Install System Form for LS -30.5mPD	9	23MAR13	02APR13	0
SCRS1045	SCRS: Construct Upper Shaft	36	03APR13	16MAY13	0
SCRS1065	SCRS: Clear Area & Install Multi-Part Cover	3	17MAY13	20MAY13	0
Miscellaneous Works					
SCRS2010	SCRS: Install E&M Services	18	21MAY13	10JUN13	0
SCRS2020	SCRS: Reinstatement & Clear RS Area	12	11JUN13	25JUN13	0
SCRS2025	SCRS: Complete All Works at SCI RS (KD-11)	0		25JUN13	0
SCRS2030	SCRS: Landscaping & Planting Works	60	08SEP13*	06NOV13	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:50

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 2

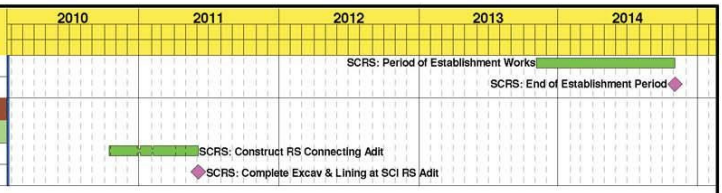
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
SCRS2060	SCRS: Period of Establishment Works	360	07NOV13	01NOV14	0
SCRS2070	SCRS: End of Establishment Period	0		01NOV14	0
Connecting Adit					
SCRS2040	SCRS: Construct RS Connecting Adit	192	14OCT10	03JUN11	0
SCRS2050	SCRS: Complete Excav & Lining at SCI RS Adit	0		03JUN11	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:50

Early Bar
Progress Bar
Critical Activity

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

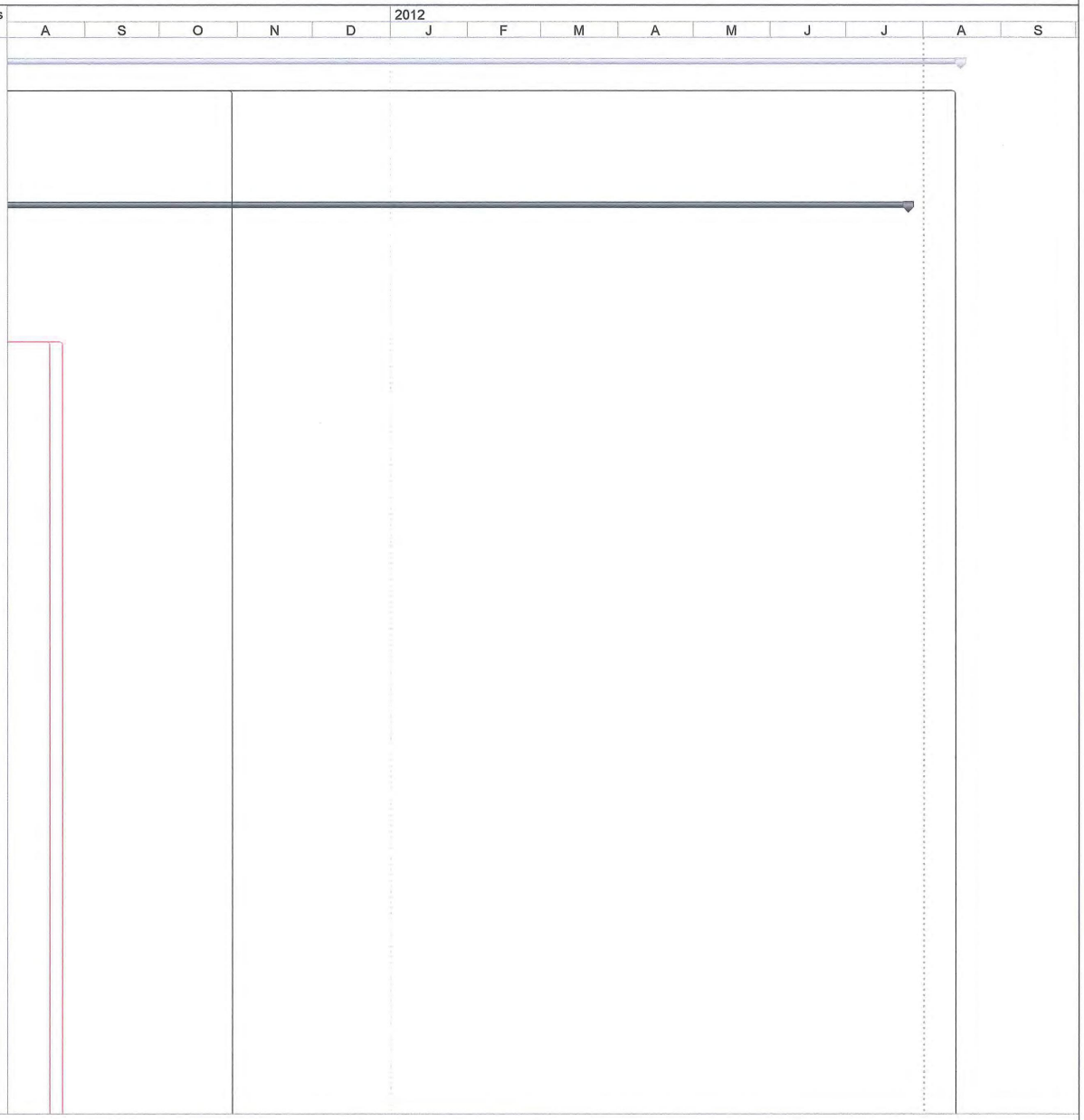
Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)
(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
0	0	**DE/2009/02 Contract Duration**	**1021 d**	**30/10/09**	**30/10/09**	**15/8/12**	**15/8/12**	**0 d**	**0 d**	
1	1	Project Commencement Date	0 d	30/10/09	30/10/09	30/10/09	30/10/09	0 d	0 d	
2	2	**Site Preparation**	**67 d**	**30/10/09**	**30/10/09**	**4/1/10**	**15/8/12**	**45 d**	**45 d**	
13	3	Submission of ICE Certified Detailed Design	0 d	27/1/10	27/1/10	27/1/10	15/8/12	931 d	931 d	1FS+90 d
14	4	**Preliminary and Detailed Design Submission**	**1000 d**	**30/10/09**	**30/10/09**	**25/7/12**	**15/8/12**	**0 d**	**0 d**	
15	4.1	Preparation of Preliminary Design Submission and Submit to the Engineer	20 d	30/10/09	30/10/09	18/11/09	18/11/09	0 d	0 d	1
16	4.2	First review and comment Preliminary Design by the Engineer	14 d	19/11/09	19/11/09	2/12/09	2/12/09	0 d	0 d	15
17	4.3	Revise Preliminary Design (PD) Submission	14 d	3/12/09	3/12/09	16/12/09	16/12/09	0 d	0 d	16
18	4.4	Review and Approval of revised PD by the Engineer	14 d	17/12/09	17/12/09	30/12/09	30/12/09	0 d	0 d	17
19	4.5	Preparation of Detailed Design (DD) Submission	24 d	31/12/09	31/12/09	23/1/10	23/1/10	0 d	0 d	16,18
20	4.6	Obtain of ICE Certificate of DD Submission and Submit to the Engineer	3 d	24/1/10	24/1/10	26/1/10	26/1/10	0 d	0 d	19
21	4.7	First review and comment DD by the Engineer	30 d	27/1/10	27/1/10	25/2/10	25/2/10	0 d	0 d	20
22	4.8	Revise DD Submission & obtain ICE Certificate and Submit to the Engineer	30 d	26/2/10	26/2/10	27/3/10	27/3/10	0 d	0 d	21
23	4.9	Review and Approval of revised DD by the Engineer	21 d	28/3/10	28/3/10	17/4/10	17/4/10	0 d	0 d	22
24	4.10	Preparation of Preliminary General Building Plan (GBP) Design Submission	90 d	11/2/10	11/2/10	11/5/10	14/9/10	0 d	126 d	1FS+104 d
25	4.11	Obtain ICE Certificate of Preliminary GBP Submission and Submit to the Engineer	14 d	12/5/10	12/5/10	25/5/10	28/9/10	0 d	126 d	24
26	4.12	First review and comment Preliminary GBP Design by the Engineer	90 d	26/5/10	26/5/10	23/8/10	27/12/10	0 d	126 d	25
27	4.13	Review Preliminary GBP Design Submission	163 d	24/8/10	24/8/10	2/2/11	8/6/11	0 d	126 d	26
28	4.14	Review and Approval of Detailed GBP Design by the Engineer	23 d	3/2/11	3/2/11	25/2/11	1/7/11	0 d	126 d	27
29	4.15	Obtain of Final ICE Certificate of Detailed GBP Submission and Submit to the Engineer	7 d	26/2/11	26/2/11	4/3/11	8/7/11	15 d	126 d	28
30	4.16	Preparation of Preliminary Foundation Design Submission and Method Statement	21 d	5/2/10	5/2/10	25/2/10	3/3/10	0 d	6 d	118
31	4.17	Obtain ICE Certificate of Preliminary Foundation Design Submission and Method Statement and Submit to the Engineer	14 d	26/2/10	26/2/10	11/3/10	17/3/10	0 d	6 d	30
32	4.18	First review and comment Preliminary Foundation Design by the Engineer	15 d	12/3/10	12/3/10	26/3/10	6/5/10	0 d	41 d	31
33	4.19	Revise Preliminary Foundation Design Submission and Method statement	14 d	27/3/10	27/3/10	9/4/10	20/5/10	0 d	41 d	32
34	4.20	Obtain ICE Certificate of Revised Foundation Design Submission and Method Statement and Submit to the Engineer	14 d	10/4/10	10/4/10	23/4/10	3/6/10	0 d	41 d	33
35	4.21	Review and Approval of revised Foundation Design and Method Statement by the Engineer	14 d	24/4/10	24/4/10	7/5/10	17/6/10	7 d	41 d	34
36	4.22	Preparation of Pile Load Test Method Statement and Submit to the Engineer	14 d	25/8/10	25/8/10	7/9/10	29/1/11	0 d	144 d	34FS+123 d
37	4.23	Review and Approval of Pile Load Test Method Statement	14 d	8/9/10	8/9/10	21/9/10	12/2/11	0 d	144 d	36
38	4.24	Preparation of method statement of construction of pile cap and control room and Submit to the Engineer	14 d	22/9/10	22/9/10	5/10/10	19/3/11	0 d	165 d	37
39	4.25	Review and Approval of method statement of construction of pile cap and contrl room	14 d	6/10/10	6/10/10	19/10/10	2/4/11	97 d	165 d	38



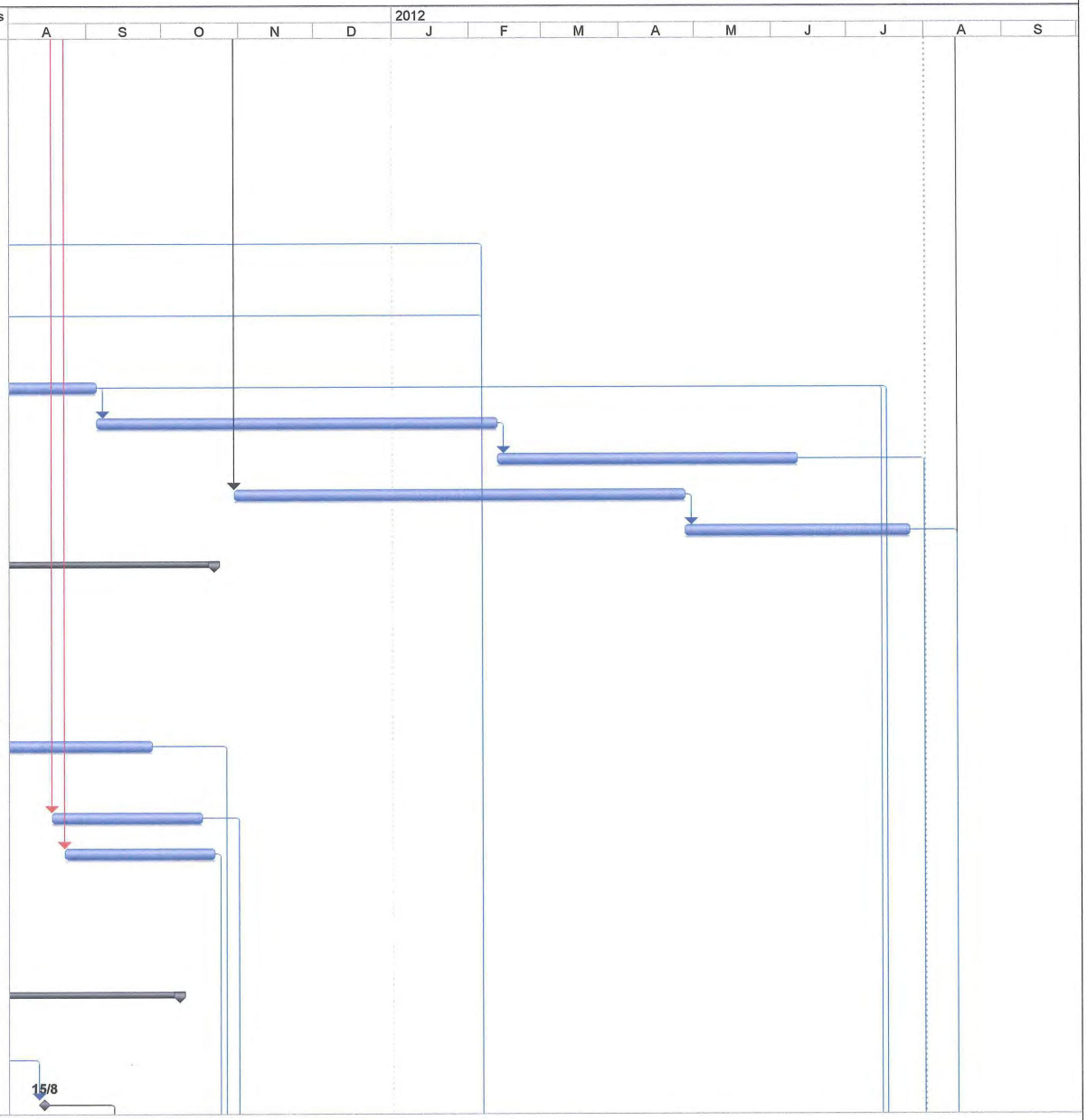
Contract No. DE/2009/02
Revision: 0
Date: 28 Jul 2012

Task | Progress | Summary | External Tasks | Group By Summary
Critical Task | Milestone | Split | Project Summary | Deadline

ATAL Engineering Limited

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)
(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
40	4.26	Preparation of Preliminary Odour Duct Bridge Design Submission	60 d	18/4/10	18/4/10	16/6/10	18/7/10	0 d	32 d	23
41	4.27	Obtain ICE Certificate of Preliminary Odour Duct Bridge Design Submission and Submit to the Engineer	14 d	17/6/10	17/6/10	30/6/10	1/8/10	0 d	32 d	40
42	4.28	First review and comment Preliminary Odour Duct Bridge Design Submission	30 d	1/7/10	1/7/10	30/7/10	31/8/10	0 d	32 d	41
43	4.29	Review Preliminary Odour Duct Bridge Design Submission	60 d	31/7/10	31/7/10	28/9/10	30/10/10	0 d	32 d	42
44	4.30	Obtain ICE Certificate of Revised Odour Duct Bridge Design Submission and Submit to the Engineer	14 d	29/9/10	29/9/10	12/10/10	13/11/10	0 d	32 d	43
45	4.31	Review and Approval of Revised Odour Duct Bridge Design Submission	30 d	13/10/10	13/10/10	11/11/10	13/12/10	0 d	32 d	44
46	4.32	Preparation of method statement of erection of odour duct bridge (TTA included) and Submit to the Engineer	14 d	12/11/10	12/11/10	25/11/10	15/1/11	0 d	51 d	45
47	4.33	Review and Approval of method statement of erection of odour duct bridge (TTA included)	28 d	26/11/10	26/11/10	23/12/10	12/2/11	0 d	51 d	46
48	4.34	Preparation of Commissioning Test Plan and Submit to the Engineer	45 d	23/4/11	23/4/11	6/6/11	27/7/11	0 d	51 d	47FS+120 d
49	4.35	Review and Approval of Commissioning Test Plan by the Engineer	90 d	7/6/11	7/6/11	4/9/11	25/10/11	0 d	51 d	48
50	4.36	Preparation of Training Plan and Submit to the Engineer	160 d	5/9/11	5/9/11	11/2/12	2/4/12	0 d	51 d	49
51	4.37	Review and Approval of Training Plan by the Engineer	120 d	12/2/12	12/2/12	10/6/12	31/7/12	40 d	51 d	50
52	4.38	Preparation of As-built drawings and Submit to the Engineer	180 d	30/10/11	30/10/11	26/4/12	17/5/12	0 d	21 d	1FS+730 d
53	4.39	Review and Approval of As-built drawings	90 d	27/4/12	27/4/12	25/7/12	15/8/12	21 d	21 d	52
54	**5**	**Equipment Submission and Approval**	**688 d**	**3/12/09**	**3/12/09**	**21/10/11**	**28/3/12**	**0 d**	**0 d**	
55	5.1	Odour Containment System (FRP Cover) - Prototype	30 d	3/12/09	3/12/09	1/1/10	1/1/10	0 d	0 d	16
56	5.2	Odour Containment System (FRP Cover) - Other Covers / walkway	80 d	15/1/10	15/1/10	4/4/10	4/4/10	0 d	0 d	16FS+43 d
57	5.3	Deodourizing System	70 d	15/1/10	15/1/10	25/3/10	4/4/10	10 d	10 d	16FS+43 d
58	5.4	LV Switchboard	80 d	15/1/10	15/1/10	4/4/10	18/5/10	0 d	44 d	16FS+43 d
59	5.5	FRP Cover at Rapid Mix Tank (VO12)	90 d	29/6/11	29/6/11	26/9/11	9/11/11	0 d	44 d	18FS+545 d
60	5.6	Modification proposal of SCADA System (VO13)	520 d	6/2/10	6/2/10	10/7/11	12/12/11	0 d	155 d	16FS+65 d
61	5.7	FRP Cover at Flow Distribution Chamber (VO14)	60 d	18/8/11	18/8/11	16/10/11	28/3/12	0 d	164 d	18FS+595 d
62	5.8	Isolation Stopboard for Scum Pit and Effluent Drop Structure (VO15)	60 d	23/8/11	23/8/11	21/10/11	4/12/11	0 d	44 d	18FS+600 d
63	5.9	FRP Ductwork and Support	70 d	6/2/10	6/2/10	16/4/10	14/5/10	0 d	28 d	16FS+65 d
64	5.10	CCTV System	90 d	29/1/10	29/1/10	28/4/10	2/1/11	0 d	249 d	16FS+57 d
65	5.11	Electrical Accessories	60 d	8/3/10	8/3/10	6/5/10	30/11/11	0 d	573 d	16FS+95 d
66	**6**	**Statutory Submission and Inspection**	**571 d**	**16/3/10**	**16/3/10**	**7/10/11**	**15/8/12**	**313 d**	**313 d**	
67	6.1	Preparation of revised FS Plan including DG goods store application	28 d	16/3/10	16/3/10	12/4/10	8/5/12	0 d	757 d	18FS+75 d
68	6.2	Approval of revised FS Plan including DG goods store application by FSD	45 d	13/4/10	13/4/10	27/5/10	22/6/12	444 d	757 d	67
69	6.3	Submission of Form 501 for FS Inspection	0 d	15/8/11	15/8/11	15/8/11	23/6/12	0 d	313 d	68



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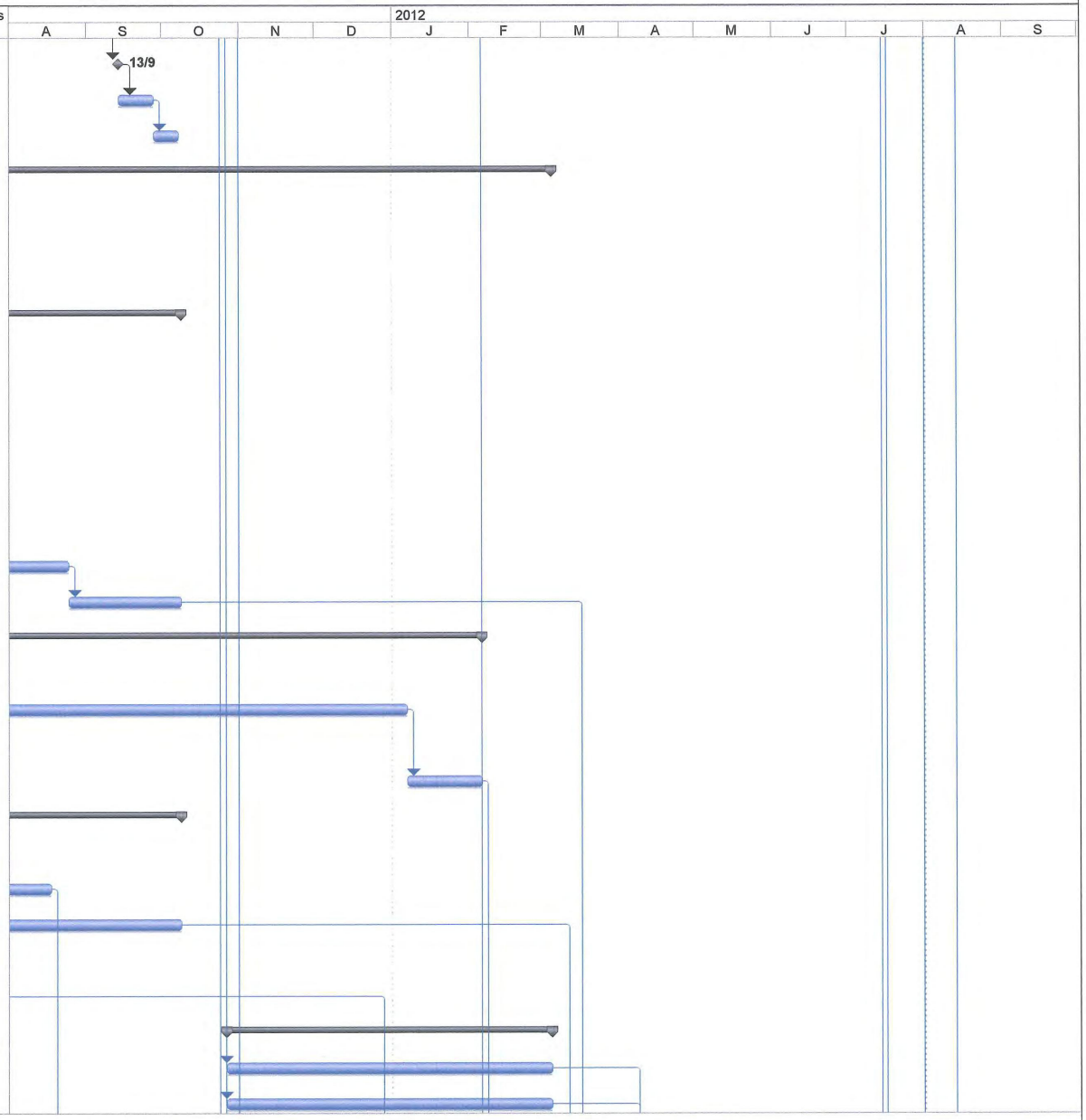
ATAL Engineering Limited

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)
(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
70	6.4	First FS Inspection	0 d	13/9/11	13/9/11	13/9/11	23/7/12	0 d	313 d	69FS+30 d
71	6.5	Defect rectification following to the first FS Inspection	14 d	14/9/11	14/9/11	27/9/11	5/8/12	0 d	313 d	70
72	6.6	Final FS Inspection and Issue of FS Certificate	10 d	28/9/11	28/9/11	7/10/11	15/8/12	313 d	313 d	71
73	7	Equipment Manufacturing, Factory Testing, Shipment and Delivery other than FRP Covers & Accessories for Containment System	**700 d**	**5/4/10**	**5/4/10**	**4/3/12**	**1/7/12**	**0 d**	**0 d**	
74	7.1	**Deodourization System**	**460 d**	**5/4/10**	**5/4/10**	**8/7/11**	**2/11/11**	**0 d**	**0 d**	
75	7.1.1	Deodourization System (DOU2)	430 d	5/4/10	5/4/10	8/6/11	8/6/11	0 d	0 d	57,56
76	7.1.2	Deodorization System (DOU1)	460 d	5/4/10	5/4/10	8/7/11	2/11/11	0 d	117 d	57,56
77	7.2	**FRP Ductwork and Support**	**360 d**	**14/10/10**	**14/10/10**	**8/10/11**	**13/4/12**	**28 d**	**28 d**	
78	7.2.1	FRP Ductwork and Support (33-45)	45 d	14/10/10	14/10/10	27/11/10	25/12/10	0 d	28 d	63FS+180 d
79	7.2.2	FRP Ductwork and Support (21-31)	45 d	28/11/10	28/11/10	11/1/11	18/7/11	0 d	188 d	78
80	7.2.3	FRP Ductwork and Support (9-19)	45 d	12/1/11	12/1/11	25/2/11	1/9/11	0 d	188 d	79
81	7.2.4	FRP Ductwork and Support (1-7)	45 d	26/2/11	26/2/11	11/4/11	16/10/11	0 d	188 d	80
82	7.2.5	FRP Ductwork and Support (2-8)	45 d	12/4/11	12/4/11	26/5/11	30/11/11	0 d	188 d	81
83	7.2.6	FRP Ductwork and Support (10-20)	45 d	27/5/11	27/5/11	10/7/11	14/1/12	0 d	188 d	82
84	7.2.7	FRP Ductwork and Support (22-32)	45 d	11/7/11	11/7/11	24/8/11	28/2/12	0 d	188 d	83
85	7.2.8	FRP Ductwork and Support(34-46)	45 d	25/8/11	25/8/11	8/10/11	13/4/12	160 d	188 d	84
86	7.3	**Odour Duct Bridge**	**451 d**	**12/11/10**	**12/11/10**	**5/2/12**	**8/4/12**	**63 d**	**63 d**	
87	7.3.1	Fabrication of individual parts of Odour Duct Bridge at DOU1	190 d	12/11/10	12/11/10	20/5/11	18/2/12	0 d	274 d	45
88	7.3.2	Fabrication of individual parts of Odour Duct Bridge at DOU2	211 d	10/6/11	10/6/11	6/1/12	7/2/12	0 d	32 d	45FS+210 d
89	7.3.3	Shipment and Delivery of Odour Duct Brdige at DOU1	50 d	21/5/11	21/5/11	9/7/11	8/4/12	0 d	274 d	87
90	7.3.4	Shipment and Delivery of Odour Duct Brdige at DOU2	30 d	7/1/12	7/1/12	5/2/12	8/3/12	0 d	32 d	88
91	7.4	**Electrical and Building Services Equipment**	**552 d**	**5/4/10**	**5/4/10**	**8/10/11**	**29/3/12**	**44 d**	**44 d**	
92	7.4.1	LV Switchboard (DOU1)	440 d	5/4/10	5/4/10	18/6/11	19/2/12	0 d	246 d	58
93	7.4.2	LV Switchboard (DOU2)	500 d	5/4/10	5/4/10	17/8/11	30/9/11	2 d	44 d	58
94	7.4.3	Modification proposal of SCADA System (VO13)	90 d	11/7/11	11/7/11	8/10/11	11/3/12	144 d	155 d	60
95	7.4.4	CCTV System	210 d	29/4/10	29/4/10	24/11/10	31/7/11	249 d	249 d	64
96	7.4.5	Electrical Accessories	120 d	7/5/10	7/5/10	3/9/10	29/3/12	481 d	573 d	65
97	7.5	**FRP Cover at Rapid Mix Tank (VO12)**	**130 d**	**27/10/11**	**27/10/11**	**4/3/12**	**17/4/12**	**44 d**	**44 d**	
98	7.5.1	Rapid Mix Tank Cover	130 d	27/10/11	27/10/11	4/3/12	17/4/12	0 d	44 d	59FS+30 d
99	7.5.2	Air Ductwork & Duct Support	130 d	27/10/11	27/10/11	4/3/12	17/4/12	0 d	44 d	59FS+30 d



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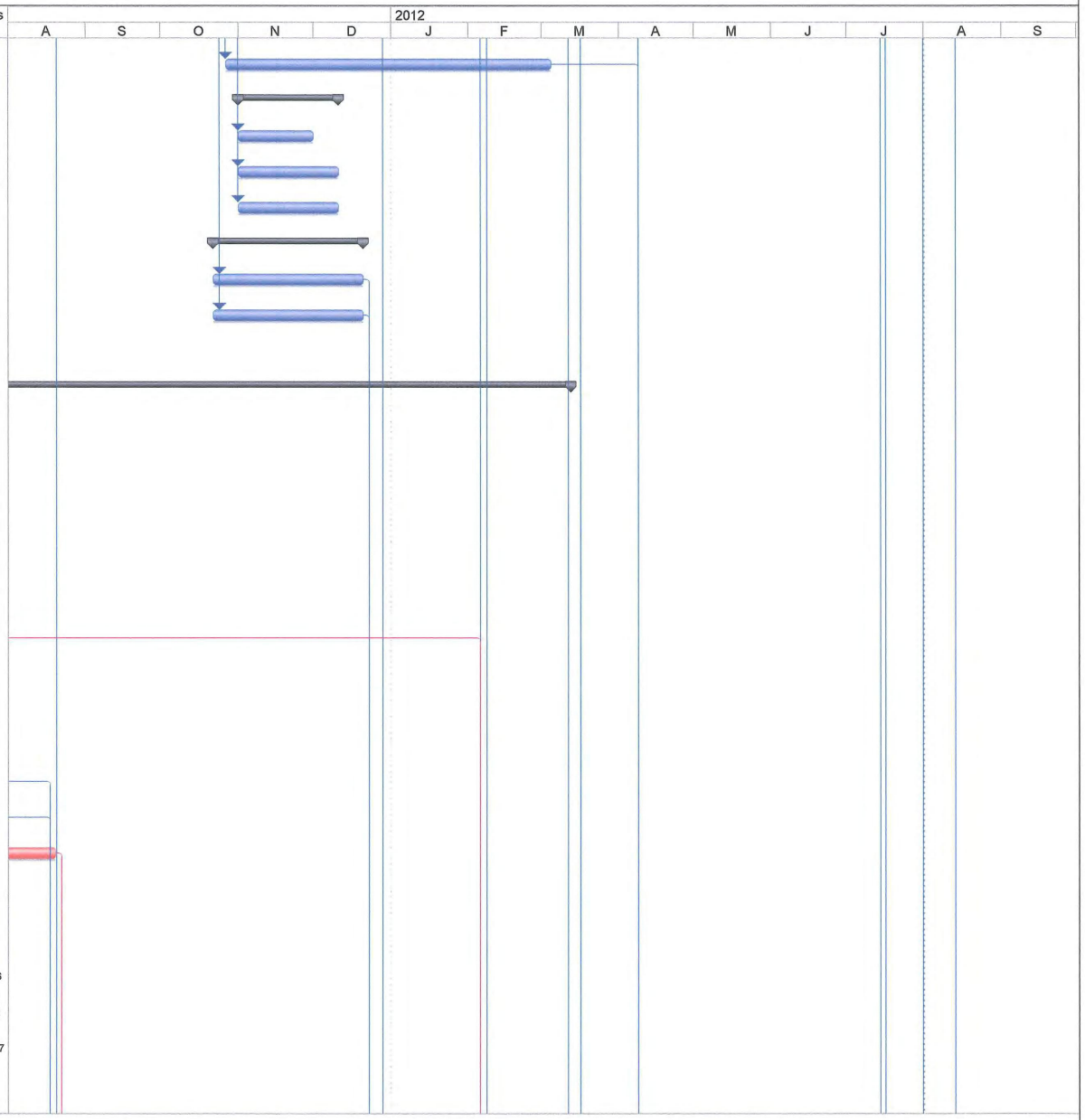
100	7.5.3	Influent Area Cover	130 d	27/10/11	27/10/11	4/3/12	17/4/12	0 d	44 d	59FS+30 d
101	**7.6**	**FRP Cover at Flow Distribution Chamber (VO14)**	**40 d**	**1/11/11**	**1/11/11**	**10/12/11**	**1/7/12**	**164 d**	**164 d**	
102	7.6.1	FDC Cover	30 d	1/11/11	1/11/11	30/11/11	1/7/12	0 d	214 d	61FS+15 d
103	7.6.2	Air Ductwork & Duct Spport	40 d	1/11/11	1/11/11	10/12/11	22/5/12	0 d	164 d	61FS+15 d
104	7.6.3	Temporary DOU	40 d	1/11/11	1/11/11	10/12/11	27/5/12	0 d	169 d	61FS+15 d
105	**7.7**	**Isolation Stopboard for Scum Pit and Effluent Drop Structure (VO15)**	**60 d**	**22/10/11**	**22/10/11**	**20/12/11**	**2/2/12**	**44 d**	**44 d**	
106	7.7.1	Support Frame Work	60 d	22/10/11	22/10/11	20/12/11	2/2/12	0 d	44 d	62
107	7.7.2	FRP Stopboard	60 d	22/10/11	22/10/11	20/12/11	2/2/12	0 d	44 d	62
108	8	Completion of Pilings and Concrete Base Slabs for the Two Deodourisation Units	0 d	28/12/10	28/12/10	28/12/10	15/8/12	596 d	596 d	1FS+425 d
109	**9**	**Civil Construction**	**806 d**	**28/12/09**	**28/12/09**	**12/3/12**	**13/4/12**	**0 d**	**0 d**	
110	**9.1**	**Condition Survey**	**80 d**	**28/12/09**	**28/12/09**	**17/3/10**	**17/3/10**	**0 d**	**0 d**	
116	**9.2**	**Piling Works**	**433 d**	**5/1/10**	**5/1/10**	**13/3/11**	**18/3/11**	**5 d**	**5 d**	
130	**9.3**	**Construction of Concrete Plinth for DOU2**	**576 d**	**30/12/09**	**30/12/09**	**28/7/11**	**19/8/11**	**22 d**	**22 d**	
131	9.3.1	Underground Utility Survey at DOU2	7 d	30/12/09	30/12/09	5/1/10	20/3/11	439 d	439 d	142SS
132	9.3.2	Excavation including temporary works and safety measures	50 d	21/3/11	21/3/11	9/5/11	9/5/11	0 d	0 d	125FS+7 d,131
133	9.3.3	Pile Cap	29 d	10/5/11	10/5/11	7/6/11	7/6/11	0 d	0 d	132,39
134	9.3.4	Concrete Plinth	7 d	8/6/11	8/6/11	14/6/11	14/6/11	0 d	0 d	133
135	9.3.5	Backfill to Ground Level	7 d	15/6/11	15/6/11	21/6/11	13/7/11	0 d	22 d	134
136	9.3.6	Pour 2a - Wall of Control Room	14 d	22/6/11	22/6/11	5/7/11	27/7/11	0 d	22 d	39,29,135
137	9.3.7	Pour 2b - Roof of Control Room	16 d	6/7/11	6/7/11	21/7/11	12/8/11	0 d	22 d	136,39,29
138	9.3.8	Block work wall of Control Room and Finishing works	7 d	22/7/11	22/7/11	28/7/11	19/8/11	22 d	22 d	137,39
139	9.4	Watermain laying works	30 d	8/6/11	8/6/11	7/7/11	19/8/11	43 d	43 d	133
140	9.5	Reinstatement of road and drainage	66 d	15/6/11	15/6/11	19/8/11	19/8/11	0 d	0 d	134
141	**9.6**	**Construction of Concrete Plinth for DOU1**	**487 d**	**30/12/09**	**30/12/09**	**30/4/11**	**19/8/11**	**111 d**	**111 d**	
142	9.6.1	Underground Utility Survey at DOU1	7 d	30/12/09	30/12/09	5/1/10	17/5/10	0 d	132 d	9FS+17 d
143	**9.6.2**	**Tree transplant**	**50 d**	**6/1/10**	**6/1/10**	**24/2/10**	**6/7/10**	**132 d**	**132 d**	**7FS+30 d**
147	9.6.3	Diversion of underground utilities including concrete service duct	270 d	30/4/10	30/4/10	24/1/11	2/4/11	0 d	68 d	18FS+120 d,146
148	9.6.4	Excavation including temporary works and safety measures	20 d	7/1/11	7/1/11	26/1/11	7/4/11	3 d	71 d	129,147FS-18 d
149	9.6.5	Pile Cap	43 d	25/1/11	25/1/11	8/3/11	15/5/11	0 d	68 d	148FS-5 d,39,147
150	9.6.6	Concrete Plinth	6 d	9/3/11	9/3/11	14/3/11	21/5/11	0 d	68 d	149,39



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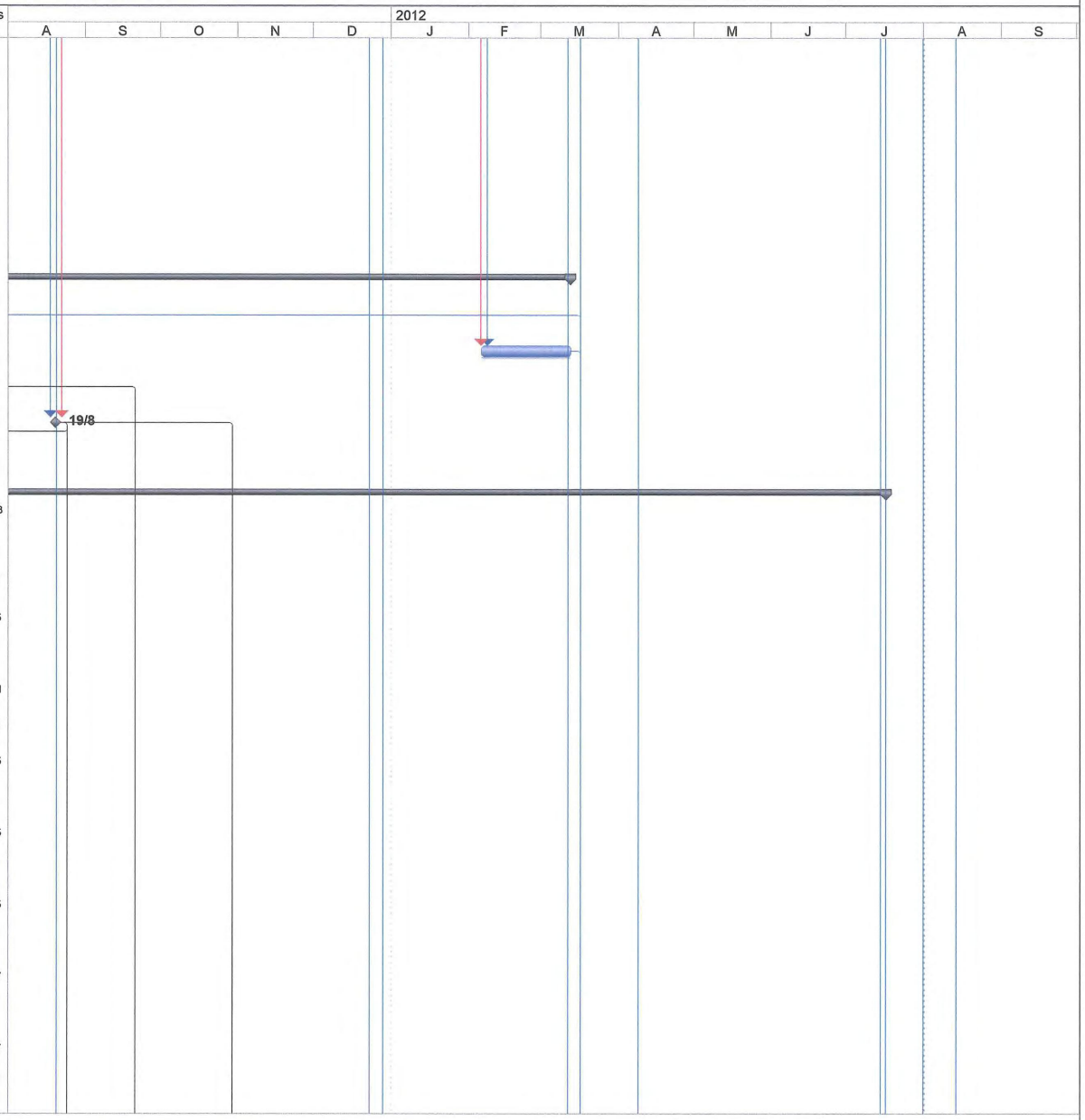
151	9.6.7	Backfill to Ground Level	5 d	15/3/11	15/3/11	19/3/11	8/7/11	0 d	111 d	149,39,150
152	9.6.8	Pour 1a - Wall of Control Room	21 d	20/3/11	20/3/11	9/4/11	29/7/11	0 d	111 d	39,29,151
153	9.6.9	Pour 2b - Roof of Control Room	14 d	10/4/11	10/4/11	23/4/11	12/8/11	0 d	111 d	152,29
154	9.6.10	Block work wall of Control Room and Finishing works	7 d	24/4/11	24/4/11	30/4/11	19/8/11	43 d	111 d	153
155	9.7	Watermain laying works	90 d	9/3/11	9/3/11	6/6/11	19/8/11	6 d	74 d	149
156	9.8	Reinstatement of road and drainage	90 d	15/3/11	15/3/11	12/6/11	19/8/11	0 d	68 d	150
157	**9.9**	**Erection of Odour Bridge**	**247 d**	**10/7/11**	**10/7/11**	**12/3/12**	**13/4/12**	**32 d**	**32 d**	
158	9.9.1	Odour Bridge connecting DOU1	5 d	10/7/11	10/7/11	14/7/11	13/4/12	246 d	274 d	45,89,47,150
159	9.9.2	Odour Bridge connecting DOU2	36 d	6/2/12	6/2/12	12/3/12	13/4/12	4 d	32 d	45,90,47,134
160	10	**Site Availability of the Plinth and Control Room for DOU1**	**0 d**	12/6/11	**12/6/11**	**12/6/11**	19/8/11	0 d	68 d	**154,155,156**
161	11	**Site Availability of the Plinth and Control Room for DOU2**	**0 d**	19/8/11	**19/8/11**	**19/8/11**	19/8/11	0 d	0 d	**138,139,140**
162	12	Completion of Installation of Prototype Covers on Tank 43	0 d	31/3/10	31/3/10	31/3/10	15/8/12	868 d	868 d	1FS+153 d
163	13	**Delivery and Installation of FRP Covers & Accessories for Containment System**	**915 d**	**14/1/10**	**14/1/10**	**16/7/12**	**16/7/12**	**0 d**	**0 d**	
164	13.1	Delivery and Manufacture of Sedimentation Tank No.43	33 d	14/1/10	14/1/10	15/2/10	15/2/10	0 d	0 d	16,55FS+12 d,18
165	13.2	Installation and Testing of Containment System of Sedimentation Tank No.43	63 d	26/1/10	26/1/10	29/3/10	29/3/10	0 d	0 d	164FS-21 d
166	13.3	Delivery and Manufacture of Sedimentation Tank No.33	30 d	30/3/10	30/3/10	28/4/10	28/4/10	0 d	0 d	165,23FS-19 d
167	13.4	Installation and Testing of Containment System of Sedimentation Tank No.33	66 d	10/5/10	10/5/10	14/7/10	14/7/10	0 d	0 d	166FS+11 d,165
168	13.5	Delivery and Manufacture of Sedimentation Tank No.35	31 d	19/4/10	19/4/10	19/5/10	19/5/10	0 d	0 d	166FS-10 d
169	13.6	Installation and Testing of Containment System of Sedimentation Tank No.35	221 d	30/5/10	30/5/10	5/1/11	5/1/11	0 d	0 d	165,168FS+10 d
170	13.7	Delivery and Manufacture of Sedimentation Tank No.37	27 d	10/5/10	10/5/10	5/6/10	5/6/10	0 d	0 d	168FS-10 d,165
171	13.8	Installation and Testing of Containment System of Sedimentation Tank No.37	196 d	26/6/10	26/6/10	7/1/11	7/1/11	0 d	0 d	170FS+20 d,165
172	13.9	Delivery and Manufacture of Sedimentation Tank No.39	33 d	27/5/10	27/5/10	28/6/10	28/6/10	0 d	0 d	170FS-10 d
173	13.10	Installation and Testing of Containment System of Sedimentation Tank No.39	120 d	19/7/10	19/7/10	15/11/10	15/11/10	0 d	0 d	172FS+20 d,165
174	13.11	Delivery and Manufacture of Sedimentation Tank No.41	21 d	19/6/10	19/6/10	9/7/10	9/7/10	0 d	0 d	172FS-10 d
175	13.12	Installation and Testing of Containment System of Sedimentation Tank No.41	94 d	30/7/10	30/7/10	31/10/10	31/10/10	0 d	0 d	174FS+20 d,165
176	13.13	Delivery and Manufacture of Sedimentation Tank No.21	33 d	30/6/10	30/6/10	1/8/10	1/8/10	0 d	0 d	174FS-10 d
177	13.14	Installation and Testing of Containment System of Sedimentation Tank No.21	66 d	22/8/10	22/8/10	26/10/10	26/10/10	0 d	0 d	176FS+20 d,167
178	13.15	Delivery and Manufacture of Sedimentation Tank No.23	30 d	18/7/10	18/7/10	16/8/10	16/8/10	0 d	0 d	176FS-15 d
179	13.16	Installation and Testing of Containment System of Sedimentation Tank No.23	67 d	27/8/10	27/8/10	1/11/10	1/11/10	0 d	0 d	178FS+10 d,167
180	13.17	Delivery and Manufacture of Sedimentation Tank No.25	27 d	2/8/10	2/8/10	28/8/10	28/8/10	0 d	0 d	178FS-15 d



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181	13.18	Installation and Testing of Containment System of Sedimentation Tank No.25	79 d	2/12/10	2/12/10	18/2/11	18/2/11	0 d	0 d	180FS+10 d,169FS-35 d
182	13.19	Delivery and Manufacture of Sedimentation Tank No.27	32 d	14/8/10	14/8/10	14/9/10	14/9/10	0 d	0 d	180FS-15 d
183	13.20	Installation and Testing of Containment System of Sedimentation Tank No.27	72 d	9/12/10	9/12/10	18/2/11	18/2/11	0 d	0 d	182FS+30 d,171FS-30 d
184	13.21	Delivery and Manufacture of Flocculation Tank No.1	42 d	31/8/10	31/8/10	11/10/10	11/10/10	0 d	0 d	182FS-15 d
185	13.22	Installation and Testing of Containment System of Flocculation Tank No.1	164 d	16/11/10	16/11/10	28/4/11	28/4/11	0 d	0 d	184FS+10 d,173
186	13.23	Delivery and Manufacture of Flocculation Tank No.3	30 d	27/9/10	27/9/10	26/10/10	26/10/10	0 d	0 d	184FS-15 d
187	13.24	Installation and Testing of Containment System of Flocculation Tank No.3	179 d	1/11/10	1/11/10	28/4/11	28/4/11	0 d	0 d	186FS+5 d,175
188	13.25	Delivery and Manufacture of Sedimentation Tank No.17	30 d	12/10/10	12/10/10	10/11/10	10/11/10	0 d	0 d	186FS-15 d
189	13.26	Installation and Testing of Containment System of Sedimentation Tank No.17	139 d	1/12/10	1/12/10	18/4/11	18/4/11	0 d	0 d	188FS+20 d,177
190	13.27	Delivery and Manufacture of Sedimentation Tank No.19	34 d	27/10/10	27/10/10	29/11/10	29/11/10	0 d	0 d	188FS-15 d
191	13.28	Installation and Testing of Containment System of Sedimentation Tank No.19	140 d	30/11/10	30/11/10	18/4/11	18/4/11	0 d	0 d	190,179FS+10 d
192	13.29	Delivery and Manufacture of Flocculation Tank No.2	49 d	15/11/10	15/11/10	2/1/11	2/1/11	0 d	0 d	190FS-15 d
193	13.30	Installation and Testing of Containment System of Flocculation Tank No.2	94 d	19/2/11	19/2/11	23/5/11	23/5/11	0 d	0 d	192FS-20 d,181
194	13.31	Delivery and Manufacture of Flocculation Tank No.4	32 d	19/12/10	19/12/10	19/1/11	19/1/11	0 d	0 d	192FS-15 d
195	13.32	Installation and Testing of Containment System of Flocculation Tank No.4	104 d	9/2/11	9/2/11	23/5/11	23/5/11	0 d	0 d	194FS+15 d,183FS-10 d
196	13.33	Delivery and Manufacture of Sedimentation Tank No 13	37 d	5/1/11	5/1/11	10/2/11	10/2/11	0 d	0 d	194FS-15 d
197	13.34	Installation and Testing of Containment System of Sedimentation Tank No 13	29 d	29/4/11	29/4/11	27/5/11	27/5/11	0 d	0 d	196FS-20 d,185
198	13.35	Delivery and Manufacture of Sedimentation Tank No 15	45 d	27/1/11	27/1/11	12/3/11	12/3/11	0 d	0 d	196FS-15 d
199	13.36	Installation and Testing of Containment System of Sedimentation Tank No 15	29 d	29/4/11	29/4/11	27/5/11	27/5/11	0 d	0 d	198FS-20 d,187
200	13.37	Delivery and Manufacture of Sedimentation Tank No 11	21 d	26/2/11	26/2/11	18/3/11	18/3/11	0 d	0 d	198FS-15 d
201	13.38	Installation and Testing of Containment System of Sedimentation Tank No 11	90 d	19/4/11	19/4/11	17/7/11	17/7/11	0 d	0 d	200FS-20 d,189
202	13.39	Delivery and Manufacture of Sedimentation Tank No 9	37 d	4/3/11	4/3/11	9/4/11	9/4/11	0 d	0 d	200FS-15 d
203	13.40	Installation and Testing of Containment System of Sedimentation Tank No 9	90 d	19/4/11	19/4/11	17/7/11	17/7/11	0 d	0 d	202FS-20 d,191
204	13.41	Delivery and Manufacture of Sedimentation Tank No 45	31 d	26/3/11	26/3/11	25/4/11	25/4/11	0 d	0 d	202FS-15 d
205	13.42	Installation and Testing of Containment System of Sedimentation Tank No 45	86 d	24/5/11	24/5/11	17/8/11	17/8/11	0 d	0 d	204FS+10 d,193
206	13.43	Delivery and Manufacture of Sedimentation Tank No 31	32 d	11/4/11	11/4/11	12/5/11	12/5/11	0 d	0 d	204FS-15 d
207	13.44	Installation and Testing of Containment System of Sedimentation Tank No 31	86 d	24/5/11	24/5/11	17/8/11	17/8/11	0 d	0 d	206FS-20 d,195
208	13.45	Delivery and Manufacture of Sedimemtation Tank No 29	32 d	28/4/11	28/4/11	29/5/11	29/5/11	0 d	0 d	206FS-15 d
209	13.46	Installation and Testing of Containment System of Sedimemtation Tank No 29	84 d	28/5/11	28/5/11	19/8/11	19/8/11	0 d	0 d	208FS-20 d,197
210	13.47	Delivery and Manufacture of Flocculation Tank 5	31 d	15/5/11	15/5/11	14/6/11	14/6/11	0 d	0 d	208FS-15 d

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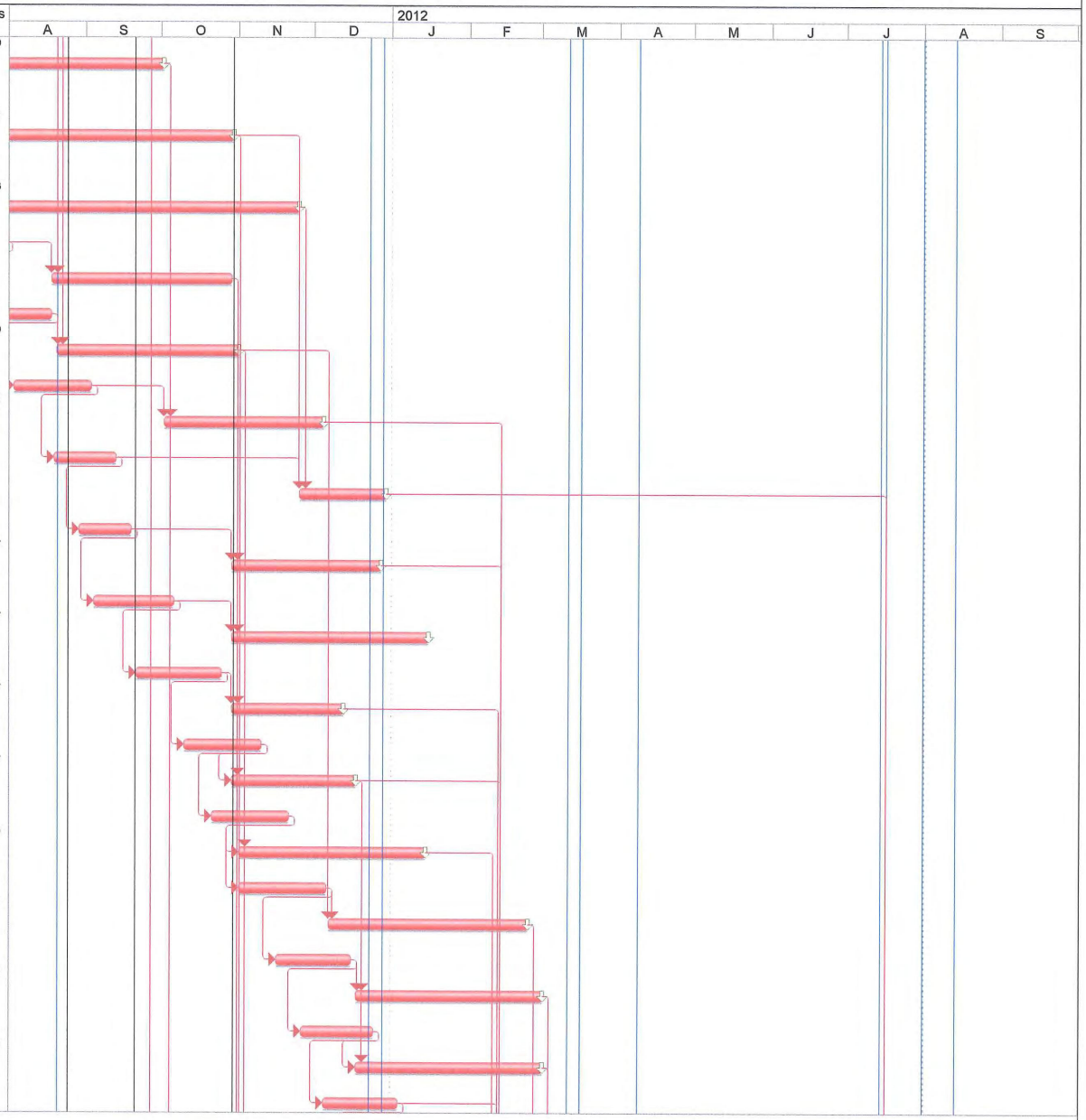
ATAL Engineering Limited

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)

(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
211	13.48	Installation and Testing of Containment System of Flocculation Tank 5	127 d	28/5/11	28/5/11	1/10/11	1/10/11	0 d	0 d	210FS-20 d,199
212	13.49	Delivery and Manufacture of Flocculation Tank No.7	30 d	31/5/11	31/5/11	29/6/11	29/6/11	0 d	0 d	210FS-15 d
213	13.50	Installation and Testing of Containment System of Flocculation Tank No.7	104 d	18/7/11	18/7/11	29/10/11	29/10/11	0 d	0 d	212FS-20 d,201
214	13.51	Delivery and Manufacture of Flocculation Tank No.6	29 d	15/6/11	15/6/11	13/7/11	13/7/11	0 d	0 d	212FS-15 d
215	13.52	Installation and Testing of Containment System of Flocculation Tank No.6	130 d	18/7/11	18/7/11	24/11/11	24/11/11	0 d	0 d	214FS-20 d,203
216	13.53	Delivery and Manufacture of Flocculation Tank 8	32 d	29/6/11	29/6/11	30/7/11	30/7/11	0 d	0 d	214FS-15 d
217	13.54	Installation and Testing of Containment System of Flocculation Tank 8	72 d	18/8/11	18/8/11	28/10/11	28/10/11	0 d	0 d	216FS-20 d,205,207
218	13.55	Delivery and Manufacture of Sedimentation Tank No.38	33 d	16/7/11	16/7/11	17/8/11	17/8/11	0 d	0 d	216FS-15 d
219	13.56	Installation and Testing of Containment System of Sedimentation Tank No.38	73 d	20/8/11	20/8/11	31/10/11	31/10/11	0 d	0 d	218FS-20 d,209
220	13.57	Delivery and Manufacture of Sedimentation Tank No.36	31 d	3/8/11	3/8/11	2/9/11	2/9/11	0 d	0 d	218FS-15 d
221	13.58	Installation and Testing of Containment System of Sedimentation Tank No.36	64 d	2/10/11	2/10/11	4/12/11	4/12/11	0 d	0 d	220FS-20 d,211
222	13.59	Delivery and Manufacture of Sedimentation Tank No.22	25 d	19/8/11	19/8/11	12/9/11	12/9/11	0 d	0 d	220FS-15 d
223	13.60	Installation and Testing of Containment System of Sedimentation Tank No.22	35 d	25/11/11	25/11/11	29/12/11	29/12/11	0 d	0 d	222FS-20 d,213,215
224	13.61	Delivery and Manufacture of Sedimentation Tank No.24	21 d	29/8/11	29/8/11	18/9/11	18/9/11	0 d	0 d	222FS-15 d
225	13.62	Installation and Testing of Containment System of Sedimentation Tank No.24	60 d	29/10/11	29/10/11	27/12/11	27/12/11	0 d	0 d	224FS-20 d,217
226	13.63	Delivery and Manufacture of Sedimentation Tank No.30	32 d	4/9/11	4/9/11	5/10/11	5/10/11	0 d	0 d	224FS-15 d
227	13.64	Installation and Testing of Containment System of Sedimentation Tank No.30	79 d	29/10/11	29/10/11	15/1/12	15/1/12	0 d	0 d	226FS-20 d,217
228	13.65	Delivery and Manufacture of Sedimentation Tank No.32	34 d	21/9/11	21/9/11	24/10/11	24/10/11	0 d	0 d	226FS-15 d
229	13.66	Installation and Testing of Containment System of Sedimentation Tank No.32	45 d	29/10/11	29/10/11	12/12/11	12/12/11	0 d	0 d	228FS-20 d,217
230	13.67	Delivery and Manufacture of Sedimentation Tank No.10	31 d	10/10/11	10/10/11	9/11/11	9/11/11	0 d	0 d	228FS-15 d
231	13.68	Installation and Testing of Containment System of Sedimentation Tank No.10	50 d	29/10/11	29/10/11	17/12/11	17/12/11	0 d	0 d	230FS-20 d,217
232	13.69	Delivery and Manufacture of Sedimentation Tank No.12	31 d	21/10/11	21/10/11	20/11/11	20/11/11	0 d	0 d	230FS-20 d
233	13.70	Installation and Testing of Containment System of Sedimentation Tank No.12	75 d	1/11/11	1/11/11	14/1/12	14/1/12	0 d	0 d	232FS-20 d,219
234	13.71	Delivery and Manufacture of Prototype near Tank No.33	35 d	1/11/11	1/11/11	5/12/11	5/12/11	0 d	0 d	232FS-20 d
235	13.72	Installation and Testing of Containment System of Prototype near Tank No.33	80 d	7/12/11	7/12/11	24/2/12	24/2/12	0 d	0 d	234FS+1 d,219
236	13.73	Delivery and Manufacture of Sedimentation Tank No.18	30 d	16/11/11	16/11/11	15/12/11	15/12/11	0 d	0 d	234FS-20 d
237	13.74	Installation and Testing of Containment System of Sedimentation Tank No.18	75 d	18/12/11	18/12/11	1/3/12	1/3/12	0 d	0 d	236FS-20 d,231
238	13.75	Delivery and Manufacture of Sedimentation Tank No.20	29 d	26/11/11	26/11/11	24/12/11	24/12/11	0 d	0 d	236FS-20 d
239	13.76	Installation and Testing of Containment System of Sedimentation Tank No.20	75 d	18/12/11	18/12/11	1/3/12	1/3/12	0 d	0 d	238FS-20 d,231
240	13.77	Delivery and Manufacture of Sedimentation Tank No.14	30 d	5/12/11	5/12/11	3/1/12	3/1/12	0 d	0 d	238FS-20 d



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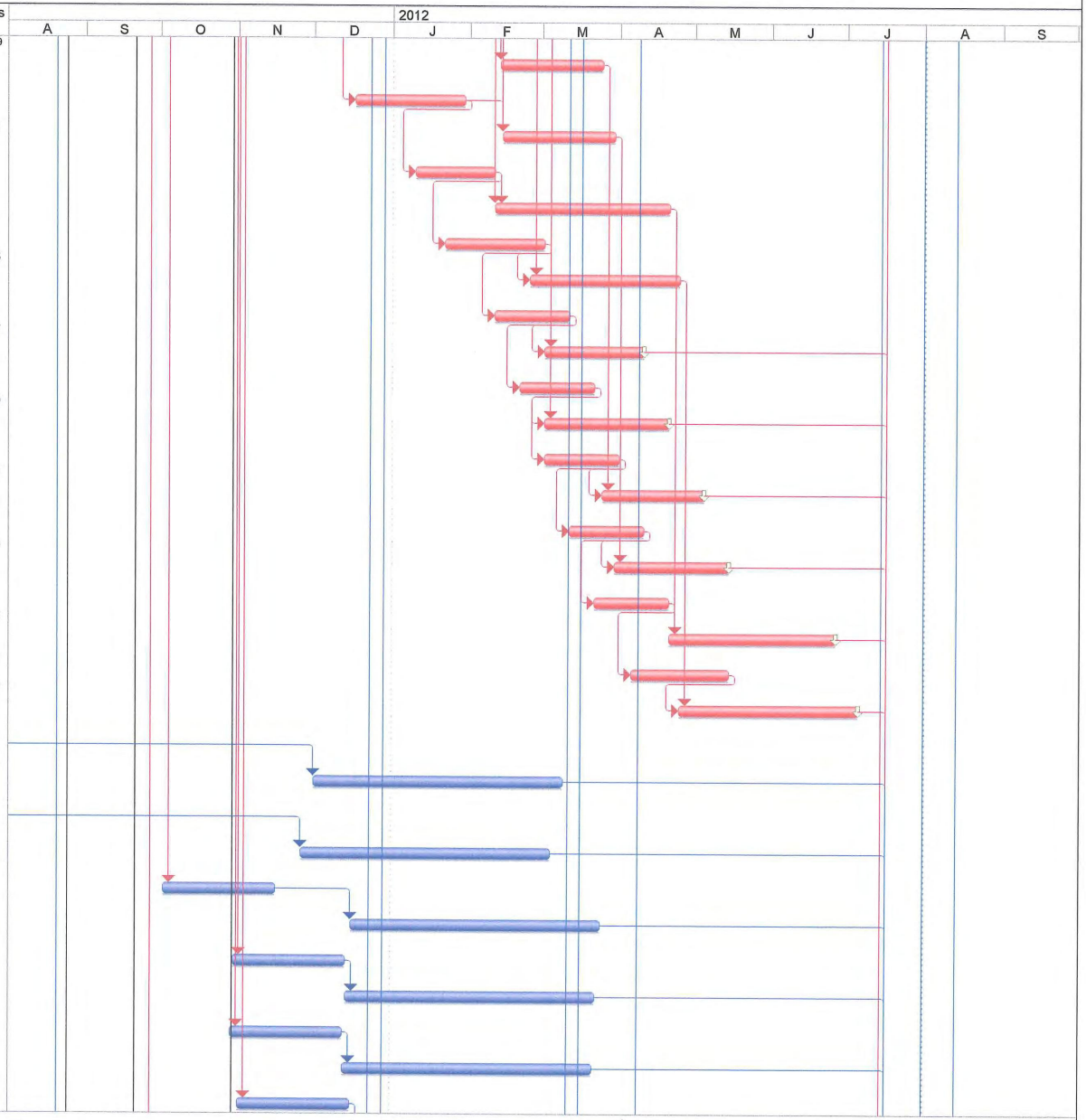
ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
241	13.78	Installation and Testing of Containment System of Sedimentation Tank No.14	41 d	13/2/12	13/2/12	24/3/12	24/3/12	0 d	0 d	240FS+40 d,229
242	13.79	Delivery and Manufacture of Sedimentation Tank No.16	44 d	17/12/11	17/12/11	29/1/12	29/1/12	0 d	0 d	240FS-18 d
243	13.80	Installation and Testing of Containment System of Sedimentation Tank No.16	45 d	14/2/12	14/2/12	29/3/12	29/3/12	0 d	0 d	242FS+15 d,231,221FS+3 d,225FS+3 d
244	13.81	Delivery and Manufacture of Sedimentation Tank No.26	32 d	10/1/12	10/1/12	10/2/12	10/2/12	0 d	0 d	242FS-20 d
245	13.82	Installation and Testing of Containment System of Sedimentation Tank No.26	70 d	11/2/12	11/2/12	20/4/12	20/4/12	0 d	0 d	244,233
246	13.83	Delivery and Manufacture of Sedimentation Tank No.28	40 d	22/1/12	22/1/12	1/3/12	1/3/12	0 d	0 d	244FS-20 d
247	13.84	Installation and Testing of Containment System of Sedimentation Tank No.28	60 d	25/2/12	25/2/12	24/4/12	24/4/12	0 d	0 d	246FS-20 d,235
248	13.85	Delivery and Manufacture of Prototype near Tank No.34	30 d	11/2/12	11/2/12	11/3/12	11/3/12	0 d	0 d	246FS-20 d
249	13.86	Installation and Testing of Containment System of Prototype near Tank No.34	40 d	2/3/12	2/3/12	10/4/12	10/4/12	0 d	0 d	248FS-20 d,237
250	13.87	Delivery and Manufacture of Sedimentation Tank No.34	30 d	21/2/12	21/2/12	21/3/12	21/3/12	0 d	0 d	248FS-20 d
251	13.88	Installation and Testing of Containment System of Sedimentation Tank No.34	50 d	2/3/12	2/3/12	20/4/12	20/4/12	0 d	0 d	250FS-20 d,239
252	13.89	Delivery and Manufacture of Sedimentation Tank No.44	30 d	2/3/12	2/3/12	31/3/12	31/3/12	0 d	0 d	250FS-20 d
253	13.90	Installation and Testing of Containment System of Sedimentation Tank No.44	41 d	25/3/12	25/3/12	4/5/12	4/5/12	0 d	0 d	252FS-20 d,241
254	13.91	Delivery and Manufacture of Sedimentation Tank No.46	30 d	12/3/12	12/3/12	10/4/12	10/4/12	0 d	0 d	252FS-20 d
255	13.92	Installation and Testing of Containment System of Sedimentation Tank No.46	46 d	30/3/12	30/3/12	14/5/12	14/5/12	0 d	0 d	254FS-20 d,243
256	13.93	Delivery and Manufacture of Sedimentation Tank No.42	30 d	22/3/12	22/3/12	20/4/12	20/4/12	0 d	0 d	254FS-20 d
257	13.94	Installation and Testing of Containment System of Sedimentation Tank No.42	67 d	21/4/12	21/4/12	26/6/12	26/6/12	0 d	0 d	256FS-20 d,245
258	13.95	Delivery and Manufacture of Sedimentation Tank No.40	39 d	6/4/12	6/4/12	14/5/12	14/5/12	0 d	0 d	256FS-15 d
259	13.96	Installation and Testing of Containment System of Sedimentation Tank No.40	72 d	25/4/12	25/4/12	5/7/12	5/7/12	0 d	0 d	258FS-20 d,247
260	13.97	Delivery and Manufacture of Main Disribution Channel (1-19)	85 d	20/1/11	20/1/11	14/4/11	21/8/11	0 d	129 d	194
261	13.98	Installation and Testing of Containment System of Main Disribution Channel (1-19)	100 d	1/12/11	1/12/11	9/3/12	16/7/12	118 d	129 d	260FS+230 d
262	13.99	Delivery and Manufacture of Main Disribution Channel (21-31)	80 d	20/1/11	20/1/11	9/4/11	21/8/11	0 d	134 d	194
263	13.100	Installation and Testing of Containment System of Main Disribution Channel (21-31)	100 d	26/11/11	26/11/11	4/3/12	16/7/12	123 d	134 d	262FS+230 d
264	13.101	Delivery and Manufacture of Main Disribution Channel (33-45)	45 d	2/10/11	2/10/11	15/11/11	8/3/12	0 d	114 d	211
265	13.102	Installation and Testing of Containment System of Main Disribution Channel (33-45)	100 d	16/12/11	16/12/11	24/3/12	16/7/12	103 d	114 d	264FS+30 d
266	13.103	Delivery and Manufacture of Main Disribution Channel (22-32)	45 d	30/10/11	30/10/11	13/12/11	7/4/12	0 d	116 d	213
267	13.104	Installation and Testing of Containment System of Main Disribution Channel (22-32)	100 d	14/12/11	14/12/11	22/3/12	16/7/12	105 d	116 d	266
268	13.105	Delivery and Manufacture of Main Disribution Channel (34-46)	45 d	29/10/11	29/10/11	12/12/11	7/4/12	0 d	117 d	217
269	13.106	Installation and Testing of Containment System of Main Disribution Channel (34-46)	100 d	13/12/11	13/12/11	21/3/12	16/7/12	106 d	117 d	268
270	13.107	Delivery and Manufacture of Main Disribution Channel (2-20)	45 d	1/11/11	1/11/11	15/12/11	7/4/12	0 d	114 d	219



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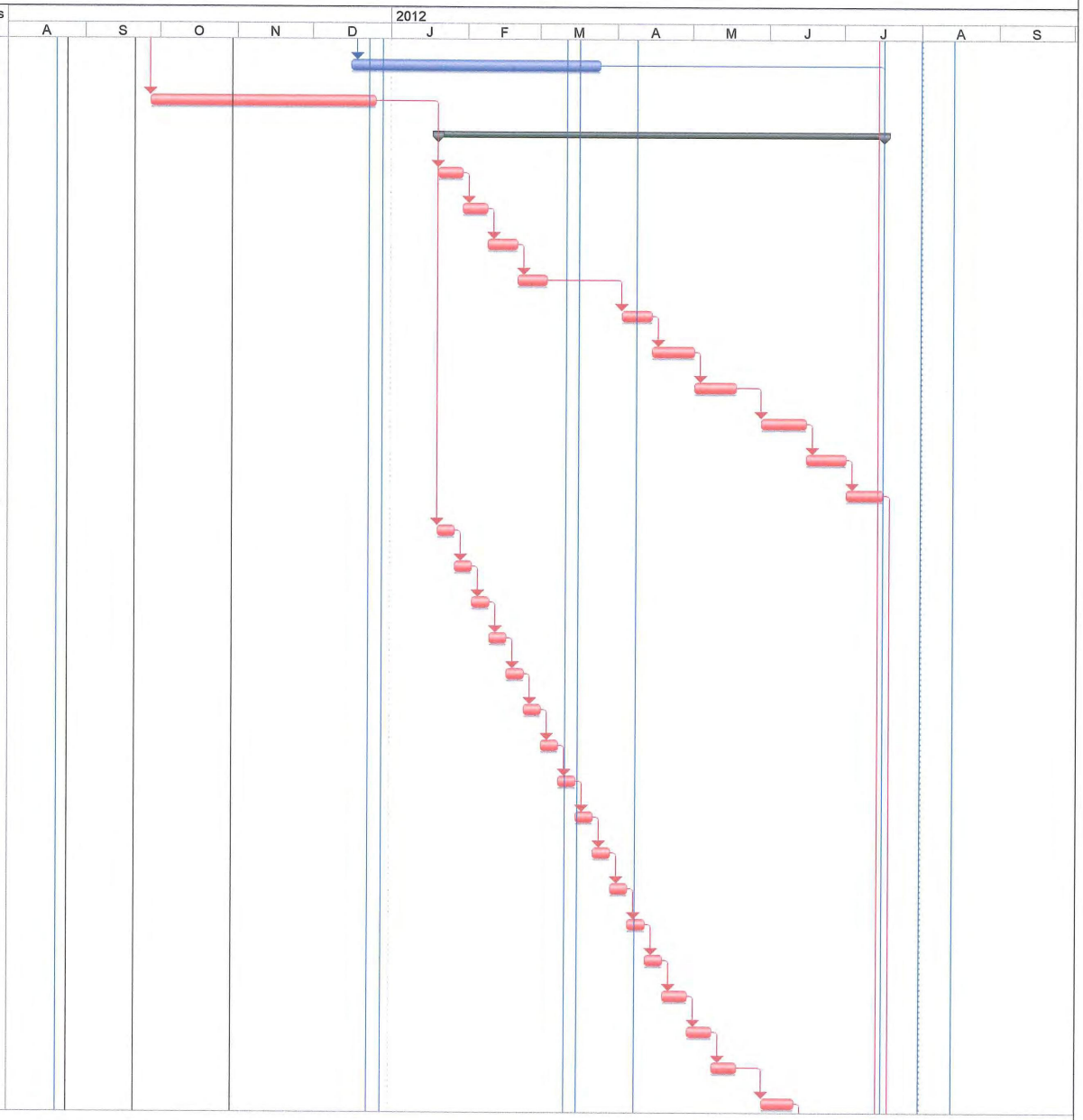
ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
271	13.108	Installation and Testing of Containment System of Main Disribution Channel (2-20)	100 d	16/12/11	16/12/11	24/3/12	16/7/12	103 d	114 d	270
272	13.109	Delivery and Manufacture of Scum Pit and Effluent Drop Structure	90 d	27/9/11	27/9/11	25/12/11	25/12/11	0 d	0 d	208FS+120 d
273	**13.110**	**Installation and Testing of Containment System of Scum Pit and Effluent Drop Structure**	**179 d**	**20/1/12**	**20/1/12**	**16/7/12**	**16/7/12**	**0 d**	**0 d**	
274	13.110.1	Scum Pit S#4	10 d	20/1/12	20/1/12	29/1/12	29/1/12	0 d	0 d	272FS+25 d
275	13.110.2	Scum Pit S#1	10 d	30/1/12	30/1/12	8/2/12	8/2/12	0 d	0 d	274
276	13.110.3	Scum Pit S#6	12 d	9/2/12	9/2/12	20/2/12	20/2/12	0 d	0 d	275
277	13.110.4	Scum Pit S#7	12 d	21/2/12	21/2/12	3/3/12	3/3/12	0 d	0 d	276
278	13.110.5	Scum Pit S#8	12 d	3/4/12	3/4/12	14/4/12	14/4/12	0 d	0 d	277FS+30 d
279	13.110.6	Scum Pit S#9	17 d	15/4/12	15/4/12	1/5/12	1/5/12	0 d	0 d	278
280	13.110.7	Scum Pit S#10	17 d	2/5/12	2/5/12	18/5/12	18/5/12	0 d	0 d	279
281	13.110.8	Scum Pit S#5	18 d	29/5/12	29/5/12	15/6/12	15/6/12	0 d	0 d	280FS+10 d
282	13.110.9	Scum Pit S#2	16 d	16/6/12	16/6/12	1/7/12	1/7/12	0 d	0 d	281
283	13.110.10	Scum Pit S#2	15 d	2/7/12	2/7/12	16/7/12	16/7/12	0 d	0 d	282
284	13.110.11	Effluent Drop Structure #7	7 d	20/1/12	20/1/12	26/1/12	26/1/12	0 d	0 d	272FS+25 d
285	13.110.12	Effluent Drop Structure 14	7 d	27/1/12	27/1/12	2/2/12	2/2/12	0 d	0 d	284
286	13.110.13	Effluent Drop Structure #11	7 d	3/2/12	3/2/12	9/2/12	9/2/12	0 d	0 d	285
287	13.110.14	Effluent Drop Structure #16	7 d	10/2/12	10/2/12	16/2/12	16/2/12	0 d	0 d	286
288	13.110.15	Effluent Drop Structure #2	7 d	17/2/12	17/2/12	23/2/12	23/2/12	0 d	0 d	287
289	13.110.16	Effluent Drop Structure #1	7 d	24/2/12	24/2/12	1/3/12	1/3/12	0 d	0 d	288
290	13.110.17	Effluent Drop Structure #13	7 d	2/3/12	2/3/12	8/3/12	8/3/12	0 d	0 d	289
291	13.110.18	Effluent Drop Structure #6	7 d	9/3/12	9/3/12	15/3/12	15/3/12	0 d	0 d	290
292	13.110.19	Effluent Drop Structure #12	7 d	16/3/12	16/3/12	22/3/12	22/3/12	0 d	0 d	291
293	13.110.20	Effluent Drop Structure #15	7 d	23/3/12	23/3/12	29/3/12	29/3/12	0 d	0 d	292
294	13.110.21	Effluent Drop Structure #9	7 d	30/3/12	30/3/12	5/4/12	5/4/12	0 d	0 d	293
295	13.110.22	Effluent Drop Structure #8	7 d	6/4/12	6/4/12	12/4/12	12/4/12	0 d	0 d	294
296	13.110.23	Effluent Drop Structure #17	7 d	13/4/12	13/4/12	19/4/12	19/4/12	0 d	0 d	295
297	13.110.24	Effluent Drop Structure #20	10 d	20/4/12	20/4/12	29/4/12	29/4/12	0 d	0 d	296
298	13.110.25	Effluent Drop Structure #10	10 d	30/4/12	30/4/12	9/5/12	9/5/12	0 d	0 d	297
299	13.110.26	Effluent Drop Structure 19	10 d	10/5/12	10/5/12	19/5/12	19/5/12	0 d	0 d	298
300	13.110.27	Effluent Drop Structure #4	13 d	30/5/12	30/5/12	11/6/12	11/6/12	0 d	0 d	299FS+10 d



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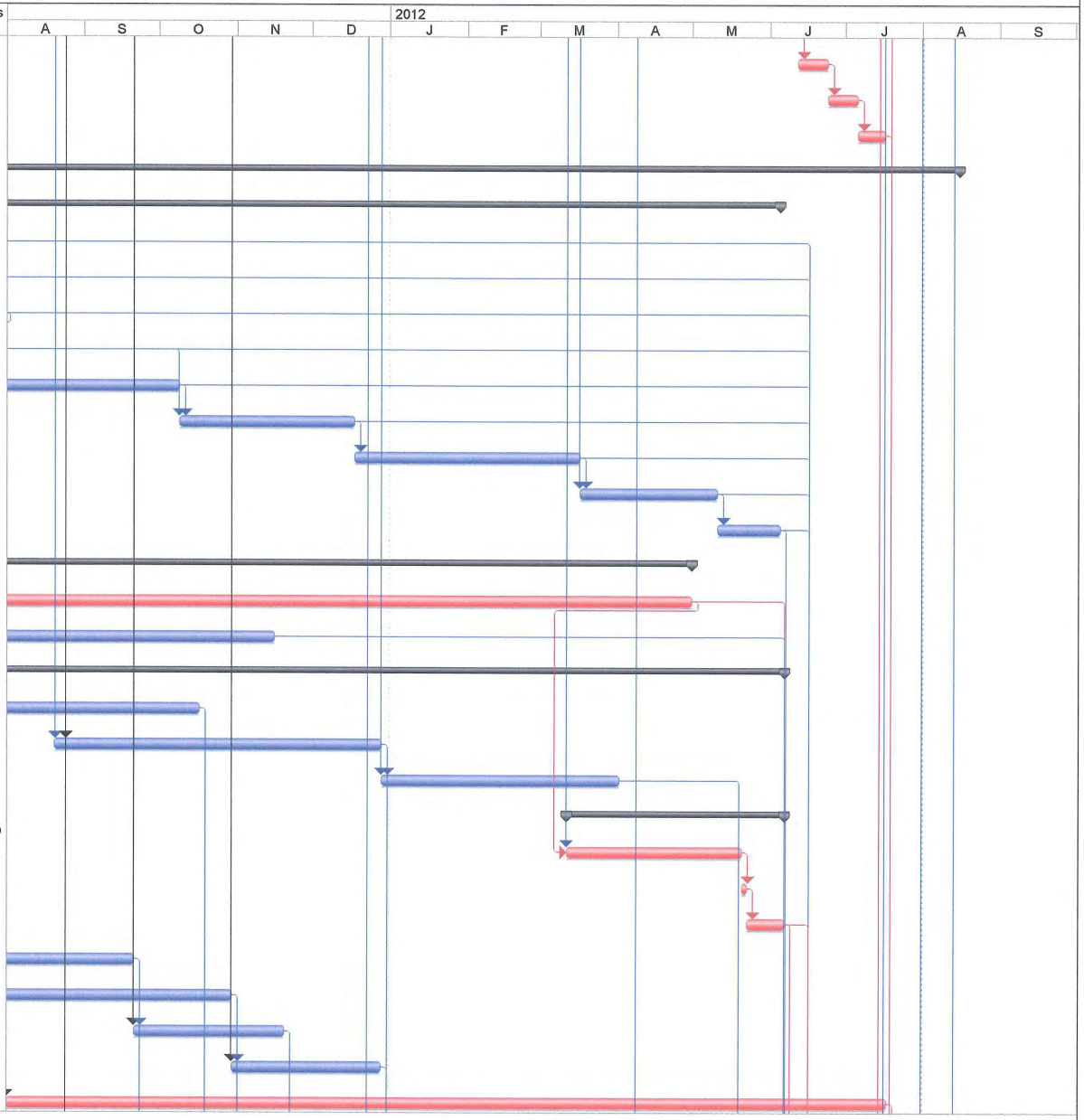
301	13.110.28	Effluent Drop Structure #5	12 d	12/6/12	12/6/12	23/6/12	23/6/12	0 d	0 d	300
302	13.110.29	Effluent Drop Structure #3	12 d	24/6/12	24/6/12	5/7/12	5/7/12	0 d	0 d	301
303	13.110.30	Effluent Drop Structure #18	11 d	6/7/12	6/7/12	16/7/12	16/7/12	0 d	0 d	302
304	14	**Site Installation**	**517 d**	**18/3/11**	**18/3/11**	**15/8/12**	**15/8/12**	**0 d**	**0 d**	
305	14.1	**FRP Ductwork**	**445 d**	**18/3/11**	**18/3/11**	**4/6/12**	**2/7/12**	**28 d**	**28 d**	
306	14.1.1	Sedimentation Tank (33-45, Odd Number)	60 d	18/3/11	18/3/11	16/5/11	13/6/11	0 d	28 d	78FS+110 d
307	14.1.2	Sedimentation Tank (9 -31, Odd Number)	60 d	17/5/11	17/5/11	15/7/11	12/8/11	0 d	28 d	306
308	14.1.3	Flocculation Tank (Odd Number)	25 d	6/7/11	6/7/11	30/7/11	27/8/11	0 d	28 d	307FS-10 d
309	14.1.4	Flocculation Tank (Even Number)	25 d	6/7/11	6/7/11	30/7/11	5/11/11	70 d	98 d	307FS-10 d
310	14.1.5	Main Distribution Channel (Odd Number)	80 d	21/7/11	21/7/11	8/10/11	5/11/11	0 d	28 d	308FS-10 d
311	14.1.6	Main Distribution Channel (Even Number)	70 d	9/10/11	9/10/11	17/12/11	14/1/12	0 d	28 d	309,310
312	14.1.7	Sedimentation Tank (34 -46, Even Number)	90 d	18/12/11	18/12/11	16/3/12	13/4/12	0 d	28 d	311
313	14.1.8	Sedimentation Tank (10 -32, Even Number)	55 d	17/3/12	17/3/12	10/5/12	7/6/12	0 d	28 d	85,312,158,159
314	14.1.9	Inlet Works	25 d	11/5/12	11/5/12	4/6/12	2/7/12	0 d	28 d	313
315	14.2	**Deodorization System**	**327 d**	**9/6/11**	**9/6/11**	**30/4/12**	**30/4/12**	**0 d**	**0 d**	
316	14.2.1	Deodourization System No. 2	327 d	9/6/11	9/6/11	30/4/12	30/4/12	0 d	0 d	150,75
317	14.2.2	Deodourization System No. 1	130 d	9/7/11	9/7/11	15/11/11	11/3/12	106 d	117 d	134,76
318	14.3	**Electrical Installation**	**410 d**	**24/4/11**	**24/4/11**	**6/6/12**	**2/7/12**	**26 d**	**26 d**	
319	14.3.1	LV Switchboard at DOU1	120 d	19/6/11	19/6/11	16/10/11	18/6/12	0 d	246 d	92,160
320	14.3.2	LV Switchboard at DOU2	131 d	20/8/11	20/8/11	28/12/11	8/2/12	0 d	42 d	93,161
321	14.3.3	Cabling Laying and Termination for DOU and SCADA	95 d	29/12/11	29/12/11	1/4/12	2/7/12	50 d	92 d	96,320
322	14.3.4	**Modification of SCADA System (VO13)**	**87 d**	**12/3/12**	**12/3/12**	**6/6/12**	**6/6/12**	**0 d**	**0 d**	
323	14.3.4.1	Programming Works	70 d	12/3/12	12/3/12	20/5/12	20/5/12	0 d	0 d	94,317,316FS-50 d
324	14.3.4.2	Factory Acceptance Test	2 d	21/5/12	21/5/12	22/5/12	22/5/12	0 d	0 d	323
325	14.3.4.3	Site Modification Works	15 d	23/5/12	23/5/12	6/6/12	6/6/12	0 d	0 d	324
326	14.3.5	Earthing Installation at DOU1	150 d	24/4/11	24/4/11	20/9/11	13/4/12	0 d	206 d	153
327	14.3.6	Earthing Installation at DOU2	100 d	22/7/11	22/7/11	29/10/11	3/2/12	0 d	97 d	137
328	14.3.7	Lightning Installation at DOU1	60 d	21/9/11	21/9/11	19/11/11	12/6/12	0 d	206 d	160,326
329	14.3.8	Lightning Installation at DOU2	60 d	30/10/11	30/10/11	28/12/11	3/4/12	0 d	97 d	161,327
330	14.4	CCTV System and associated cabling work	352 d	1/8/11	1/8/11	17/7/12	17/7/12	0 d	0 d	95,161FS-19 d,160FS-19 d



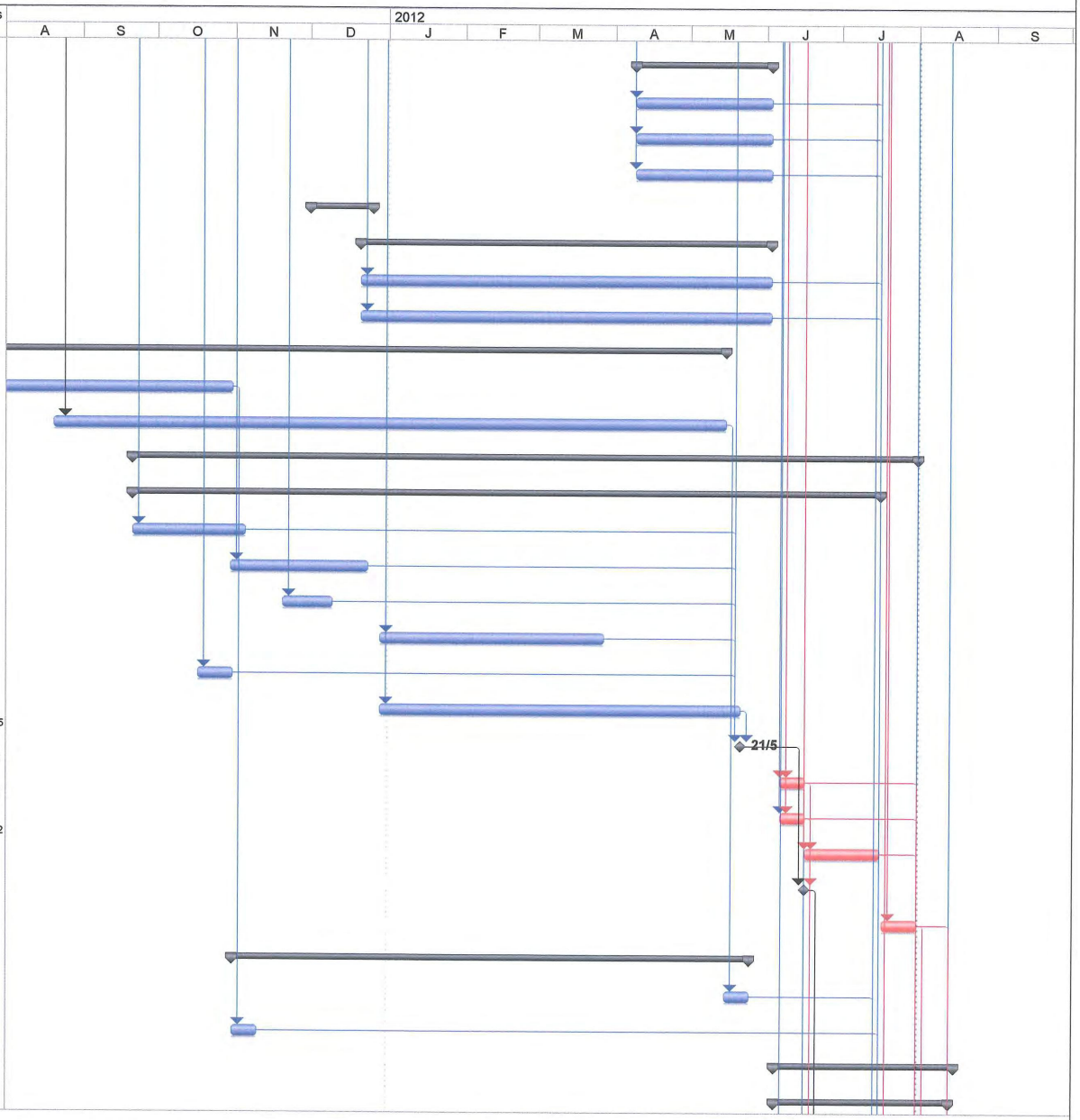
Contract No. DE/2009/02
Revision: 0
Date: 28 Jul 2012

Task | Progress | Summary | External Tasks | Group By Summary
Critical Task | Milestone | Split | Project Summary | Deadline

ATAL Engineering Limited

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)
(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
331	14.5	**FRP Cover at Rapid Mix Tank (VO12)**	**55 d**	**9/4/12**	**9/4/12**	**2/6/12**	**16/7/12**	**44 d**	**44 d**	
332	14.5.1	Rapid Mix Tank Cover	55 d	9/4/12	9/4/12	2/6/12	16/7/12	42 d	44 d	98FS+35 d
333	14.5.2	Air Ductwork & Duct Support	55 d	9/4/12	9/4/12	2/6/12	16/7/12	42 d	44 d	99FS+35 d
334	14.5.3	Influent Area Cover	55 d	9/4/12	9/4/12	2/6/12	16/7/12	42 d	44 d	100FS+35 d
335	14.6	**FRP Cover at Flow Distribution Chamber (VO14)**	**25 d**	**1/12/11**	**1/12/11**	**25/12/11**	**16/7/12**	**174 d**	**174 d**	
339	14.7	**Isolation Stopboard for Scum Pit and Effluent Drop Structure (VO15)**	**165 d**	**21/12/11**	**21/12/11**	**2/6/12**	**16/7/12**	**44 d**	**44 d**	
340	14.7.1	Support Frame Work	165 d	21/12/11	21/12/11	2/6/12	16/7/12	33 d	44 d	106
341	14.7.2	FRP Stopboard	165 d	21/12/11	21/12/11	2/6/12	16/7/12	33 d	44 d	107
342	14.8	**BS Installation**	**338 d**	**13/6/11**	**13/6/11**	**15/5/12**	**6/7/12**	**52 d**	**52 d**	
343	14.8.1	Building Services and FS Equipment Installation at DOU1	140 d	13/6/11	13/6/11	30/10/11	6/7/12	0 d	250 d	160
344	14.8.2	Building Services and FS Equipment Installation at DOU2	270 d	20/8/11	20/8/11	15/5/12	6/7/12	0 d	52 d	161
345	14.9	**Testing and Commissioning**	**315 d**	**21/9/11**	**21/9/11**	**31/7/12**	**31/7/12**	**0 d**	**0 d**	
346	14.9.1	**Electrical Installation**	**300 d**	**21/9/11**	**21/9/11**	**16/7/12**	**16/7/12**	**0 d**	**0 d**	
347	14.9.1.1	Earthing Installation at DOU1	45 d	21/9/11	21/9/11	4/11/11	2/7/12	199 d	241 d	326
348	14.9.1.2	Earthing Installation at DOU2	55 d	30/10/11	30/10/11	23/12/11	2/7/12	150 d	192 d	327
349	14.9.1.3	Lightning Installation at DOU1	20 d	20/11/11	20/11/11	9/12/11	2/7/12	164 d	206 d	328
350	14.9.1.4	Lightning Installation at DOU2	90 d	29/12/11	29/12/11	27/3/12	2/7/12	55 d	97 d	329
351	14.9.1.5	LV Switchboard at DOU1	14 d	17/10/11	17/10/11	30/10/11	2/7/12	204 d	246 d	319
352	14.9.1.6	LV Switchboard at DOU2	145 d	29/12/11	29/12/11	21/5/12	2/7/12	0 d	42 d	320
353	14.9.1.7	Power Energization for DOU2	0 d	21/5/12	21/5/12	21/5/12	3/7/12	15 d	42 d	52,347,348,349,35
354	14.9.1.8	Deodourization System No. 2	10 d	7/6/12	7/6/12	16/6/12	16/6/12	0 d	0 d	316,338,337,325
355	14.9.1.9	Deodourization System No. 1	10 d	7/6/12	7/6/12	16/6/12	16/6/12	0 d	0 d	317,338,337,325
356	14.9.1.10	DCS/ PLC System	30 d	17/6/12	17/6/12	16/7/12	16/7/12	0 d	0 d	54,355,338,337,32
357	14.9.2	Manual Operation of DOU2	0 d	16/6/12	16/6/12	16/6/12	3/7/12	0 d	16 d	354,353
358	14.9.3	CCTV System	14 d	18/7/12	18/7/12	31/7/12	31/7/12	0 d	0 d	330
359	14.9.4	**BS & FS Installation**	**208 d**	**31/10/11**	**31/10/11**	**25/5/12**	**16/7/12**	**52 d**	**52 d**	
360	14.9.4.1	Building Services and FS Equipment Installation at DOU2	10 d	16/5/12	16/5/12	25/5/12	16/7/12	50 d	52 d	344
361	14.9.4.2	Building Services and FS Equipment Installation at DOU1	10 d	31/10/11	31/10/11	9/11/11	16/7/12	239 d	250 d	343
362	14.10	**System Performance Test**	**72 d**	**5/6/12**	**5/6/12**	**15/8/12**	**15/8/12**	**0 d**	**0 d**	
363	14.10.1	**Deodourization System No. 1**	**70 d**	**5/6/12**	**5/6/12**	**13/8/12**	**15/8/12**	**2 d**	**2 d**	



Contract No. DE/2009/02
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Task | Progress | Summary | External Tasks | Group By Summary
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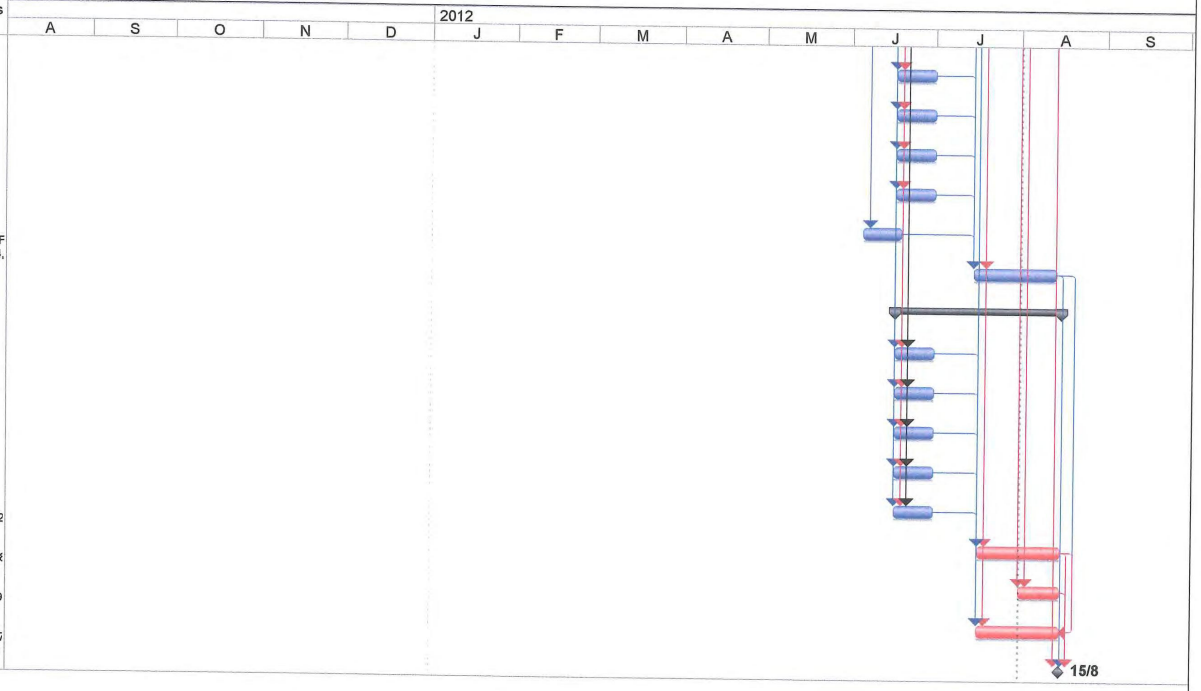
ATAL Engineering Limited

Three Months Rolling Programme for Contract No. DE/2009/02
Provision of Covers and Deodourisation Facilities to the Existing Sedimentation Tanks at Stonecutters Island Sewage Treatment Works (Jul12 to Sep12)
(Revision 0)

ID	WBS	Task Name	Duration	Early Start	Start	Finish	Late Finish	Free Slack	Total Slack	Predecessors
364	14.10.1.1	Sedimentation Tank (34 -46, Even Number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	14 d	16 d	355,313
365	14.10.1.2	Sedimentation Tank (10 -32, Even Number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	14 d	16 d	312,355
366	14.10.1.3	Main Distribution Channel (Even Number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	14 d	16 d	355,311
367	14.10.1.4	Flocculation Tank (Even number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	14 d	16 d	355,309
368	14.10.1.5	Inlet Works	14 d	5/6/12	5/6/12	18/6/12	16/7/12	26 d	28 d	314
369	14.10.1.6	Final DOU1 System Acceptance Test	30 d	15/7/12	15/7/12	13/8/12	15/8/12	2 d	2 d	,365,367,368,356F),366,259,336,334,
370	**14.10.2**	**Deodourization System No. 2**	**60 d**	**17/6/12**	**17/6/12**	**15/8/12**	**15/8/12**	**0 d**	**0 d**	
371	14.10.2.1	Sedimentation Tank (33-45, Odd Number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	16 d	16 d	306,354,357
372	14.10.2.2	Sedimentation Tank (9 -31, Odd Number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	16 d	16 d	307,354,357
373	14.10.2.3	Main Distribution Channel (odd number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	16 d	16 d	310,354,357
374	14.10.2.4	Flocculation Tank (odd number)	14 d	17/6/12	17/6/12	30/6/12	16/7/12	16 d	16 d	308,354,357
375	14.10.2.5	Inlet Works	14 d	17/6/12	17/6/12	30/6/12	16/7/12	16 d	16 d	354,314,357
376	14.10.2.6	Final DOU2 System Acceptance Test	30 d	17/7/12	17/7/12	15/8/12	15/8/12	0 d	0 d	,361,373,375,374,2
377	14.10.3	Training of Employer's Staff	15 d	1/8/12	1/8/12	15/8/12	15/8/12	0 d	0 d	51,354,355,356,358
378	14.10.4	Overall Acceptance Test for Covers and Air Extraction System	30 d	17/7/12	17/7/12	15/8/12	15/8/12	0 d	0 d	,49,369FF,259,249 d,251FS+42 d,253FS+32
379	15	Project Substantial Completion Date	0 d	15/8/12	15/8/12	15/8/12	15/8/12	0 d	0 d	39,376,358,1FS+97 d,8,12,53,377,378



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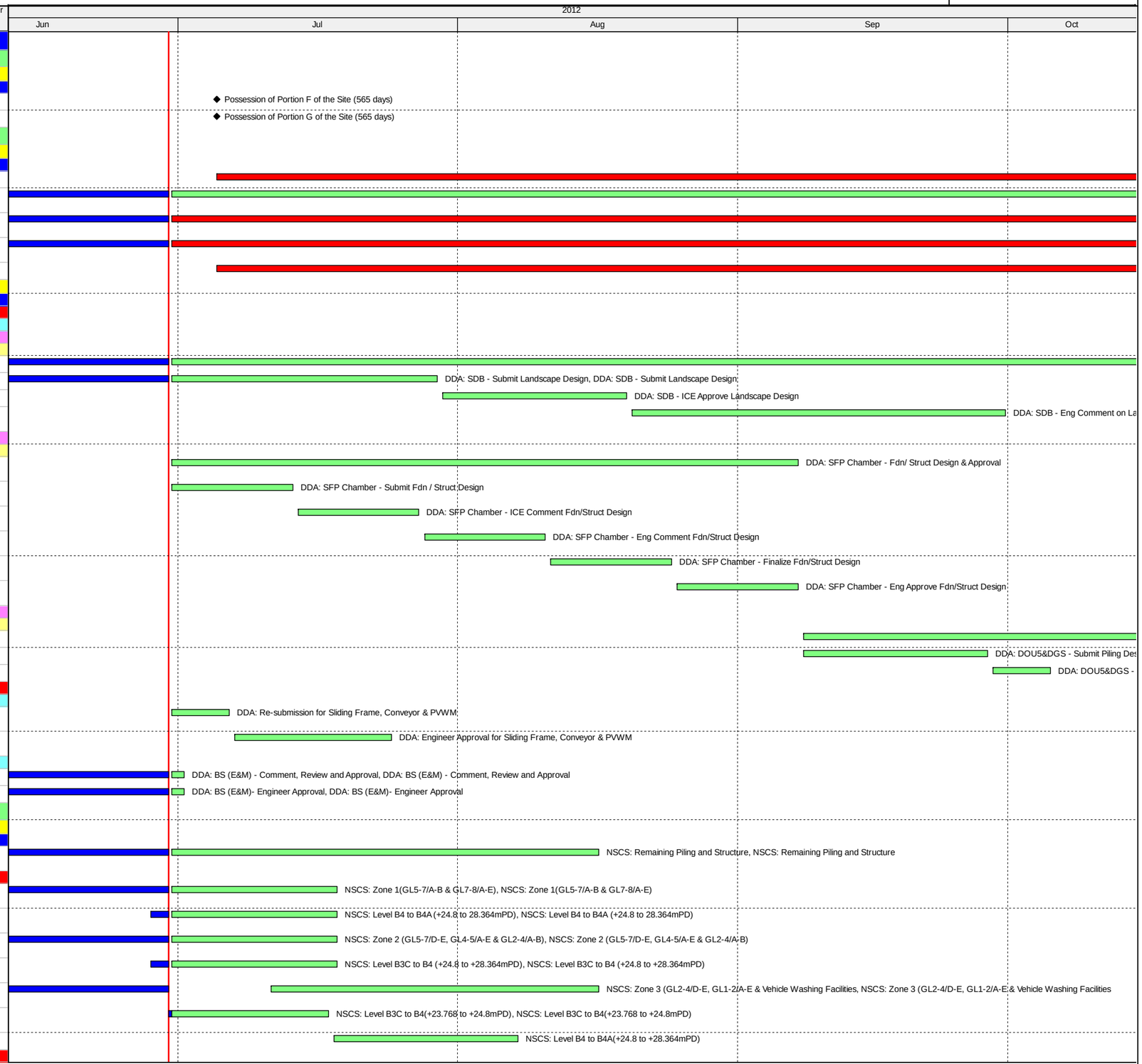
Task | Progress | Summary | External Tasks | Group By Summary
Critical Task | Milestone | Split | Project Summary | Deadline

ATAL Engineering Limited

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
Works Programme Updated 30 June 2012					
KEY DATE					
Contract Dates					
Commencement and Completion					
AD000100	Possession of Portion F of the Site (565 days)	0	05-Jul-12		0
AD000110	Possession of Portion G of the Site (565 days)	0	05-Jul-12		0
Preliminaries and General Requirement					
General					
Initial Works					
PG000172	Maintenance and Security for Portion F	1429	05-Jul-12	02-Jun-16	1429
PG000190	Environmental Impact Monitoring	1600	04-Dec-10 A	01-Jun-16	1153
PG000260	Maintenance and Upkeeping of Portion D	2095	25-Aug-10 A	02-Jun-16	1434
PG000300	Maintenance and Security in Portion E	2095	25-Aug-10 A	02-Jun-16	1434
PG000310	Maintenance and Security in Portion G	1429	05-Jul-12	02-Jun-16	1429
Design of Permanent Works					
Design Submission and Approval					
Detailed Design Approval (DDA) for Civil / Builder Work Package					
DDA1 (SDB, DOU6, DGS and Transformer Bay)					
Sub-Package- F					
DP024190	DDA: SDB - Landscape Design and Approval	175	25-May-12 A	02-Dec-12	156
DP024200	DDA: SDB - Submit Landscape Design	49	25-May-12 A	29-Jul-12	30
DP024210	DDA: SDB - ICE Approve Landscape Design	21	30-Jul-12	19-Aug-12	21
DP024220	DDA: SDB - Eng Comment on Landscape Design	42	20-Aug-12	30-Sep-12	42
DDA6 (Sludge Feed Pipework Chambers)					
Sub-Package - A					
DP031105	DDA: SFP Chamber - Fdn/ Struct Design & Approval	70	30-Jun-12	07-Sep-12	70
DP031110	DDA: SFP Chamber - Submit Fdn / Struct Design	14	30-Jun-12	13-Jul-12	14
DP031120	DDA: SFP Chamber - ICE Comment Fdn/Struct Design	14	14-Jul-12	27-Jul-12	14
DP031130	DDA: SFP Chamber - Eng Comment Fdn/Struct Design	14	28-Jul-12	10-Aug-12	14
DP031140	DDA: SFP Chamber - Finalize Fdn/Struct Design	14	11-Aug-12	24-Aug-12	14
DP031150	DDA: SFP Chamber - Eng Approve Fdn/Struct Design	14	25-Aug-12	07-Sep-12	14
DDA7 (DOU5 and DGS)					
Sub-Package - A					
DP034105	DDA: DOU5&DGS - Piling Design and Approval	84	08-Sep-12	30-Nov-12	84
DP034110	DDA: DOU5&DGS - Submit Piling Design	21	08-Sep-12	28-Sep-12	21
DP034120	DDA: DOU5&DGS - ICE Comment Piling Design	7	29-Sep-12	05-Oct-12	7
Detailed Design Approval (DDA) Submission					
Submission and Approval of DDA30 (Sludge Cakes Silos System)					
DP007890	DDA: Re-submission for Sliding Frame, Conveyor & PVWM	7	30-Jun-12	06-Jul-12	7
DP007900	DDA: Engineer Approval for Sliding Frame, Conveyor & PVWM	18	07-Jul-12	24-Jul-12	18
Submission and Approval of DDA36 (Building Services System)					
DP009015	DDA: BS (E&M) - Comment, Review and Approval	63	23-Jan-12 A	01-Jul-12	2
DP009060	DDA: BS (E&M)- Engineer Approval	14	26-Mar-12 A	01-Jul-12	2
SECTION 3 OF THE WORKS					
NORTHERN SLUDGE CAKE SILO					
Structure					
S3000236	NSCS: Remaining Piling and Structure	518	28-Jan-11 A	16-Aug-12	40
Superstructure Construction					
S3000391	NSCS: Zone 1(GL5-7/A-B & GL7-8/A-E)	120	02-Jan-12 A	18-Jul-12	15
S3000402	NSCS: Level B4 to B4A (+24.8 to 28.364mPD)	18	28-Jun-12 A	18-Jul-12	15
S3000404	NSCS: Zone 2 (GL5-7/D-E, GL4-5/A-E & GL2-4/A-B)	118	06-Feb-12 A	18-Jul-12	15
S3000416	NSCS: Level B3C to B4 (+24.8 to +28.364mPD)	18	28-Jun-12 A	18-Jul-12	15
S3000418	NSCS: Zone 3 (GL2-4/D-E, GL1-2/A-E & Vehicle Washing Facilities	110	04-Apr-12 A	16-Aug-12	32
S3000430	NSCS: Level B3C to B4(+23.768 to +24.8mPD)	16	30-Jun-12 A	17-Jul-12	14
S3000432	NSCS: Level B4 to B4A(+24.8 to +28.364mPD)	18	18-Jul-12	07-Aug-12	18
Building Finishes including Landscaping					

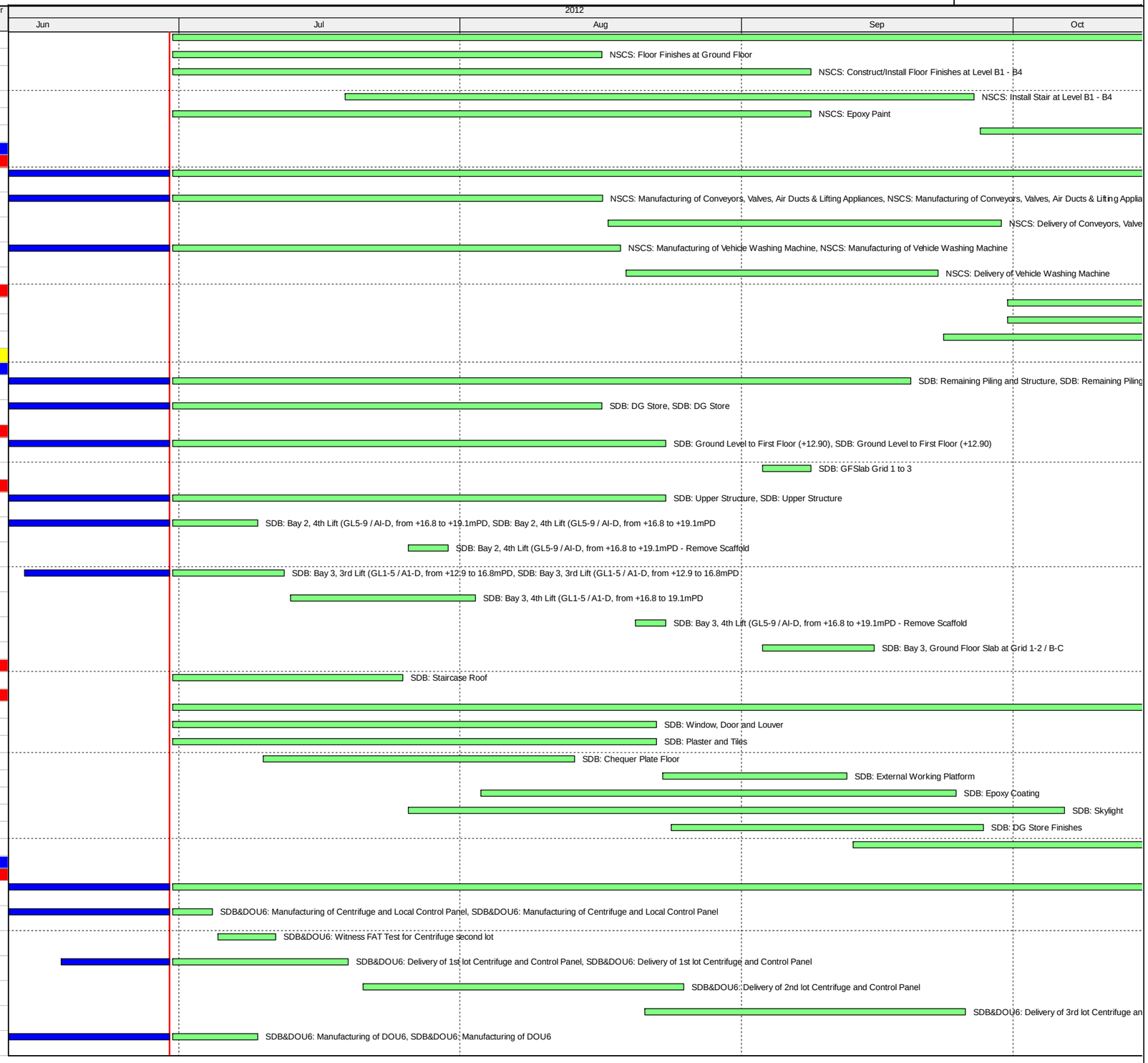


Actual Work ◆ ◆ Milestone
Remaining Work
Critical Remaining Work

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3000450	NSCS: Building Finishes and Landscape	217	30-Jun-12	23-Mar-13	217
S3000460	NSCS: Floor Finishes at Ground Floor	40	30-Jun-12	16-Aug-12	40
S3000480	NSCS: Construct/Install Floor Finishes at Level B1 - B4	60	30-Jun-12	08-Sep-12	60
S3000490	NSCS: Install Stair at Level B1 - B4	60	19-Jul-12	26-Sep-12	60
S3000520	NSCS: Epoxy Paint	60	30-Jun-12	08-Sep-12	60
S3000540	NSCS: External Working Platform	18	27-Sep-12	20-Oct-12	18
E&M Procurement, Installation/ Testing & Commisioning					
Manufacture and Delivery					
S3000600	NSCS: Procurement and Delivery of E&M Equipment/ Material	396	02-Dec-11 A	31-Dec-12	185
S3000620	NSCS: Manufacturing of Conveyors, Valves, Air Ducts & Lifting Appliances	150	03-Apr-12 A	16-Aug-12	48
S3000645	NSCS: Delivery of Conveyors, Valves, Air Ducts & Lifting Appliances	44	17-Aug-12	29-Sep-12	44
S3000665	NSCS: Manufacturing of Vehicle Washing Machine	144	05-Mar-12 A	18-Aug-12	50
S3000685	NSCS: Delivery of Vehicle Washing Machine	35	19-Aug-12	22-Sep-12	35
E&M Installation and Testing & Commissioning					
S3000664	NSCS: Sligde Gate (8 nos)	60	30-Sep-12	28-Nov-12	60
S3000666	NSCS: Screw Conveyor (8 nos)	60	30-Sep-12	28-Nov-12	60
S3000680	NSCS: Vehicle Washing Machine (2 nos)	120	23-Sep-12	20-Jan-13	120
SLUDGE DEWATERING BUILDING and DOU6					
Superstructure Construction					
S3001200	SDB: Remaining Piling and Structure	484	31-Oct-11 A	19-Sep-12	69
S3001290	SDB: DG Store	60	01-Mar-12 A	16-Aug-12	40
Structure Ground Floor at +5.4					
S3001241	SDB: Ground Level to First Floor (+12.90)	88	31-Dec-11 A	23-Aug-12	46
S3001243	SDB: GFSlab Grid 1 to 3	6	03-Sep-12	08-Sep-12	6
Structure First Floor at +12.90					
S3001252	SDB: Upper Structure	124	03-Jan-12 A	23-Aug-12	46
S3001286	SDB: Bay 2, 4th Lift (GL5-9 / AI-D, from +16.8 to +19.1mPD	18	22-May-12 A	09-Jul-12	7
S3001287	SDB: Bay 2, 4th Lift (GL5-9 / AI-D, from +16.8 to +19.1mPD - Remove Scaffold	4	26-Jul-12	30-Jul-12	4
S3001302	SDB: Bay 3, 3rd Lift (GL1-5 / A1-D, from +12.9 to 16.8mPD	18	14-Jun-12 A	12-Jul-12	10
S3001304	SDB: Bay 3, 4th Lift (GL1-5 / A1-D, from +16.8 to 19.1mPD	18	13-Jul-12	02-Aug-12	18
S3001306	SDB: Bay 3, 4th Lift (GL5-9 / AI-D, from +16.8 to +19.1mPD - Remove Scaffold	4	20-Aug-12	23-Aug-12	4
S3001314	SDB: Bay 3, Ground Floor Slab at Grid 1-2 / B-C	12	03-Sep-12	15-Sep-12	12
Roof Level Structure					
S3001280	SDB: Staircase Roof	21	30-Jun-12	25-Jul-12	21
Building Finishes including Landscaping					
S3001380	SDB: Building Finishes and Landscape	203	30-Jun-12	07-Mar-13	203
S3001400	SDB: Window, Door and Louver	45	30-Jun-12	22-Aug-12	45
S3001410	SDB: Plaster and Tiles	45	30-Jun-12	22-Aug-12	45
S3001420	SDB: Chequer Plate Floor	30	10-Jul-12	13-Aug-12	30
S3001430	SDB: External Working Platform	18	23-Aug-12	12-Sep-12	18
S3001440	SDB: Epoxy Coating	45	03-Aug-12	24-Sep-12	45
S3001450	SDB: Skylight	60	26-Jul-12	06-Oct-12	60
S3001460	SDB: DG Store Finishes	30	24-Aug-12	27-Sep-12	30
S3001470	SDB: Shanghai Render	80	13-Sep-12	18-Dec-12	80
E&M Procurement, Installation/ Testing & Commissioning					
Manufacture & Delivery					
S3001550	SDB&DOU6: Procure/ Delivery of E&M Eq't / Matl	390	26-Nov-11 A	23-Dec-12	177
S3001570	SDB&DOU6: Manufacturing of Centrifuge and Local Control Panel	260	06-Dec-11 A	04-Jul-12	5
S3001581	SDB&DOU6: Witness FAT Test for Centrifuge second lot	7	05-Jul-12	11-Jul-12	7
S3001582	SDB&DOU6: Delivery of 1st lot Centrifuge and Control Panel	36	18-Jun-12 A	19-Jul-12	20
S3001584	SDB&DOU6: Delivery of 2nd lot Centrifuge and Control Panel	36	21-Jul-12	25-Aug-12	36
S3001586	SDB&DOU6: Delivery of 3rd lot Centrifuge and Control Panel	36	21-Aug-12	25-Sep-12	36
S3001594	SDB&DOU6: Manufacturing of DOU6	140	06-Feb-12 A	09-Jul-12	10

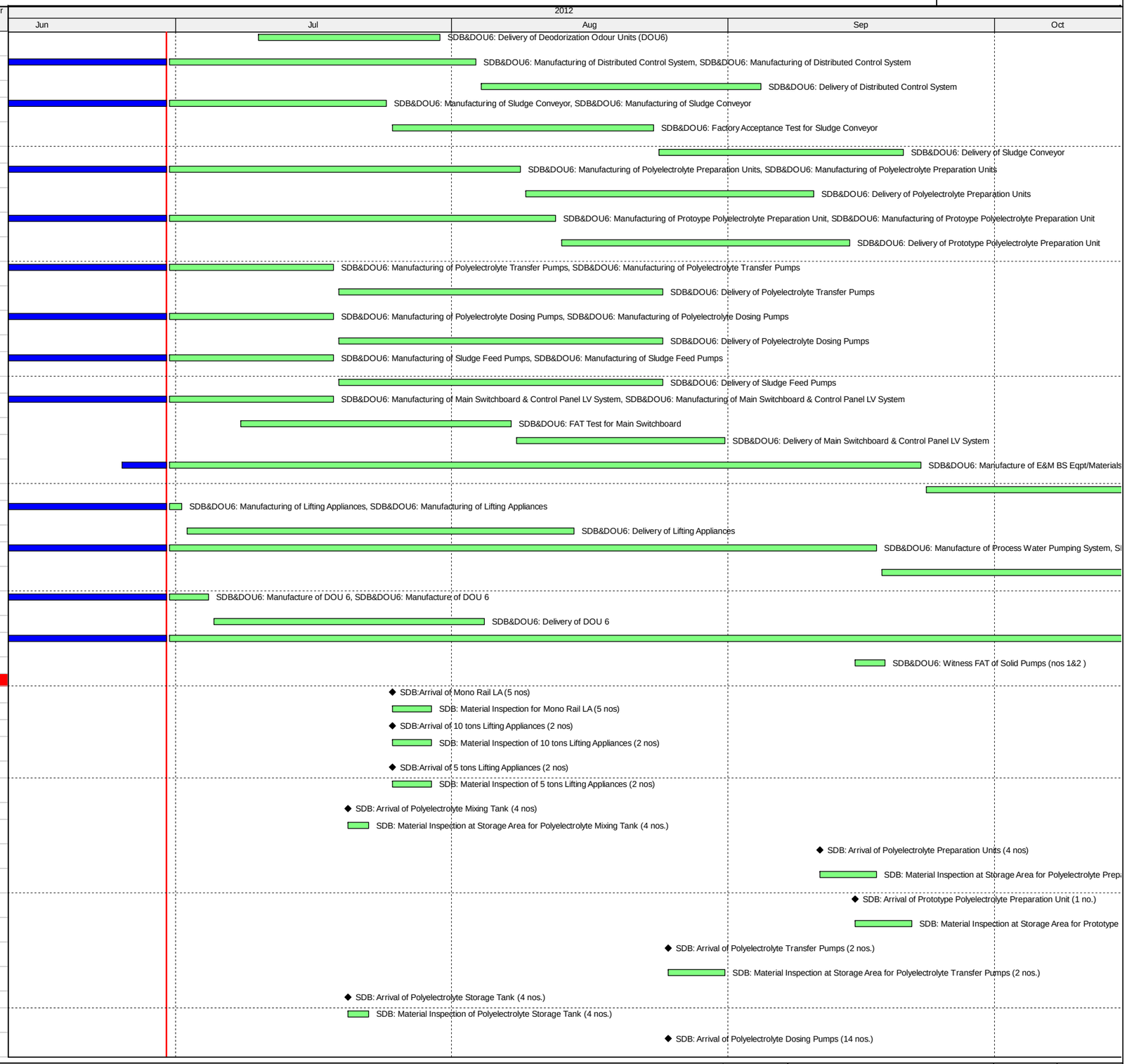


Actual Work ◆ ◆ Milestone
Remaining Work
Critical Remaining Work

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3001598	SDB&DOU6: Delivery of Deodorization Odour Units (DOU6)	21	10-Jul-12	30-Jul-12	21
S3001610	SDB&DOU6: Manufacturing of Distributed Control System	110	02-Apr-12 A	03-Aug-12	35
S3001630	SDB&DOU6: Delivery of Distributed Control System	32	04-Aug-12	04-Sep-12	32
S3001650	SDB&DOU6: Manufacturing of Sludge Conveyor	125	21-Mar-12 A	24-Jul-12	25
S3001660	SDB&DOU6: Factory Acceptance Test for Sludge Conveyor	30	25-Jul-12	23-Aug-12	30
S3001670	SDB&DOU6: Delivery of Sludge Conveyor	28	24-Aug-12	20-Sep-12	28
S3001852	SDB&DOU6: Manufacturing of Polyelectrolyte Preparation Units	147	05-Mar-12 A	08-Aug-12	40
S3001854	SDB&DOU6: Delivery of Polyelectrolyte Preparation Units	33	09-Aug-12	10-Sep-12	33
S3001862	SDB&DOU6: Manufacturing of Protoype Polyelectrolyte Preparation Unit	147	05-Mar-12 A	12-Aug-12	44
S3001864	SDB&DOU6: Delivery of Prototype Polyelectrolyte Preparation Unit	33	13-Aug-12	14-Sep-12	33
S3001872	SDB&DOU6: Manufacturing of Polyelectrolyte Transfer Pumps	112	19-Mar-12 A	18-Jul-12	19
S3001874	SDB&DOU6: Delivery of Polyelectrolyte Transfer Pumps	37	19-Jul-12	24-Aug-12	37
S3001882	SDB&DOU6: Manufacturing of Polyelectrolyte Dosing Pumps	112	19-Mar-12 A	18-Jul-12	19
S3001884	SDB&DOU6: Delivery of Polyelectrolyte Dosing Pumps	37	19-Jul-12	24-Aug-12	37
S3001900	SDB&DOU6: Manufacturing of Sludge Feed Pumps	110	19-Mar-12 A	18-Jul-12	19
S3001915	SDB&DOU6: Delivery of Sludge Feed Pumps	37	19-Jul-12	24-Aug-12	37
S3001935	SDB&DOU6: Manufacturing of Main Switchboard & Control Panel LV System	110	02-Apr-12 A	18-Jul-12	19
S3001995	SDB&DOU6: FAT Test for Main Switchboard	31	08-Jul-12	07-Aug-12	31
S3002000	SDB&DOU6: Delivery of Main Switchboard & Control Panel LV System	24	08-Aug-12	31-Aug-12	24
S3002015	SDB&DOU6: Manufacture of E&M BS Eqpt/Materials	90	25-Jun-12 A	22-Sep-12	85
S3002020	SDB&DOU6: Delivery of E&M BS Eqpt/ Materials	30	23-Sep-12	22-Oct-12	30
S3002030	SDB&DOU6: Manufacturing of Lifting Appliances	90	15-Mar-12 A	01-Jul-12	2
S3002040	SDB&DOU6: Delivery of Lifting Appliances	44	02-Jul-12	14-Aug-12	44
S3002046	SDB&DOU6: Manufacture of Process Water Pumping System	210	13-Feb-12 A	17-Sep-12	80
S3002048	SDB&DOU6: Delivery of Process Water Pumping System	36	18-Sep-12	23-Oct-12	36
S3002052	SDB&DOU6: Manufacture of DOU 6	140	06-Feb-12 A	04-Jul-12	5
S3002054	SDB&DOU6: Delivery of DOU 6	31	05-Jul-12	04-Aug-12	31
S3002058	SDB&DOU6: Manufacture of Solid Pumps	200	19-Mar-12 A	24-Nov-12	148
S3002060	SDB&DOU6: Witness FAT of Solid Pumps (nos 1&2)	4	15-Sep-12	18-Sep-12	4
E&M Installation and Other Equipment					
S3001822	SDB:Arrival of Mono Rail LA (5 nos)	0	25-Jul-12		0
S3001824	SDB: Material Inspection for Mono Rail LA (5 nos)	5	25-Jul-12	29-Jul-12	5
S3001826	SDB:Arrival of 10 tons Lifting Appliances (2 nos)	0	25-Jul-12		0
S3001828	SDB: Material Inspection of 10 tons Lifting Appliances (2 nos)	5	25-Jul-12	29-Jul-12	5
S3001830	SDB:Arrival of 5 tons Lifting Appliances (2 nos)	0	25-Jul-12		0
S3001832	SDB: Material Inspection of 5 tons Lifting Appliances (2 nos)	5	25-Jul-12	29-Jul-12	5
S3002120	SDB: Arrival of Polyelectrolyte Mixing Tank (4 nos)	0	20-Jul-12		0
S3002130	SDB: Material Inspection at Storage Area for Polyelectrolyte Mixing Tank (4 nos.)	3	20-Jul-12	22-Jul-12	3
S3002150	SDB: Arrival of Polyelectrolyte Preparation Units (4 nos)	0	11-Sep-12		0
S3002160	SDB: Material Inspection at Storage Area for Polyelectrolyte Preparation Units (4 nos)	7	11-Sep-12	17-Sep-12	7
S3002180	SDB: Arrival of Prototype Polyelectrolyte Preparation Unit (1 no.)	0	15-Sep-12		0
S3002190	SDB: Material Inspection at Storage Area for Prototype Polyelectrolyte Preparation Unit (1 no.)	7	15-Sep-12	21-Sep-12	7
S3002210	SDB: Arrival of Polyelectrolyte Transfer Pumps (2 nos.)	0	25-Aug-12		0
S3002220	SDB: Material Inspection at Storage Area for Polyelectrolyte Transfer Pumps (2 nos.)	7	25-Aug-12	31-Aug-12	7
S3002225	SDB: Arrival of Polyelectrolyte Storage Tank (4 nos.)	0	20-Jul-12		0
S3002230	SDB: Material Inspection of Polyelectrolyte Storage Tank (4 nos.)	3	20-Jul-12	22-Jul-12	3
S3002240	SDB: Arrival of Polyelectrolyte Dosing Pumps (14 nos.)	0	25-Aug-12		0



Actual Work ◆ Milestone

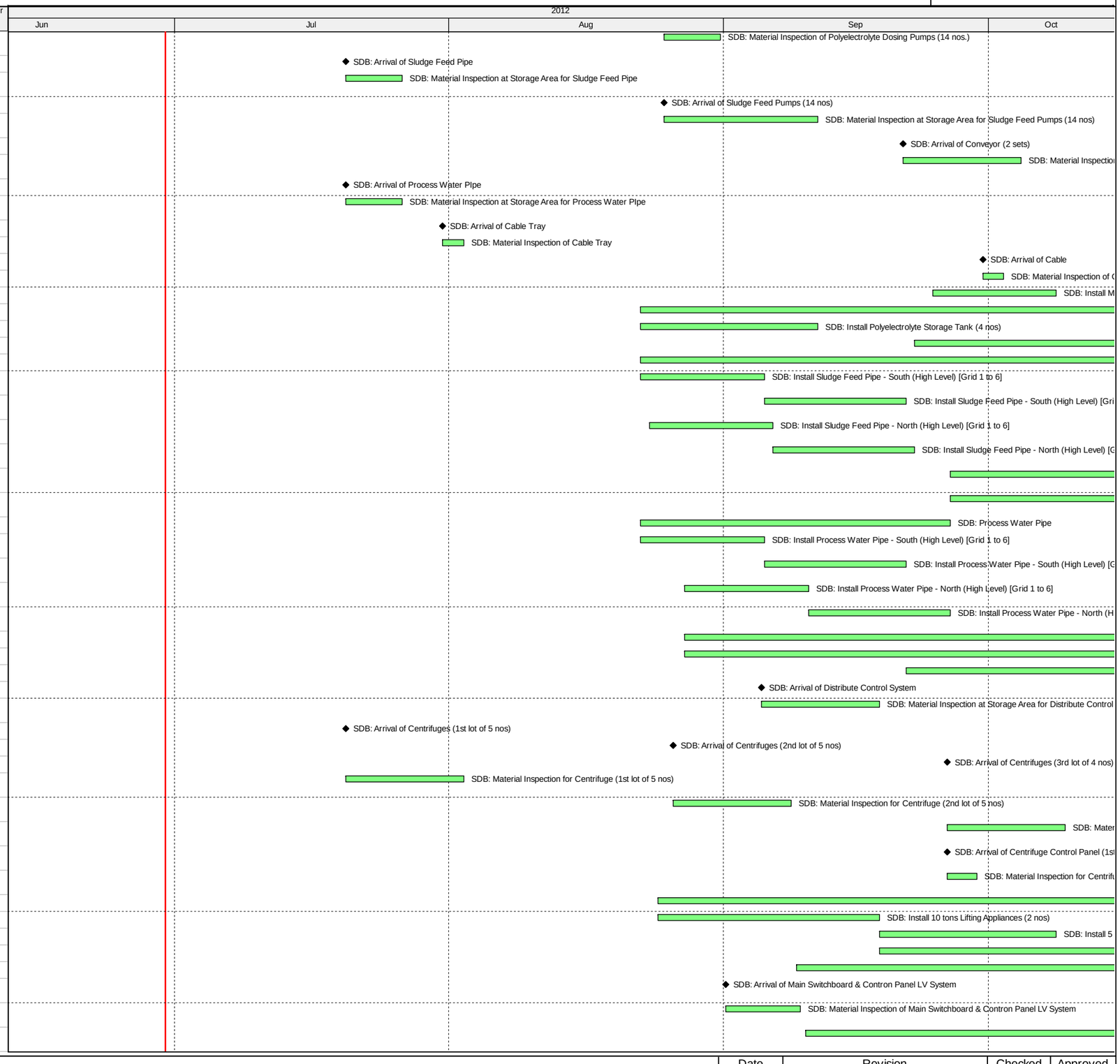
Remaining Work

Critical Remaining Work

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3002245	SDB: Material Inspection of Polyelectrolyte Dosing Pumps (14 nos.)	7	25-Aug-12	31-Aug-12	7
S3002250	SDB: Arrival of Sludge Feed Pipe	0	20-Jul-12		0
S3002255	SDB: Material Inspection at Storage Area for Sludge Feed Pipe	7	20-Jul-12	26-Jul-12	7
S3002260	SDB: Arrival of Sludge Feed Pumps (14 nos)	0	25-Aug-12		0
S3002265	SDB: Material Inspection at Storage Area for Sludge Feed Pumps (14 nos)	18	25-Aug-12	11-Sep-12	18
S3002270	SDB: Arrival of Conveyor (2 sets)	0	21-Sep-12		0
S3002275	SDB: Material Inspection at Storage Area for Conveyor (2 sets)	14	21-Sep-12	04-Oct-12	14
S3002310	SDB: Arrival of Process Water PIpe	0	20-Jul-12		0
S3002315	SDB: Material Inspection at Storage Area for Process Water PIpe	7	20-Jul-12	26-Jul-12	7
S3002320	SDB: Arrival of Cable Tray	0	31-Jul-12		0
S3002325	SDB: Material Inspection of Cable Tray	3	31-Jul-12	02-Aug-12	3
S3002330	SDB: Arrival of Cable	0	30-Sep-12		0
S3002332	SDB: Material Inspection of Cable	3	30-Sep-12	02-Oct-12	3
S3002340	SDB: Install Mono Rail LA (5 nos)	14	24-Sep-12	08-Oct-12	14
S3002380	SDB: Polyelectrolyte Dosing System	66	22-Aug-12	27-Oct-12	66
S3002390	SDB: Install Polyelectrolyte Storage Tank (4 nos)	20	22-Aug-12	11-Sep-12	20
S3002410	SDB: Install Polyelectrolyte Dosing Pump (14 nos)	30	22-Sep-12	22-Oct-12	30
S3003100	SDB: Sludge Feed Pipe	99	22-Aug-12	29-Nov-12	99
S3003110	SDB: Install Sludge Feed Pipe - South (High Level) [Grid 1 to 6]	14	22-Aug-12	05-Sep-12	14
S3003120	SDB: Install Sludge Feed Pipe - South (High Level) [Grid 6 to 12]	16	05-Sep-12	21-Sep-12	16
S3003130	SDB: Install Sludge Feed Pipe - North (High Level) [Grid 1 to 6]	14	23-Aug-12	06-Sep-12	14
S3003140	SDB: Install Sludge Feed Pipe - North (High Level) [Grid 6 to 12]	16	06-Sep-12	22-Sep-12	16
S3003190	SDB: Install Sludge Feed Pumps (1st lot 5 nos; Grid 2 - 5)	28	26-Sep-12	24-Oct-12	28
S3003200	SDB: Install Sludge Feed Pumps (2nd lot 5 nos; Grid 6 - 10)	28	26-Sep-12	24-Oct-12	28
S3003220	SDB: Process Water Pipe	35	22-Aug-12	26-Sep-12	35
S3003230	SDB: Install Process Water Pipe - South (High Level) [Grid 1 to 6]	14	22-Aug-12	05-Sep-12	14
S3003240	SDB: Install Process Water Pipe - South (High Level) [Grid 6 to 12]	16	05-Sep-12	21-Sep-12	16
S3003250	SDB: Install Process Water Pipe - North (High Level) [Grid 1 to 6]	14	27-Aug-12	10-Sep-12	14
S3003260	SDB: Install Process Water Pipe - North (High Level) [Grid 6 to 12]	16	10-Sep-12	26-Sep-12	16
S3003340	SDB: Cables	191	27-Aug-12	06-Mar-13	191
S3003350	SDB: Install Cable Tray	170	27-Aug-12	13-Feb-13	170
S3003360	SDB: Install Cable	166	21-Sep-12	06-Mar-13	166
S3003400	SDB: Arrival of Distribute Control System	0	05-Sep-12		0
S3003410	SDB: Material Inspection at Storage Area for Distribute Control System	14	05-Sep-12	18-Sep-12	14
S3003450	SDB: Arrival of Centrifuges (1st lot of 5 nos)	0	20-Jul-12		0
S3003460	SDB: Arrival of Centrifuges (2nd lot of 5 nos)	0	26-Aug-12		0
S3003470	SDB: Arrival of Centrifuges (3rd lot of 4 nos)	0	26-Sep-12		0
S3003480	SDB: Material Inspection for Centrifuge (1st lot of 5 nos)	14	20-Jul-12	02-Aug-12	14
S3003490	SDB: Material Inspection for Centrifuge (2nd lot of 5 nos)	14	26-Aug-12	08-Sep-12	14
S3003500	SDB: Material Inspection for Centrifuge (3nd lot of 4 nos)	14	26-Sep-12	09-Oct-12	14
S3003510	SDB: Arrival of Centrifuge Control Panel (1st lot of 5 nos)	0	26-Sep-12		0
S3003540	SDB: Material Inspection for Centrifuge Contron Panel (1st lot of 5 nos)	4	26-Sep-12	29-Sep-12	4
S3003600	SDB: E&M Installation at 1/F	188	24-Aug-12	28-Feb-13	188
S3003610	SDB: Install 10 tons Lifting Appliances (2 nos)	25	24-Aug-12	18-Sep-12	25
S3003620	SDB: Install 5 tons Lifting Appliances (2 nos)	20	18-Sep-12	08-Oct-12	20
S3003650	SDB: Install Centrifuges (1st lot of 5 nos)	43	18-Sep-12	31-Oct-12	43
S3003660	SDB: Install Centrifuges (2nd lot of 5 nos)	42	09-Sep-12	20-Oct-12	42
S3003750	SDB: Arrival of Main Switchboard & Contron Panel LV System	0	01-Sep-12		0
S3003760	SDB: Material Inspection of Main Switchboard & Contron Panel LV System	9	01-Sep-12	09-Sep-12	9
S3003770	SDB: Install Main Switchboard & Contron Panel LV System	60	10-Sep-12	08-Nov-12	60



Actual Work
Remaining Work
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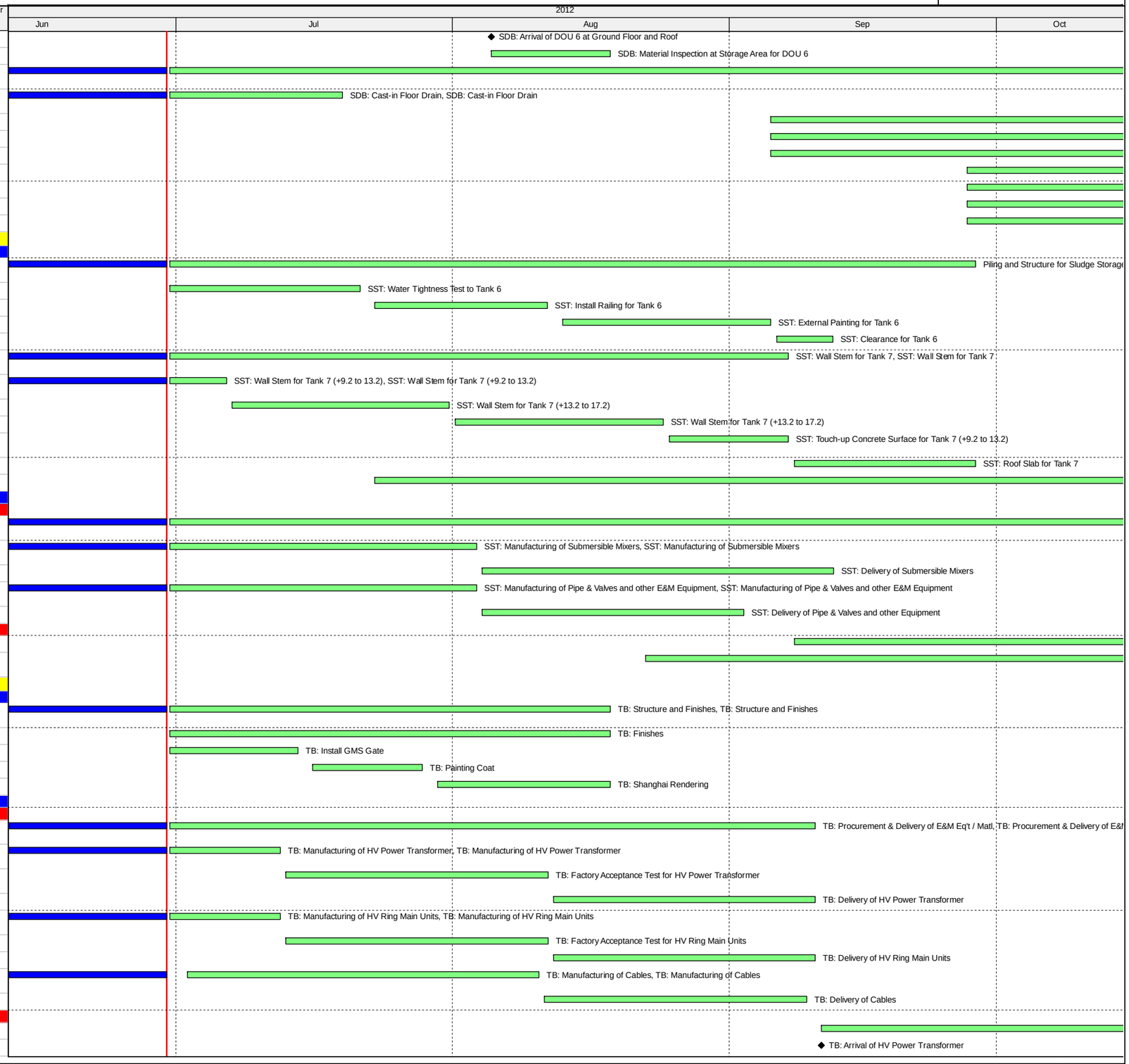
◆ Milestone

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3003800	SDB: Arrival of DOU 6 at Ground Floor and Roof	0	05-Aug-12		0
S3003810	SDB: Material Inspection at Storage Area for DOU 6	14	05-Aug-12	18-Aug-12	14
S3003900	SDB: Building Services	356	10-Mar-12 A	14-Apr-13	289
S3003905	SDB: Cast-in Floor Drain	88	10-Mar-12 A	19-Jul-12	20
S3003910	SDB: Drainage Pipe Line / RWO	90	05-Sep-12	04-Dec-12	90
S3003915	SDB: Plumbing	139	05-Sep-12	22-Jan-13	139
S3003920	SDB: Pipe Line for Plumbing	90	05-Sep-12	04-Dec-12	90
S3004000	SDB: Fire Services	199	27-Sep-12	14-Apr-13	199
S3004010	SDB: Fire Services Pipe Line	91	27-Sep-12	27-Dec-12	91
S3004200	SDB: BS Small Power and Lighting System	209	27-Sep-12	24-Apr-13	209
S3004210	SDB: Conduit & Trunking for BS	131	27-Sep-12	05-Feb-13	131
SLUDGE STORAGE TANK 6 & 7					
Structure					
S3005505	Piling and Structure for Sludge Storage Tanks	349	28-Feb-11 A	28-Sep-12	77
S3005830	SST: Water Tightness Test to Tank 6	18	30-Jun-12	21-Jul-12	18
S3005840	SST: Install Railing for Tank 6	18	23-Jul-12	11-Aug-12	18
S3005850	SST: External Painting for Tank 6	21	13-Aug-12	05-Sep-12	21
S3005870	SST: Clearance for Tank 6	6	06-Sep-12	12-Sep-12	6
S3006110	SST: Wall Stem for Tank 7	84	30-Mar-12 A	07-Sep-12	59
S3006130	SST: Wall Stem for Tank 7 (+9.2 to 13.2)	21	12-Jun-12 A	06-Jul-12	5
S3006140	SST: Wall Stem for Tank 7 (+13.2 to 17.2)	21	07-Jul-12	31-Jul-12	21
S3006150	SST: Wall Stem for Tank 7 (+13.2 to 17.2)	21	01-Aug-12	24-Aug-12	21
S3006160	SST: Touch-up Concrete Surface for Tank 7 (+9.2 to 13.2)	12	25-Aug-12	07-Sep-12	12
S3006210	SST: Roof Slab for Tank 7	18	08-Sep-12	28-Sep-12	18
S3006310	SST: Finishes for Tank 6 and 7	116	23-Jul-12	07-Dec-12	116
E&M Procurement Installation/ Testing & Commissioning					
Manufacture & Delivery					
S3006450	SST: Procurement & Delivery of E&M Equipment/ Materials	290	25-Nov-11 A	11-Nov-12	135
S3006470	SST: Manufacturing of Submersible Mixers	135	01-Feb-12 A	03-Aug-12	35
S3006480	SST: Delivery of Submersible Mixers	40	04-Aug-12	12-Sep-12	40
S3006590	SST: Manufacturing of Pipe & Valves and other E&M Equipment	90	30-Apr-12 A	03-Aug-12	35
S3006610	SST: Delivery of Pipe & Valves and other Equipment	30	04-Aug-12	02-Sep-12	30
E&M Testing & Commissioning					
S3006505	SST: Liaise with ST2 for System Connection	30	08-Sep-12	16-Oct-12	30
S3006750	SST: Install Temporary Pipe from Tank nos 3 - 5 to Existing Recirculation Pump	60	22-Aug-12	21-Oct-12	60
Transformer Bay					
Structure					
S3007010	TB: Structure and Finishes	168	21-Nov-11 A	18-Aug-12	42
S3007310	TB: Finishes	42	30-Jun-12	18-Aug-12	42
S3007320	TB: Install GMS Gate	12	30-Jun-12	14-Jul-12	12
S3007330	TB: Painting Coat	12	16-Jul-12	28-Jul-12	12
S3007340	TB: Shanghai Rendering	18	30-Jul-12	18-Aug-12	18
E&M Procurment, Installation & T&C					
Manufacture & Delivery					
S3007410	TB: Procurement & Delivery of E&M Eq't / Matl	195	08-Mar-12 A	10-Sep-12	73
S3007430	TB: Manufacturing of HV Power Transformer	125	01-Apr-12 A	12-Jul-12	13
S3007435	TB: Factory Acceptance Test for HV Power Transformer	30	13-Jul-12	11-Aug-12	30
S3007440	TB: Delivery of HV Power Transformer	30	12-Aug-12	10-Sep-12	30
S3007460	TB: Manufacturing of HV Ring Main Units	130	03-Apr-12 A	12-Jul-12	13
S3007470	TB: Factory Acceptance Test for HV Ring Main Units	30	13-Jul-12	11-Aug-12	30
S3007480	TB: Delivery of HV Ring Main Units	30	12-Aug-12	10-Sep-12	30
S3007550	TB: Manufacturing of Cables	90	30-Apr-12 A	10-Aug-12	40
S3007560	TB: Delivery of Cables	30	11-Aug-12	09-Sep-12	30
E&M Installation & Testing & Commissioning					
S3007510	Liaison with CLP/MPS Contractor for Power Supply	100	11-Sep-12	11-Jan-13	100
S3007535	TB: Arrival of HV Power Transformer	0	11-Sep-12		0



Actual Work ◆ ◆ Milestone

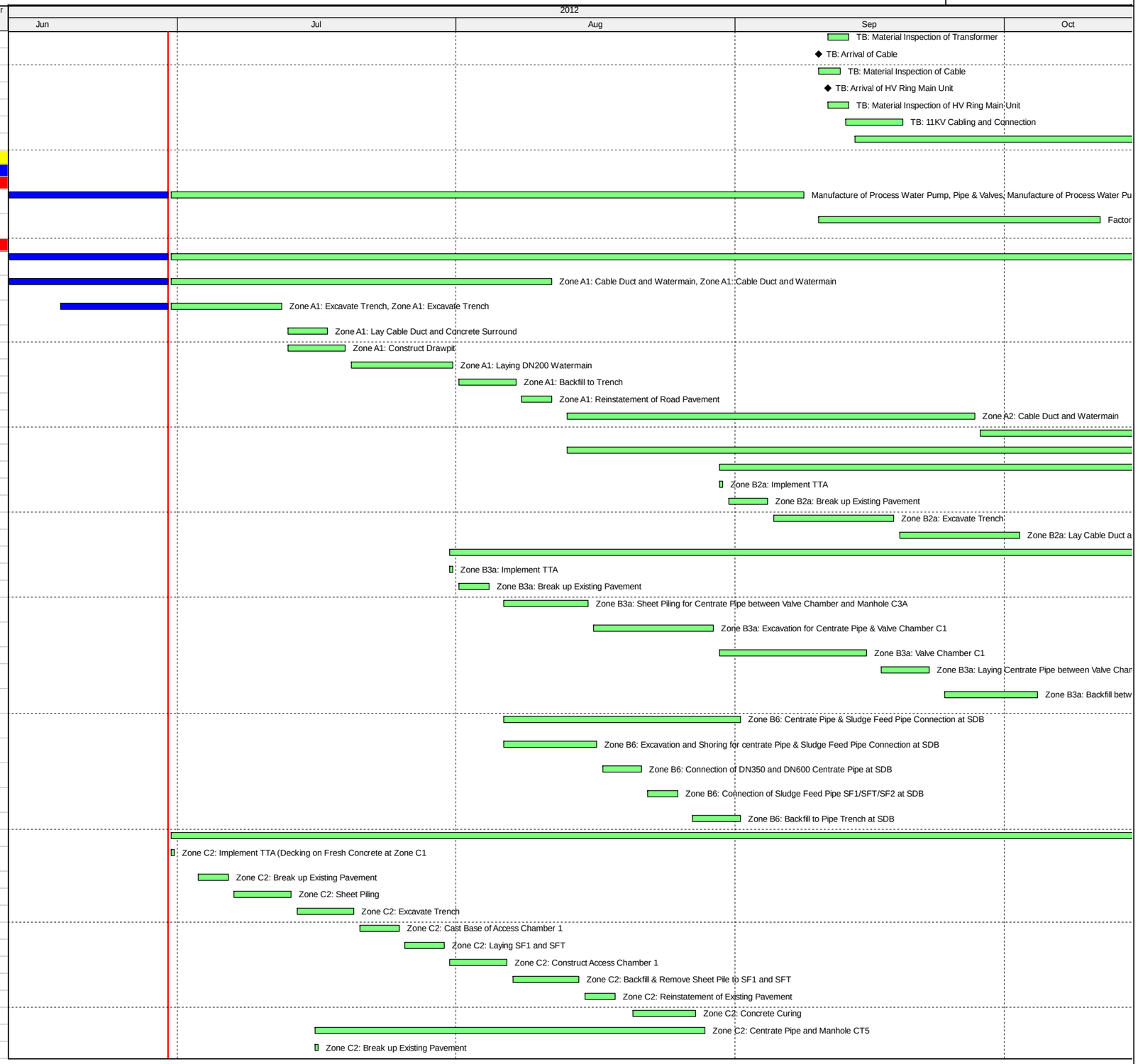
Remaining Work

Critical Remaining Work

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3007545	TB: Material Inspection of Transformer	3	11-Sep-12	13-Sep-12	3
S3007555	TB: Arrival of Cable	0	10-Sep-12		0
S3007565	TB: Material Inspection of Cable	3	10-Sep-12	12-Sep-12	3
S3007575	TB: Arrival of HV Ring Main Unit	0	11-Sep-12		0
S3007585	TB: Material Inspection of HV Ring Main Unit	3	11-Sep-12	13-Sep-12	3
S3007605	TB: 11KV Cabling and Connection	7	13-Sep-12	19-Sep-12	7
S3007610	TB: Install Transformer	58	14-Sep-12	10-Nov-12	58
System					
Pump, Piping and Ducting					
Manufacture & Delivery					
S3008215	Manufacture of Process Water Pump, Pipe & Valves	173	13-Feb-12 A	08-Sep-12	60
S3008225	Factory Acceptance Test for Process Water Pump, Pipe and Valves	25	10-Sep-12	11-Oct-12	25
Pump, Pipe and Duct Installation					
S3008350	Zone A: External System	120	05-Jun-12 A	16-Nov-12	116
S3008360	Zone A1: Cable Duct and Watermain	40	05-Jun-12 A	11-Aug-12	36
S3008375	Zone A1: Excavate Trench	10	18-Jun-12 A	12-Jul-12	10
S3008380	Zone A1: Lay Cable Duct and Concrete Surround	4	13-Jul-12	17-Jul-12	4
S3008385	Zone A1: Construct Drawpit	6	13-Jul-12	19-Jul-12	6
S3008390	Zone A1: Laying DN200 Watermain	10	20-Jul-12	31-Jul-12	10
S3008395	Zone A1: Backfill to Trench	6	01-Aug-12	07-Aug-12	6
S3008400	Zone A1: Reinstatement of Road Pavement	4	08-Aug-12	11-Aug-12	4
S3008410	Zone A2: Cable Duct and Watermain	40	13-Aug-12	27-Sep-12	40
S3008420	Zone A3: Cable Duct and Watermain	40	28-Sep-12	16-Nov-12	40
S3008430	Zone A4: Cabe Trough	75	13-Aug-12	10-Nov-12	75
S3008530	Zone B2a: Cable Duct and Chemical Pipe Trench	51	30-Aug-12	31-Oct-12	51
S3008535	Zone B2a: Implement TTA	1	30-Aug-12	30-Aug-12	1
S3008540	Zone B2a: Break up Existing Pavement	4	31-Aug-12	04-Sep-12	4
S3008545	Zone B2a: Excavate Trench	12	05-Sep-12	18-Sep-12	12
S3008550	Zone B2a: Lay Cable Duct and Construct Drawpits	10	19-Sep-12	02-Oct-12	10
S3008610	Zone B3a: Centrate Pipe and Ducting	75	31-Jul-12	29-Oct-12	75
S3008620	Zone B3a: Implement TTA	1	31-Jul-12	31-Jul-12	1
S3008630	Zone B3a: Break up Existing Pavement	4	01-Aug-12	04-Aug-12	4
S3008640	Zone B3a: Sheet Piling for Centrate Pipe between Valve Chamber and Manhole C3A	9	06-Aug-12	15-Aug-12	9
S3008645	Zone B3a: Excavation for Centrate Pipe & Valve Chamber C1	12	16-Aug-12	29-Aug-12	12
S3008655	Zone B3a: Valve Chamber C1	15	30-Aug-12	15-Sep-12	15
S3008660	Zone B3a: Laying Centrate Pipe between Valve Chamber C1 and Manhole C3A	6	17-Sep-12	22-Sep-12	6
S3008665	Zone B3a: Backfill between Valve Chamber C1 and Manhole C3A	8	24-Sep-12	04-Oct-12	8
S3008940	Zone B6: Centrate Pipe & Sludge Feed Pipe Connection at SDB	24	06-Aug-12	01-Sep-12	24
S3008942	Zone B6: Excavation and Shoring for centrate Pipe & Sludge Feed Pipe Connection at SDB	10	06-Aug-12	16-Aug-12	10
S3008944	Zone B6: Connection of DN350 and DN600 Centrate Pipe at SDB	4	17-Aug-12	21-Aug-12	4
S3008946	Zone B6: Connection of Sludge Feed Pipe SF1/SFT/SF2 at SDB	4	22-Aug-12	25-Aug-12	4
S3008956	Zone B6: Backfill to Pipe Trench at SDB	6	27-Aug-12	01-Sep-12	6
S3009210	Zone C2: DN600 Sludge Feed Pipe SF1 and SFT	124	30-Jun-12	26-Nov-12	124
S3009220	Zone C2: Implement TTA (Decking on Fresh Concrete at Zone C1	1	30-Jun-12	30-Jun-12	1
S3009230	Zone C2: Break up Existing Pavement	4	03-Jul-12	06-Jul-12	4
S3009240	Zone C2: Sheet Piling	6	07-Jul-12	13-Jul-12	6
S3009250	Zone C2: Excavate Trench	6	14-Jul-12	20-Jul-12	6
S3009260	Zone C2: Cast Base of Access Chamber 1	4	21-Jul-12	25-Jul-12	4
S3009270	Zone C2: Laying SF1 and SFT	4	26-Jul-12	30-Jul-12	4
S3009280	Zone C2: Construct Access Chamber 1	6	31-Jul-12	06-Aug-12	6
S3009290	Zone C2: Backfill & Remove Sheet Pile to SF1 and SFT	7	07-Aug-12	14-Aug-12	7
S3009300	Zone C2: Reinstatement of Existing Pavement	4	15-Aug-12	18-Aug-12	4
S3009310	Zone C2: Concrete Curing	7	20-Aug-12	27-Aug-12	7
S3009320	Zone C2: Centrate Pipe and Manhole CT5	38	16-Jul-12	28-Aug-12	38
S3009330	Zone C2: Break up Existing Pavement	1	16-Jul-12	16-Jul-12	1

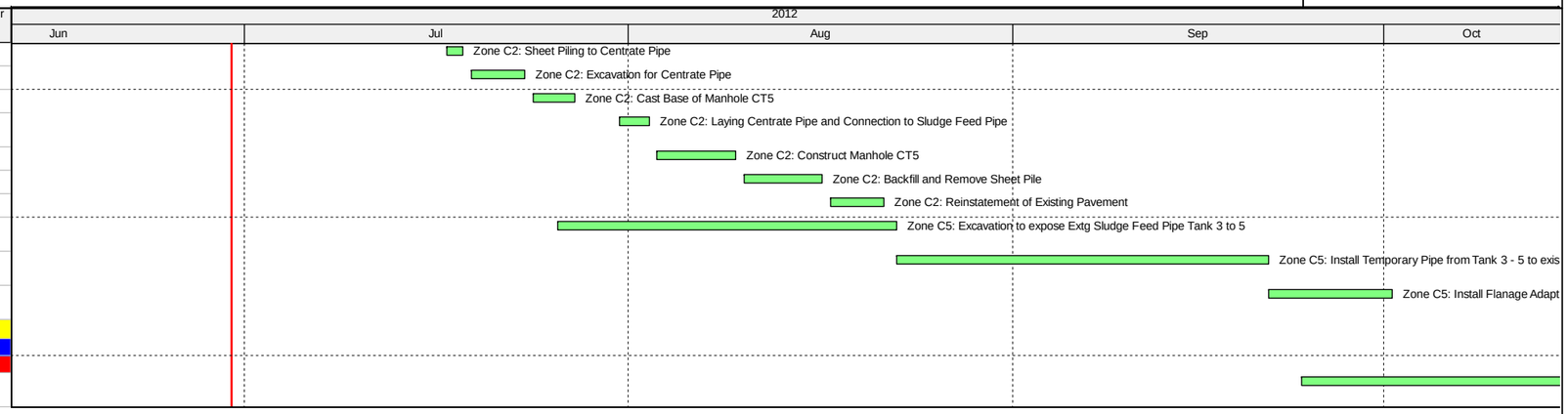


Actual Work ◆ ◆ Milestone
Remaining Work
Critical Remaining Work

Three Months Rolling Programme - July to September 2012

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Rem Dur
S3009340	Zone C2: Sheet Piling to Centrate Pipe	2	17-Jul-12	18-Jul-12	2
S3009350	Zone C2: Excavation for Centrate Pipe	4	19-Jul-12	23-Jul-12	4
S3009360	Zone C2: Cast Base of Manhole CT5	4	24-Jul-12	27-Jul-12	4
S3009370	Zone C2: Laying Centrate Pipe and Connection to Sludge Feed Pipe	3	31-Jul-12	02-Aug-12	3
S3009380	Zone C2: Construct Manhole CT5	6	03-Aug-12	09-Aug-12	6
S3009390	Zone C2: Backfill and Remove Sheet Pile	6	10-Aug-12	16-Aug-12	6
S3009400	Zone C2: Reinstatement of Existing Pavement	4	17-Aug-12	21-Aug-12	4
S3009560	Zone C5: Excavation to expose Extg Sludge Feed Pipe Tank 3 to 5	24	26-Jul-12	22-Aug-12	24
S3009570	Zone C5: Install Temporary Pipe from Tank 3 - 5 to existing Recirculation Pump	30	22-Aug-12	21-Sep-12	30
S3009580	Zone C5: Install Flanage Adaptor for Existing Sludge Feed Pipe Tank 3 to 5	10	21-Sep-12	01-Oct-12	10
Statutory Inspection					
E&M: Testing & Commissioning					
O&M Manual and Training					
S3013170	S3 Work: Preparation & Submit draft O&M Manuals as PS Cl. 40.07	60	24-Sep-12*	05-Dec-12	60



Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
3 Month Rolling Programme (24 May 2012 to 24 Aug 2012)						
Contract Particulars						
Key Dates						
KD1050	Section 1A (365 days)	0		24-May-12	-90	0%
Portion of Site						
Possession/ Vacation of Portion						
PS1040	Portion 5 Handover	0	24-May-12		-29	0%
PS1100	Portion 8 Handover	0	24-May-12		-90	0%
PS1130	Portion 9 Vacation	0		24-May-12	-90	0%
Management Plans and Programme						
Contractor Submission (General)						
GN0040	Approval/ Comment of Detail master Programme	90	06-Sep-11 A	16-Apr-12 A		100%
Civil and Geotechnical Submission						
Contractor Design, Submission and Approval						
General						
CCD00127	Installation of web cameras	60	01-Feb-12 A	26-May-12	-48	95%
CCD00137	Operation and maintenace of web cameras	1932	22-Jul-12 A	09-Sep-17	-48	0%
Detailed Design Approval (DDA) Submission for Structural/ Builder Works						
DDA2 (Container Maintenance Bldg)						
P100030	Approval for Design for Container Maintenance Building	60	29-Feb-12 A	21-May-12 A		100%
DDA4 (SCIMPS2 and Inlet Chamber)						
CCD00124	Final Approval of Structural Design of RC for SCIMPS2 and Inlet chamber - Below G/F	30	25-Feb-12 A	15-Jun-12	34	25%
CCD00135	Comment of Structural Design of RC for SCIMPS2 and Inlet chamber - Above G/F	28	01-Apr-12 A	28-Apr-12 A		100%
CCD00145	Resubmission of Structural Design of RC for SCIMPS2 and Inlet chamber - Above G/F	21	29-Apr-12 A	08-Jun-12	222	25%
CCD00155	Final Approval of Structural Design of RC for SCIMPS2 and Inlet chamber - Above G/F	12	08-Jun-12	20-Jun-12	222	0%
DDA6 (Switchgear Bldg)						
CCD00143	Resubmission of Structural Design of RC for Switchgear Bldg	75	04-Apr-12 A	19-Jul-12	53	25%
CCD00144	Final Approval of Structural Design of RC for Switchgear Bldg	45	19-Jul-12	02-Sep-12	53	0%
CCD00220	Comment of Cost saving design and Geotechnical Design review of Structures	14	01-Apr-12 A	14-Apr-12 A		100%
CCD00230	Resubmission of Cost saving design and Geotechnical Design review of Structures	7	15-Apr-12 A	21-Apr-12 A		100%
CCD00240	Final Approval of Cost saving design and Geotechnical Design review of Structures	7	22-Apr-12 A	29-May-12	-14	25%
DDA7 (Main Flow Culvert)						
CCD00300	Comment of Cost saving design and Geotechnical Design review of Structures	14	08-Apr-12 A	21-Apr-12 A		100%
CCD00310	Resubmission of Cost saving design and Geotechnical Design review of Structures	14	22-Apr-12 A	03-Jun-12	61	25%
CCD00320	Final Approval of Cost saving design and Geotechnical Design review of Structures	14	03-Jun-12	17-Jun-12	61	0%
CCD00530	Prepare/ Submission of temporary works design for excavation	140	31-Dec-11 A	12-Apr-12 A		100%
CCD00540	Comment of temporary works design for excavation	60	30-Apr-12 A	24-May-12 A		100%
CCD00550	Resubmission of temporary works design for excavation for GEO approval	45	24-May-12	01-Jul-12	162	15%
CCD00560	GEO Approval of temporary works design for excavation	30	01-Jul-12	31-Jul-12	162	0%
DDA8 (Extension of CEPT tanks)						
CCD00192	Comment of Structural Design of RC for for CEPT tank - Below G.L.	35	20-Mar-12 A	23-Apr-12 A		100%
CCD00193	Resubmission of Structural Design of RC for CEPT tank - Below G.L.	28	24-Apr-12 A	16-Jun-12	53	15%
CCD00194	Final Approval of Structural Design of RC for CEPT tank - Below G.L.	21	16-Jun-12	07-Jul-12	53	0%
CCD00196	Comment of Structural Design of RC for for Flocculation tank and main disturbution channel - Below G.L.	35	30-Mar-12 A	01-Jun-12	32	76%
CCD00197	Resubmission of Structural Design of RC for Flocculation tank and main disturbution channel - Below G.L.	45	01-Jun-12	16-Jul-12	32	0%
CCD00198	Final Approval of Structural Design of RC for Flocculation tank and main disturbution channel - Below G.L.	28	16-Jul-12	13-Aug-12	32	0%
CCD00570	Prepare/ Submission of Structural Design of RC for CEPT tank - Above G.L. (DDA 8)	180	19-Dec-11 A	10-Jun-12	94	90%
CCD00580	Comment of Structural Design of RC for for CEPT tank - Above G.L.	45	11-Jun-12	25-Jul-12	94	0%
CCD00590	Resubmission of Structural Design of RC for CEPT tank - Above G.L.	75	26-Jul-12	08-Oct-12	94	0%
CCD00650	Prepare/ Submission of Structural Design of RC for Flocculation tank and main disturbution channel - Above G.L. (D	180	19-Jan-12 A	28-Jun-12	206	80%
CCD00660	Comment of Structural Design of RC for for Flocculation tank and main disturbution channel - Above G.L.	45	29-Jun-12	12-Aug-12	206	0%
CCD00670	Resubmission of Structural Design of RC for Flocculation tank and main disturbution channel - Above G.L.	75	13-Aug-12	26-Oct-12	206	0%
CCD00720	Final Approval of Geotechnical Design review of Structures	7	15-Jan-12 A	24-May-12	-15	95%
CCD00740	Comment of Cost Saving Design of Inlet Section of Flocculation tanks	14	01-Apr-12 A	14-Apr-12 A		100%
CCD00750	Resubmission of Cost Saving Design of Inlet Section of Flocculation tanks	10	15-Apr-12 A	24-Apr-12 A		100%
CCD00760	Final Approval of Cost Saving Design of Inlet Section of Flocculation tanks	7	25-Apr-12 A	27-May-12	60	50%
DDA9 (Extension of NaHClO Bldg)						
CCD00161	Prepare/ Submission of Structural Design of RC for Extension of NaHClO Bldg (DDA 9)	120	19-Apr-12 A	06-Sep-12	195	12%
CCD00162	Comment of Structural Design of RC for for Extension of NaHClO Bldg	45	06-Sep-12	21-Oct-12	195	0%
CCD00206	Prepare/ Submission of Structural Design for Steel Structures	120	04-May-12	06-Sep-12	222	12%
CCD00207	Comment of Structural Design of Steel Structures	45	06-Sep-12	21-Oct-12	222	0%
DDA11 (DOU No. 3 and DOU No. 1b)						
CCD00201	Prepare/ Submission of Structural Design of RC for DOU No. 3 and 1b (DDA 11)	100	08-Jun-12	15-Sep-12	380	0%
CCD00202	Comment of Structural Design of RC for for DOU No. 3 and No. 1b	45	16-Sep-12	30-Oct-12	380	0%
CCD00460	Comment of Cost saving design and Geotechnical Design review of Structures	14	01-Apr-12 A	14-Apr-12 A		100%
CCD00470	Resubmission of Cost saving design and Geotechnical Design review of Structures	14	15-Apr-12 A	28-Apr-12 A		100%
CCD00480	Final Approval of Cost saving design and Geotechnical Design review of Structures	14	29-Apr-12 A	29-May-12	79	60%
DDA12 (Odour Duct Bridge)						
CCD00181	Prepare/ Submission of Structural Design of RC for Odour Duct bridge (DDA 12)	100	08-Jun-12	15-Sep-12	419	0%
CCD00182	Comment of Structural Design of RC for for Odour Duct bridge	45	16-Sep-12	30-Oct-12	419	0%
CCD00500	Comment of Cost saving design and Geotechnical Design review of Structures	14	01-Apr-12 A	14-Apr-12 A		100%
CCD00510	Resubmission of Cost saving design and Geotechnical Design review of Structures	14	15-Apr-12 A	28-Apr-12 A		100%

Actual Work
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Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
CCD00520	Final Approval of Cost saving design and Geotechnical Design review of Structures	14	29-Apr-12 A	29-May-12	202	60%
Electrical & Mechanical Equipment Submission						
Contractor Design, Submission and Approval						
Aproved In-princple (AIP) Submission						
AIP No. 2 (Cooling water system of MPS)						
ECD00040	Comment/ Approval of AIP for Cooling water system of Main Sewage Pumping system (AIP No. 2)	180	08-Nov-11 A	19-Jun-12	-34	85%
AIP No. 3 (Drainage and Sparging System at Wet Well)						
ECD00045	Preparation of AIP Submission for Drainage and Sparging System at MPS2 and Valve Chamber (AIP No. 3)	432	24-Feb-11 A	30-Apr-12 A		100%
AIP No. 4 (Piping system for centrate flow/ NWK overflow pipe)						
ECD00051	Preparation of AIP Submission for piping system for centrate flow/ NWK overflow pipe (AIP No. 4)	415	24-Feb-11 A	13-Apr-12 A		100%
AIP No. 5 (Air mixing System for Wet Well)						
ECD00053	Preparation of AIP Submission for air mixing system for wet well (AIP No. 5)	415	24-Feb-11 A	13-Apr-12 A		100%
ECD00055	Comment/ Approval of AIP for air mixing system for wet well (AIP No. 5)	28	16-Apr-12 A	13-Jun-12	101	25%
AIP No. 6 (Flushing water System for interconnection tunnel and valve chamber)						
ECD00056	Preparation of AIP Submission for flushing water system for interconnection tunnels, valve chamber (AIP No. 6)	429	24-Feb-11 A	27-Apr-12 A		100%
ECD00070	Comment/ Approval of AIP for flushing water system for interconnection tunnels, valve chamber (AIP No. 6)	60	12-Mar-12 A	04-Jul-12	-36	30%
AIP No. 7 (Proccess Air Supply System for Flocculation tanks and ED culvert)						
ECD00075	Preparation of AIP Submission for Process Air Supply System for Extended CEPT Tanks (AIP No. 7)	425	24-Feb-11 A	23-Apr-12 A		100%
ECD00080	Comment/ Approval of AIP for Process Air Supply System for Extended CEPT Tanks (AIP No. 7)	75	10-Mar-12 A	11-Jul-12	13	35%
AIP No. 8 (Sludge and Scum Pumping System)						
ECD00085	Preparation of AIP Submission for Sludge and Scum Pumping System (AIP No. 8)	415	24-Feb-11 A	13-Apr-12 A		100%
ECD00150	Comment/ Approval of AIP for Sludge and Scum Pumping System (AIP No. 8)	95	09-Feb-12 A	24-Jul-12	-11	35%
AIP No. 9 (Process Air Supply System & Protected Water Supply System)						
ECD00155	Preparation of AIP Submission for Process & Protected Water and Process Drainage System for CEPT Tanks (AIP N	436	24-Feb-11 A	04-May-12 A		100%
ECD00160	Comment/ Approval of AIP for Process & Protected Water and Process Drainage System for CEPT Tanks (AIP No. 9)	80	16-Mar-12 A	30-Jul-12	-12	15%
AIP No. 10 (Penstocks and Stoplogs for Extension of CEPT tanks)						
ECD00165	Preparation of AIP Submission for Penstocks and Stoplogs (AIP No. 10)	415	24-Feb-11 A	13-Apr-12 A		100%
ECD00170	Comment/ Approval of AIP for Penstocks and Stoplogs (AIP No. 10)	60	15-Mar-12 A	10-Jun-12	45	70%
AIP No. 11 (Chemical Dosing System)						
ECD00175	Preparation of AIP Submission for Chemical Storage and Dosing System (AIP No. 11)	415	24-Feb-11 A	13-Apr-12 A		100%
ECD00180	Comment/ Approval of AIP for Chemical Storage and Dosing System (AIP No. 11)	60	15-Mar-12 A	25-Jun-12	20	45%
AIP No. 12 (Sodium Hypochlorite Storage, transfer and dosing system)						
ECD00200	Comment/ Approval of AIP for Sodium Hypochorite storage, transfer and dosing system (AIP No. 12)	60	07-Mar-12 A	01-Jul-12	48	35%
AIP No. 13 (Deodourization System for MPS, CEPT tanks, NWK PS)						
ECD00210	Comment/ Approva AIP for Deodourization System DOU3 and DOU1b (AIP No. 13)	75	14-Feb-12 A	07-Jul-12	-43	40%
AIP No. 18 (Ventilation System of MPS, valve chamber and Switchgear bldg)						
ECD00255	Preparation of AIP Submission for Ventilation System for MPS (AIP No. 18)	439	24-Feb-11 A	07-May-12 A		100%
ECD00260	Comment/ Approval of AIP for Ventilation System for MPS (AIP No. 18)	90	09-Mar-12 A	30-Jul-12	79	25%
AIP No. 19 (Fire Service Installation)						
ECD00265	Preparation of AIP Submission for Fire Hydrant, Hose Reel and Automatic Sprinkler System (AIP No. 19)	446	24-Feb-11 A	14-May-12 A		100%
ECD00270	Comment/ Approval of AIP for Fire Hydrant, Hose Reel and Automatic Sprinkler System (AIP No. 19)	90	24-May-12	21-Aug-12	27	0%
AIP No. 20 (Plumbling System)						
ECD00275	Preparation of AIP Submission for plumbing system for potable, flushing, irrigation system (AIP No. 20)	434	24-Feb-11 A	02-May-12 A		100%
ECD00280	Comment/ Approval of AIP for plumbing system for potable, flushing, irrigation system (AIP No. 20)	70	24-Mar-12 A	27-Jun-12	240	50%
AIP No. 21 (Drainage System)						
ECD00285	Preparation of AIP Submission for Drainage system for wastes water drainage system (AIP No. 21)	437	24-Feb-11 A	05-May-12 A		100%
ECD00290	Comment/ Approval of AIP for Drainage system for wastes water drainage system (AIP No. 21)	90	07-Mar-12 A	21-Aug-12	24	0%
AIP No. 22 (Knife Gate Valves - size DN3000 & DN3600))						
ECD00310	Comment/ Approval of AIP for Knife Gate Valves - size DN 3000 & DN 3600 (AIP No. 22)	90	04-Feb-12 A	21-Aug-12 A		100%
AIP No. 23 (Lifting applicance)						
ECD00410	Comment/ Approval of AIP for Lifting appliance (AIP No. 23)	75	07-Jan-12 A	15-Jul-12	-106	30%
Infrastructure Construction Works						
Works for Section 1A						
Time for Sectional Completion						
TC0040	Sectional Completion Date	0		24-May-12*	-90	0%
Portion 3 (Extension of CEPT Tanks)						
Civil Works						
P300080	Construction of NWK DN1200 Overflow pipe (CH140-215)	100	14-Oct-11 A	24-May-12	-45	100%
P300090	Construction of Chemical pipe trench (CH0-119)	230	14-Oct-11 A	30-Jul-12	-100	76%
P300250	Construction of Dia 250 watermain	245	14-Oct-11 A	28-Aug-12	-126	67%
P300256	Construction of NWK DN1200 Overflow pipe (CH235-286)	120	28-Feb-12 A	09-Jun-12	-85	88%
P904200	TTM Stage 4	1	12-Apr-12 A	12-Apr-12 A		100%
P904210	Construction of CLP cable Trench (CHB0-80, CHC0-60)	55	13-Apr-12 A	19-Jul-12	-118	15%
P904220	Construction of NWK DN1200 Overflow pipe (CH215-235)	55	13-Apr-12 A	24-May-12	-71	100%
Portion 9 (Permanent Storage Building)						
Contractor Design for Structural and E&M						
P900420	Submission of GBP to FSD	180	22-Sep-11 A	10-Apr-12 A		100%
P900430	Approval/ Comment of GBP from FSD	28	11-Apr-12 A	04-Jun-12	-164	60%
P900450	Approval/ Comment of WSD submission of Portable water	90	05-Mar-12 A	15-Jun-12	-137	75%
P900460	Submission of WSD submission of Fire services water	45	20-Jan-12 A	02-May-12 A		100%
P900470	Approval/ comment of WSD submission of Fire services water	90	03-May-12	15-Jun-12	-137	75%
P900500	Submission of FSD Form 314	14	17-Apr-12 A	18-Jun-12	-164	0%
P900520	Submission of FSD Form 501	21	24-Jul-12	14-Aug-12	-179	0%
Procurement/ Order/ Manufacturing/ Delivery						
P900330	Delivery of Travelling Cranes	20	31-Mar-12 A	19-Apr-12 A		100%

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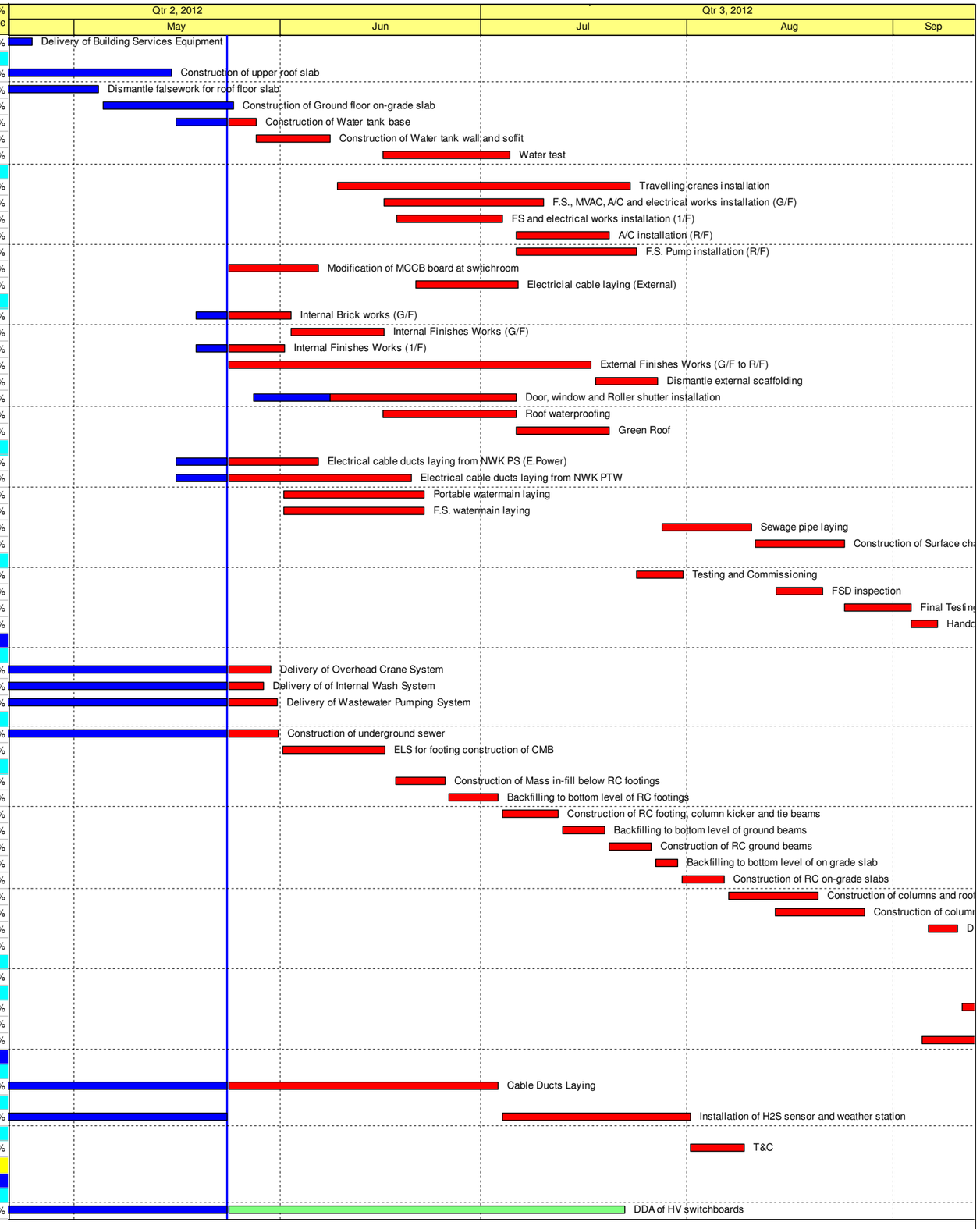
Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
P900360	Delivery of Building Services Equipment	18	07-Apr-12 A	24-Apr-12 A		100%
RC Works						
P900230	Construction of upper roof slab	25	14-Apr-12 A	15-May-12 A		100%
P900365	Dismantle falsework for roof floor slab	12	19-Apr-12 A	04-May-12 A		100%
P900370	Construction of Ground floor on-grade slab	12	05-May-12	25-May-12 A		100%
P900380	Construction of Water tank base	6	16-May-12	28-May-12	-156	45%
P900390	Construction of Water tank wall and soffit	10	28-May-12	08-Jun-12	-156	0%
P900490	Water test	14	16-Jun-12	05-Jul-12	-144	0%
Electrical and Machainical Installation						
P900130	Travelling cranes installation	35	09-Jun-12	23-Jul-12	-133	0%
P900180	F.S., MVAC, A/C and electrical works installation (G/F)	18	16-Jun-12	10-Jul-12	-122	0%
P900400	FS and electrical works installation (1/F)	12	18-Jun-12	04-Jul-12	-128	0%
P900410	A/C installation (R/F)	12	06-Jul-12	20-Jul-12	-130	0%
P900480	F.S. Pump installation (R/F)	15	06-Jul-12	24-Jul-12	-145	0%
P900485	Modification of MCCB board at swtichroom	12	24-May-12	06-Jun-12	-107	0%
P900510	Electricial cable laying (External)	12	21-Jun-12	06-Jul-12	-119	0%
Builder and finishes Works						
P900135	Internal Brick works (G/F)	9	19-May-12	02-Jun-12	-122	5%
P900140	Internal Finishes Works (G/F)	12	02-Jun-12	16-Jun-12	-122	0%
P900145	Internal Finishes Works (1/F)	14	19-May-12	01-Jun-12	-133	45%
P900155	External Finishes Works (G/F to R/F)	45	24-May-12	17-Jul-12	-161	0%
P900165	Dismantle external scaffolding	9	18-Jul-12	27-Jul-12	-161	0%
P900300	Door, window and Roller shutter installation	24	28-May-12	06-Jul-12	-118	10%
P900305	Roof waterproofing	15	16-Jun-12	06-Jul-12	-145	0%
P900310	Green Roof	12	06-Jul-12	20-Jul-12	-130	0%
External underground works						
P901000	Electrical cable ducts laying from NWK PS (E.Power)	30	16-May-12	06-Jun-12	-107	60%
P901010	Electrical cable ducts laying from NWK PTW	30	16-May-12	20-Jun-12	-119	20%
P901020	Portable watermain laying	18	01-Jun-12	22-Jun-12	-109	0%
P901030	F.S. watermain laying	18	01-Jun-12	22-Jun-12	-109	0%
P901120	Sewage pipe laying	12	28-Jul-12	10-Aug-12	-161	0%
P901170	Construction of Surface channel	12	11-Aug-12	24-Aug-12	-161	0%
Testing and Commissioning						
P900150	Testing and Commissioning	6	24-Jul-12	31-Jul-12	-133	0%
P900250	FSD inspection	6	14-Aug-12	21-Aug-12	-145	0%
P900530	Final Testing and commissioning	10	24-Aug-12	03-Sep-12	-197	0%
P900540	Handover to ST2	4	03-Sep-12	07-Sep-12	-197	0%
Portion 1 (Container Maintenance Building)						
Procurement/ Order/ Manufacturing/ Delivery						
P901060	Delivery of Overhead Crane System	22	04-Feb-12 A	30-May-12	-141	70%
P901090	Delivery of of Internal Wash System	18	28-Jan-12 A	29-May-12	-139	70%
P901130	Delivery of Wastewater Pumping System	25	01-Feb-12 A	31-May-12	-142	70%
Civil Works						
P902040	Construction of underground sewer	35	14-Apr-12 A	31-May-12	-238	80%
P902050	ELS for footing construction of CMB	14	01-Jun-12	16-Jun-12	-238	0%
RC works						
P100040	Construction of Mass in-fill below RC footings	6	18-Jun-12	25-Jun-12	-238	0%
P100045	Backfilling to bottom level of RC footings	6	26-Jun-12	03-Jul-12	-238	0%
P100046	Construction of RC footing, column kicker and tie beams	8	04-Jul-12	12-Jul-12	-238	0%
P100047	Backfilling to bottom level of ground beams	6	13-Jul-12	19-Jul-12	-238	0%
P100050	Construction of RC ground beams	6	20-Jul-12	26-Jul-12	-238	0%
P100055	Backfilling to bottom level of on grade slab	3	27-Jul-12	30-Jul-12	-238	0%
P100060	Construction of RC on-grade slabs	6	31-Jul-12	06-Aug-12	-238	0%
P100100	Construction of columns and roof slabs for plant rooms	12	07-Aug-12	20-Aug-12	-238	0%
P100110	Construction of columns and roof slabs for main structures	12	14-Aug-12	27-Aug-12	-238	0%
P100400	Dismantle scaffoldings for plant rooms	4	06-Sep-12	10-Sep-12	-217	0%
P100405	Dismantle scaffoldings for main structures	5	13-Sep-12	18-Sep-12	-238	0%
Electrical and Machainical Installation						
P100310	Electrical and FS Installation for plant rooms	12	20-Sep-12	05-Oct-12	-217	0%
Builder and finishes Works						
P100080	Internal Finishes for plant rooms	8	11-Sep-12	19-Sep-12	-217	0%
P100390	Internal finishes for main structures	10	19-Sep-12	29-Sep-12	-238	0%
P100410	External finishes	21	05-Sep-12	28-Sep-12	-190	0%
Portion 1 (Real weather Station and H2S Sensors)						
Civil Works						
P100910	Cable Ducts Laying	60	20-Sep-11 A	03-Jul-12	-136	45%
Electrical and Mechanical Installation						
P100920	Installation of H2S sensor and weather station	45	19-Dec-11 A	01-Aug-12	-136	45%
Testing and Commissioning						
P100960	T&C	7	01-Aug-12	09-Aug-12	-136	0%
Works for Section 2						
Portion 4 (Switchgear Building)						
Submission of Design for Structural and E&M						
P401000	DDA of HV switchboards	60	04-Mar-12 A	22-Jul-12	41	0%



Actual Work
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HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
P401010	Approval/ Comment of DDA of HV switchboards	60	18-Apr-12 A	01-Jul-12	41	35%
P401020	DDA of LV switchboards	60	04-Mar-12 A	22-Jul-12	66	0%
P401030	Approval/ Comment of DDA of LV switchboards	60	18-Apr-12 A	01-Jul-12	66	35%
P401040	DDA of Transformer	85	04-Mar-12 A	16-Aug-12	-1	0%
P401050	Approval/ Comment of DDA of Transformer	85	19-Mar-12 A	16-Aug-12	-1	0%
P401060	DDA of Gensets	90	18-Apr-12 A	21-Jul-12	87	35%
P401065	EPD submission for Gensets	90	18-Apr-12 A	21-Jul-12	87	35%
P401070	Approval/ Comment of DDA of Gensets	90	18-May-12	21-Jul-12	87	35%
P401090	Approval/ Comment of DDA of Lifting Appliance	90	21-Apr-12 A	02-Sep-12	29	45%
P401101	DDA of Control system architecture for upgrading existing DCDAS at MPS1 and HATS 1 PTW (AIP No. 16)	45	16-May-12	24-Jun-12	72	30%
P401102	Approval/ comment for the DDA of Control system architecture for upgrading existing DCDAS at MPS1 and HATS 1 F	46	15-Jun-12	30-Jul-12	72	0%
P401103	DDA of Conctrol system architecture for upgrading existing control system (AIP No. 17)	45	16-May-12	22-Jun-12	128	35%
P401104	Approval/ comment for the DDA of Conctrol system architecture for upgrading existing control system	46	15-Jun-12	30-Jul-12	128	0%
Procurement/ Order/ Manufacturing/ Delivery						
P302550	Procurement / Purchase Order of Control System for upgrading existing DCDAS at MPS1 and HATS 1 PTWs	28	31-Jul-12	27-Aug-12	72	0%
P302560	Manufacturing of Control System for upgrading existing DCDAS at MPS1 and HATS 1 PTWs	125	28-Aug-12	30-Dec-12	72	0%
P302580	Procurement / Purchase Order of Control System for upgrading existing control system	28	31-Jul-12	27-Aug-12	128	0%
P302590	Manufacturing of Control System for upgrading existing control system	125	28-Aug-12	30-Dec-12	128	0%
P402040	Procurement / Purchase Order of HV swichboards	25	02-Jul-12	26-Jul-12	41	0%
P402050	Manufacturing of HV switchboards	250	27-Jul-12	02-Apr-13	41	0%
P402070	Procurement / Purchase Order of LV switchboards	28	02-Jul-12	29-Jul-12	66	0%
P402080	Manufacturing of LV switchboards	250	30-Jul-12	05-Apr-13	66	0%
P402100	Procurement / Purchase Order of Transformers	35	17-Aug-12	20-Sep-12	-1	0%
P402130	Procurement / Purchase Order of Emergency Generator	20	21-Jul-12	10-Aug-12	87	0%
P402140	Manufacturing of Emergency Generator	210	10-Aug-12	08-Mar-13	87	0%
P402160	Procurement / Purchase Order of Lifting Appliances	21	03-Sep-12	23-Sep-12	29	0%
P402220	Procurement / Purchase order of Cables	30	17-Aug-12	15-Sep-12	16	0%
P402230	Manufacturing of Cables	210	16-Sep-12	13-Apr-13	16	0%
Foundation Works						
Ground investigation						
P400900	Submission of Preliminary borehole log	35	16-Mar-12 A	20-Apr-12 A		100%
Driven H-Pile						
P400015	Mobilization of Percussive Piling Plant	12	14-Apr-12 A	30-Apr-12 A		100%
P400020	Driven H-Piles (155 Nos)	60	30-Apr-12 A	26-Jul-12	-12	20%
P400025	Pile Load Test	12	26-Jul-12	09-Aug-12	-12	0%
P400030	Submit/ Approval of pile load test	5	26-Jul-12	01-Aug-12	13	0%
Excavation and Lateral Support for Substructure						
P400060	Sheetpiling Works	18	09-Aug-12	30-Aug-12	-12	0%
P400930	Excavation down to +4.5mPD	10	23-Aug-12	04-Sep-12	-12	0%
P400940	Install wailing and strut @ +4.3mPD	15	28-Aug-12	14-Sep-12	-12	0%
P400941	Excavation down to +2.3mPD	10	14-Sep-12	26-Sep-12	-12	0%
Works for Section 3						
Portion 1 (Existing CEPT tanks)						
Submission of design of E&M works						
P106000	Submission of Design for the MEICA works for modification works of CEPT tanks	90	13-Apr-12 A	21-Aug-12	100	0%
P106010	Approval/ comment of Design for the MEICA works for modification works of CEPT tanks	90	24-May-12	21-Aug-12	100	0%
Procurement/ Order/ Manufacturing/ Delivery						
P106110	Procurement / Purchase Order of Scum Collection System	34	22-Aug-12	24-Sep-12	100	0%
P106140	Procurement / Purchase Order of FRP mid tank baffles	34	22-Aug-12	24-Sep-12	100	0%
Portion 3 (Extension of CEPT Tank)						
Submission of design of E&M works						
P301000	DDA of Process air supply system for flocculation tanks (AIP No. 7)	120	11-Jul-12	08-Nov-12	13	0%
P301010	Approval/ comment for the DDA of Process air supply system for flocculation tanks	120	10-Aug-12	08-Dec-12	13	0%
P301020	DDA of the sludge pumping and scum collection system (AIP No. 8)	120	14-Jul-12	11-Nov-12	-11	0%
P301030	Approval/ comment for DDA of the sludge pumping and scum collection system	120	13-Aug-12	11-Dec-12	-10	0%
P301480	DDA of the Process water flushing and protected water system (AIP No. 9)	120	31-Jul-12	27-Nov-12	-12	0%
P301490	Approval/ comment for DDA of the Process water flushing and protected water system	120	30-Aug-12	27-Dec-12	-12	0%
P301500	DDA of the Penstock and stoplogs for CEPT tanks (AIP No. 10)	90	11-Jun-12	08-Sep-12	45	0%
P301510	Approval/ comment for DDA of the Penstock and stoplogs for CEPT tanks	90	11-Jul-12	08-Oct-12	45	0%
P301520	DDA of the Chemical (FECL3 and polymer) dosing system (AIP No. 11)	120	26-Jun-12	23-Oct-12	20	0%
P301530	Approval/ comment for DDA of the Chemical (FECL3 and polymer) dosing system	120	26-Jul-12	22-Nov-12	20	0%
P301550	DDA of the Lifting appliance (AIP No. 23)	120	15-Jul-12	12-Nov-12	-106	0%
Foundation Works						
Extension/ trimming of Existing Daido Piles						
Row C, F, I & L						
P321000	Open excavation to +4.1mPD for substructure of Southern CEPT tanks	15	24-Aug-12	11-Sep-12	-12	0%
P321010	Extension L1 to L36 (36 Nos)	21	11-Sep-12	02-Oct-12	-14	0%
P902540	Extension for C65 to C70, F37 to F40, I37 to I40, L37 to L40 (18Nos)	40	09-Jul-12	24-Aug-12	-12	0%
Row A, D, G & J						
P902550	Open excavation to +4.1mPD for substructure of Northern CEPT tanks	15	13-Aug-12	29-Aug-12	2	0%
P902555	Extension for J5 to J44 (40Nos)	15	30-Aug-12	15-Sep-12	2	0%
P902560	Extension for G5 to G44 (40Nos)	21	17-Sep-12	12-Oct-12	2	0%
P902620	Extension for A1 to A6, D1 to D4, G1 to G4, J1 to J4 (18Nos)	40	26-Jun-12	11-Aug-12	2	0%
Row B, E, H & K						

Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

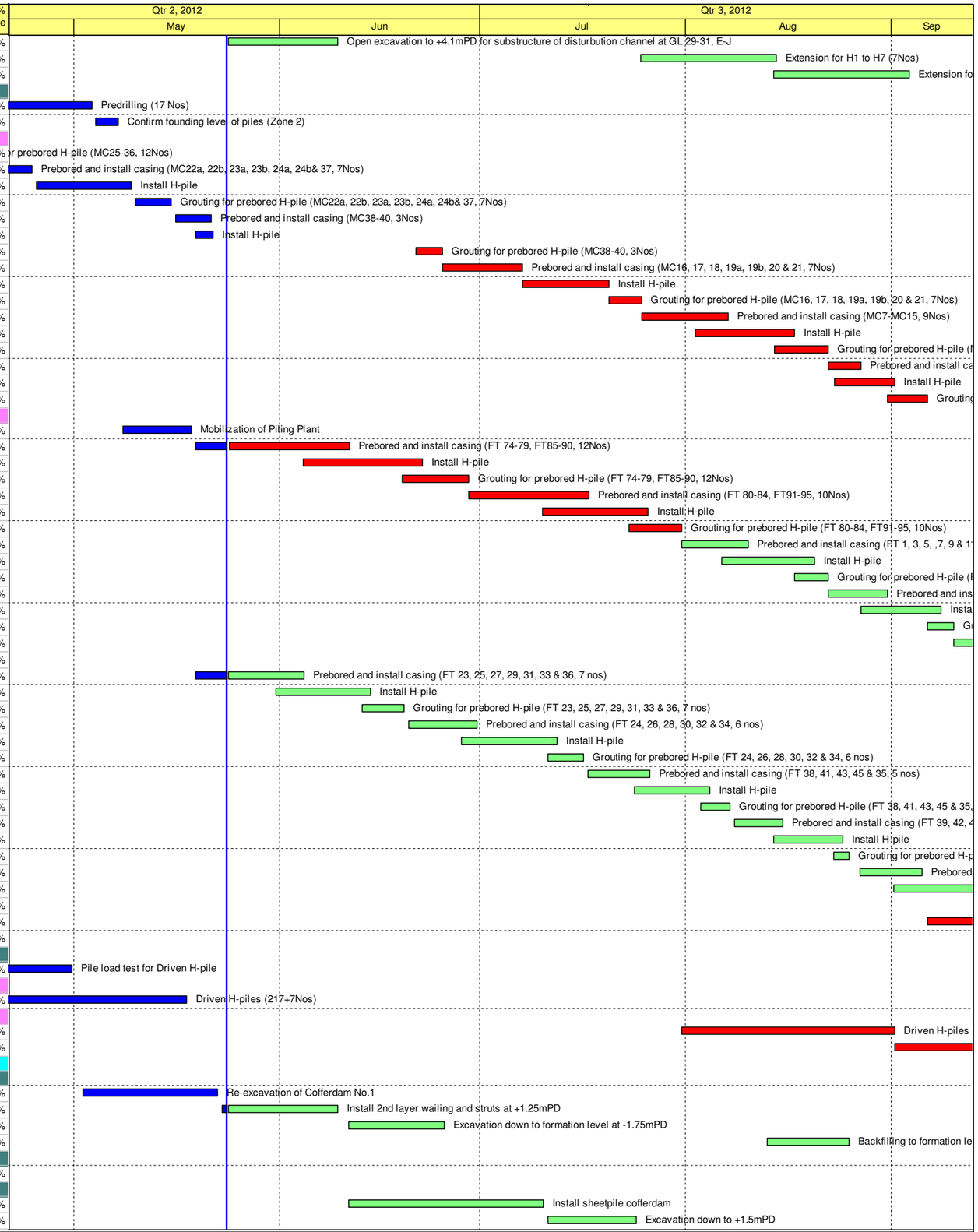
Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
P902635	Open excavation to +4.1mPD for substructure of disturbution channel at GL 29-31, E-J	15	24-May-12	09-Jun-12	9	0%
P902660	Extension for H1 to H7 (7Nos)	18	25-Jul-12	14-Aug-12	9	0%
P902670	Extension for K1 to K7 (7Nos)	18	14-Aug-12	03-Sep-12	9	0%
Prebored Rock Socketted H-Pile						
P300115	Predrilling (17 Nos)	28	26-Mar-12 A	03-May-12 A		100%
P300121	Confirm founding level of piles (Zone 2)	3	04-May-12	07-May-12 A		100%
Zone 1 - Disturbution Channel, Rig No. 1						
P310420	Grouting for prebored H-pile (MC25-36, 12Nos)	7	31-Mar-12 A	12-Apr-12 A		100%
P310430	Prebored and install casing (MC22a, 22b, 23a, 23b, 24a, 24b& 37, 7Nos)	10	13-Apr-12 A	24-Apr-12 A		100%
P310440	Install H-pile	11	25-Apr-12 A	09-May-12 A		100%
P310450	Grouting for prebored H-pile (MC22a, 22b, 23a, 23b, 24a, 24b& 37, 7Nos)	5	10-May-12	15-May-12 A		100%
P310460	Prebored and install casing (MC38-40, 3Nos)	5	16-May-12	21-May-12 A		100%
P310470	Install H-pile	6	19-May-12	22-May-12 A		100%
P310480	Grouting for prebored H-pile (MC38-40, 3Nos)	2	21-Jun-12	25-Jun-12	-13	0%
P310490	Prebored and install casing (MC16, 17, 18, 19a, 19b, 20 & 21, 7Nos)	10	25-Jun-12	07-Jul-12	-13	0%
P310500	Install H-pile	11	07-Jul-12	20-Jul-12	-13	0%
P310510	Grouting for prebored H-pile (MC16, 17, 18, 19a, 19b, 20 & 21, 7Nos)	4	20-Jul-12	25-Jul-12	-13	0%
P310520	Prebored and install casing (MC7-MC15, 9Nos)	11	25-Jul-12	07-Aug-12	-13	0%
P310530	Install H-pile	13	02-Aug-12	17-Aug-12	-13	0%
P310540	Grouting for prebored H-pile (MC7-MC15, 9Nos)	7	14-Aug-12	22-Aug-12	-13	0%
P310550	Prebored and install casing (MC1-MC6, 6Nos)	4	22-Aug-12	27-Aug-12	-13	0%
P310560	Install H-pile	8	23-Aug-12	01-Sep-12	-13	0%
P310570	Grouting for prebored H-pile (MC1-MC6, 6Nos)	5	31-Aug-12	06-Sep-12	-13	0%
Zone 2 - Rapid Mix tank, Rig No. 2 & 3						
P310000	Mobilization of Piling Plant	10	08-May-12	18-May-12 A		100%
P310001	Prebored and install casing (FT 74-79, FT85-90, 12Nos)	15	19-May-12	11-Jun-12	-4	0%
P310002	Install H-pile	16	04-Jun-12	22-Jun-12	-4	0%
P310003	Grouting for prebored H-pile (FT 74-79, FT85-90, 12Nos)	8	19-Jun-12	29-Jun-12	-4	0%
P310004	Prebored and install casing (FT 80-84, FT91-95, 10Nos)	14	29-Jun-12	17-Jul-12	-4	0%
P310005	Install H-pile	14	10-Jul-12	26-Jul-12	-4	0%
P310007	Grouting for prebored H-pile (FT 80-84, FT91-95, 10Nos)	7	23-Jul-12	31-Jul-12	-4	0%
P310010	Prebored and install casing (FT 1, 3, 5, ,7, 9 & 11, 6 nos)	9	31-Jul-12	10-Aug-12	6	0%
P310020	Install H-pile	12	06-Aug-12	20-Aug-12	6	0%
P310030	Grouting for prebored H-pile (FT 1, 3, 5, 7, 9 & 11, 6 nos)	4	17-Aug-12	22-Aug-12	6	0%
P310040	Prebored and install casing (FT 2, 4, 6, 8, 10, 5 nos)	8	22-Aug-12	31-Aug-12	6	0%
P310050	Install H-pile	11	27-Aug-12	08-Sep-12	6	0%
P310060	Grouting for prebored H-pile (FT 2, 4, 6, 8, 10, 5 nos)	3	06-Sep-12	10-Sep-12	6	0%
P310070	Prebored and install casing (FT 13, 15, 17, 19 & 21, 5 nos)	8	10-Sep-12	19-Sep-12	6	0%
P310080	Install H-pile	11	14-Sep-12	27-Sep-12	6	0%
P310130	Prebored and install casing (FT 23, 25, 27, 29, 31, 33 & 36, 7 nos)	10	19-May-12	04-Jun-12	25	0%
P310140	Install H-pile	13	31-May-12	14-Jun-12	25	0%
P310150	Grouting for prebored H-pile (FT 23, 25, 27, 29, 31, 33 & 36, 7 nos)	6	13-Jun-12	19-Jun-12	25	0%
P310160	Prebored and install casing (FT 24, 26, 28, 30, 32 & 34, 6 nos)	9	20-Jun-12	30-Jun-12	25	0%
P310170	Install H-pile	12	28-Jun-12	12-Jul-12	25	0%
P310180	Grouting for prebored H-pile (FT 24, 26, 28, 30, 32 & 34, 6 nos)	5	11-Jul-12	16-Jul-12	25	0%
P310190	Prebored and install casing (FT 38, 41, 43, 45 & 35, 5 nos)	9	17-Jul-12	26-Jul-12	25	0%
P310200	Install H-pile	11	24-Jul-12	04-Aug-12	25	0%
P310210	Grouting for prebored H-pile (FT 38, 41, 43, 45 & 35, 5 nos)	4	03-Aug-12	07-Aug-12	25	0%
P310220	Prebored and install casing (FT 39, 42, 44 & 37, 4 nos)	7	08-Aug-12	15-Aug-12	25	0%
P310230	Install H-pile	10	14-Aug-12	24-Aug-12	25	0%
P310240	Grouting for prebored H-pile (FT 39, 42, 44 & 37, 4 nos)	3	23-Aug-12	25-Aug-12	25	0%
P310250	Prebored and install casing (FT 46-50, FT61-60, 8Nos)	9	27-Aug-12	05-Sep-12	25	0%
P310260	Install H-pile	12	01-Sep-12	14-Sep-12	25	0%
P310270	Grouting for prebored H-pile (FT 46-50, FT61-60, 8Nos)	7	13-Sep-12	20-Sep-12	25	0%
P310280	Prebored and install casing (FT 51-59, 9Nos)	11	06-Sep-12	19-Sep-12	-13	0%
P310290	Install H-pile	13	13-Sep-12	28-Sep-12	-13	0%
Driven H-Pile						
P320140	Pile load test for Driven H-pile	15	12-Apr-12 A	30-Apr-12 A		100%
Zone 3 - CEPT Tank						
P320060	Driven H-piles (217+7Nos)	85	23-Dec-11 A	18-May-12 A		100%
Zone 4 - Inlet Section of Flocculation tank						
P904240	Driven H-piles (31 Nos+ 25 Nos at CEPT)	28	31-Jul-12	01-Sep-12	-4	0%
P904250	Pile load test for Driven H-pile	10	01-Sep-12	13-Sep-12	-4	0%
Excavation and Lateral Support for Substructure						
Cofferdam No. 1 (GL29-33, A-B)						
P322000	Re-excavation of Cofferdam No.1	18	02-May-12	22-May-12 A		100%
P322008	Install 2nd layer wailing and struts at +1.25mPD	15	23-May-12	09-Jun-12	2	0%
P322010	Excavation down to formation level at -1.75mPD	12	11-Jun-12	25-Jun-12	2	0%
P322015	Backfilling to formation level of pile cap at +1.20mPD	12	13-Aug-12	25-Aug-12	3	0%
Cofferdam No. 2 (GL34-36, A)						
P322200	Install sheetpile cofferdam (within Portion 3)	15	13-Sep-12	03-Oct-12	-4	0%
Cofferdam No. 5 (GL29-33, D-K)						
P322500	Install sheetpile cofferdam	24	11-Jun-12	10-Jul-12	9	0%
P322530	Excavation down to +1.5mPD	12	11-Jul-12	24-Jul-12	9	0%



Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

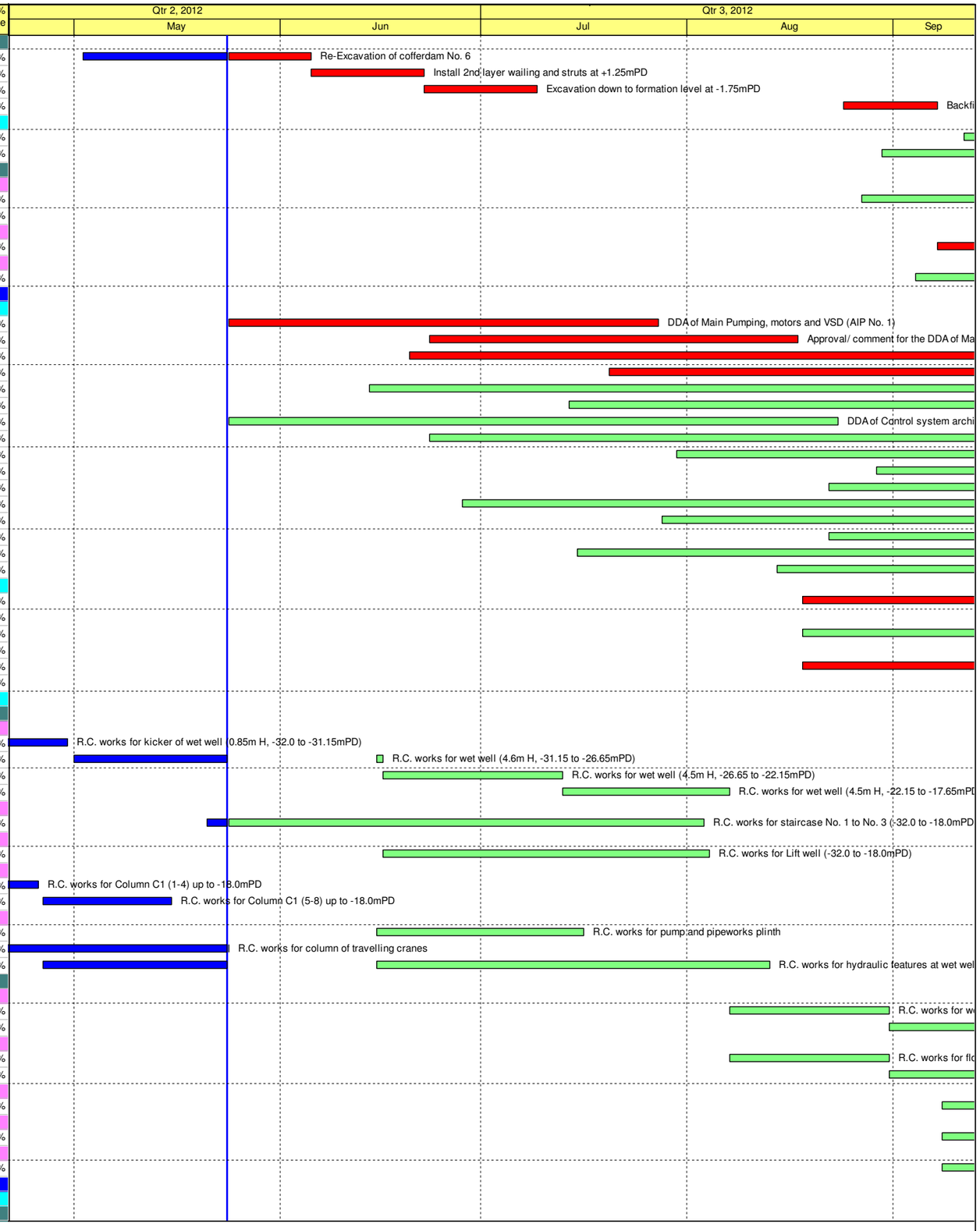
Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
Cofferdam No. 6 (GL29-33, N-M)						
P322600	Re-Excavation of cofferdam No. 6	18	02-May-12	05-Jun-12	-12	40%
P322605	Install 2nd layer wailing and struts at +1.25mPD	15	05-Jun-12	22-Jun-12	-12	0%
P322610	Excavation down to formation level at -1.75mPD	12	22-Jun-12	09-Jul-12	-12	0%
P322615	Backfilling to formation level of pile cap at +1.20mPD	12	24-Aug-12	07-Sep-12	-8	0%
R.C. Works						
P300180	Erection of tower crane A	30	11-Sep-12	18-Oct-12	75	0%
P300185	Erection of tower crane B	30	30-Aug-12	05-Oct-12	104	0%
Substructure						
GL 33-29 & GL A-B (Northern Effluent tunnel)						
P330000	R.C. works for Pile caps	16	27-Aug-12	13-Sep-12	3	0%
P330010	R.C. works for Channel wall	16	14-Sep-12	04-Oct-12	3	0%
GL 33-29 & GL M-N (Southern Effluent Tunnel)						
P330100	R.C. works for Pile caps	16	07-Sep-12	26-Sep-12	-8	0%
GL 33-29 & GL D-K (Disturbution Channel)						
P335000	R.C. works for pile cap (GL29-30)	18	04-Sep-12	24-Sep-12	9	0%
Portion 4 (Main Pumping Station)						
Submission of design of E&M works						
P301100	DDA of Main Pumping, motors and VSD (AIP No. 1)	65	24-May-12	27-Jul-12	-101	0%
P301110	Approval/ comment for the DDA of Main Pumping, motors and VSD	56	23-Jun-12	17-Aug-12	-101	0%
P301120	DDA of Cooling water system for pump bearing and motors (AIP No. 2)	120	20-Jun-12	17-Oct-12	-34	0%
P301130	Approval/ comment for the DDA of Cooling water system for pump bearing and motors	120	20-Jul-12	16-Nov-12	-34	0%
P301260	DDA of Air Mixing system of wet well (AIP No. 5)	180	14-Jun-12	10-Dec-12	101	0%
P301270	Approval/ comment for the DDA of Air Mixing system of wet well	180	14-Jul-12	09-Jan-13	101	0%
P301300	DDA of Control system architecture for DCS and Interfacing control system (AIP No. 15)	92	24-May-12	23-Aug-12	155	0%
P301310	Approval/ comment for the DDA of Control system architecture for DCS and Interfacing control system	92	23-Jun-12	22-Sep-12	155	0%
P301390	DDA of Ventilation system of MPS (AIP No. 18)	120	30-Jul-12	27-Nov-12	79	0%
P301400	Approval/ comment for the DDA of Ventilation system of MPS2	120	29-Aug-12	27-Dec-12	79	0%
P301410	DDA of Fire service of MPS (AIP No. 19)	171	22-Aug-12	08-Feb-13	27	0%
P301430	DDA of Plumbling system (AIP No. 20)	201	28-Jun-12	14-Jan-13	240	0%
P301440	Approval/ comment for the DDA of Plumbling system	201	28-Jul-12	13-Feb-13	240	0%
P301450	DDA of Drainage system (AIP No. 21)	200	22-Aug-12	09-Mar-13	24	0%
P301470	DDA of Lifting appliance (AIP No. 23)	180	15-Jul-12	11-Jan-13	171	0%
P301540	Approval/ comment for the DDA of Lifting appliance	180	14-Aug-12	10-Feb-13	171	0%
Procurement/ Order/ Manufacturing/ Delivery						
P302250	Procurement / Purchase Order of Main Sewage Pumps	30	18-Aug-12	16-Sep-12	-101	0%
P302260	Manufacturing of Main Sewage Pumps	365	17-Sep-12	16-Sep-13	-101	0%
P302280	Procurement / Purchase Order of Main Sewage Pump Motors	30	18-Aug-12	16-Sep-12	221	0%
P302290	Manufacturing of Main Sewage Pump Motors	365	17-Sep-12	16-Sep-13	221	0%
P302310	Procurement / Purchase Order of VSD for Main Sewage Pumps	30	18-Aug-12	16-Sep-12	-4	0%
P302320	Manufacturing of VSD for Main Sewage Pumps	365	17-Sep-12	16-Sep-13	-4	0%
R.C. Works						
Access Floor No. 1 (-32.0mPD)						
Wet Well						
P400180	R.C. works for kicker of wet well (0.85m H, -32.0 to -31.15mPD)	15	05-Apr-12 A	30-Apr-12 A		100%
P400185	R.C. works for wet well (4.6m H, -31.15 to -26.65mPD)	35	01-May-12	16-Jun-12	27	98%
P400190	R.C. works for wet well (4.5m H, -26.65 to -22.15mPD)	21	16-Jun-12	13-Jul-12	27	0%
P400195	R.C. works for wet well (4.5m H, -22.15 to -17.65mPD)	21	13-Jul-12	07-Aug-12	27	0%
Staircase No. 1 to No. 3						
P400215	R.C. works for staircase No. 1 to No. 3 (-32.0 to -18.0mPD)	60	21-May-12	03-Aug-12	117	0%
Lift Well						
P400225	R.C. works for Lift well (-32.0 to -18.0mPD)	40	16-Jun-12	04-Aug-12	268	0%
Columns C1 (8 Nos)						
P400245	R.C. works for Column C1 (1-4) up to -18.0mPD	15	05-Apr-12 A	25-Apr-12 A		100%
P400295	R.C. works for Column C1 (5-8) up to -18.0mPD	15	26-Apr-12 A	15-May-12 A		100%
E&M features						
P400255	R.C. works for pump and pipeworks plinth	24	15-Jun-12	16-Jul-12	1487	0%
P400265	R.C. works for column of travelling cranes	32	07-Mar-12 A	24-May-12	114	100%
P400285	R.C. works for hydraulic features at wet well (Benching and Baffle)	48	26-Apr-12 A	13-Aug-12	47	0%
Access Floor No. 2 (-18.0mPD)						
Wet Well						
P400205	R.C. works for wet well and beams (4.0m H, -17.65 to -13.65mPD)	21	07-Aug-12	31-Aug-12	31	0%
P400415	R.C. Works for wet well (3.6m H, -13.65 to -10.0mPD)	18	31-Aug-12	21-Sep-12	31	0%
Floor slab and beams (-18.0mPD)						
P400400	R.C. works for floor slab and beam (RHS)	21	07-Aug-12	31-Aug-12	27	0%
P400405	R.C. works for floor slab and beam (LHS)	21	31-Aug-12	25-Sep-12	31	0%
Staircase No. 1 to No. 3						
P400435	R.C. works for staircase No. 1 to No. 3 (-18.0 to -10.0mPD)	45	08-Sep-12	03-Nov-12	87	0%
Lift Well						
P400445	R.C. works for Lift well (-18.0 to -10.0mPD)	30	08-Sep-12	16-Oct-12	238	0%
Columns C1 (8 Nos)						
P400455	R.C. works for Column C1 (1-4) up to -10.0mPD	15	08-Sep-12	26-Sep-12	27	0%
Portion 4 (Main flow Culvert)						
Foundation Works						
Driven H-Pile						



Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

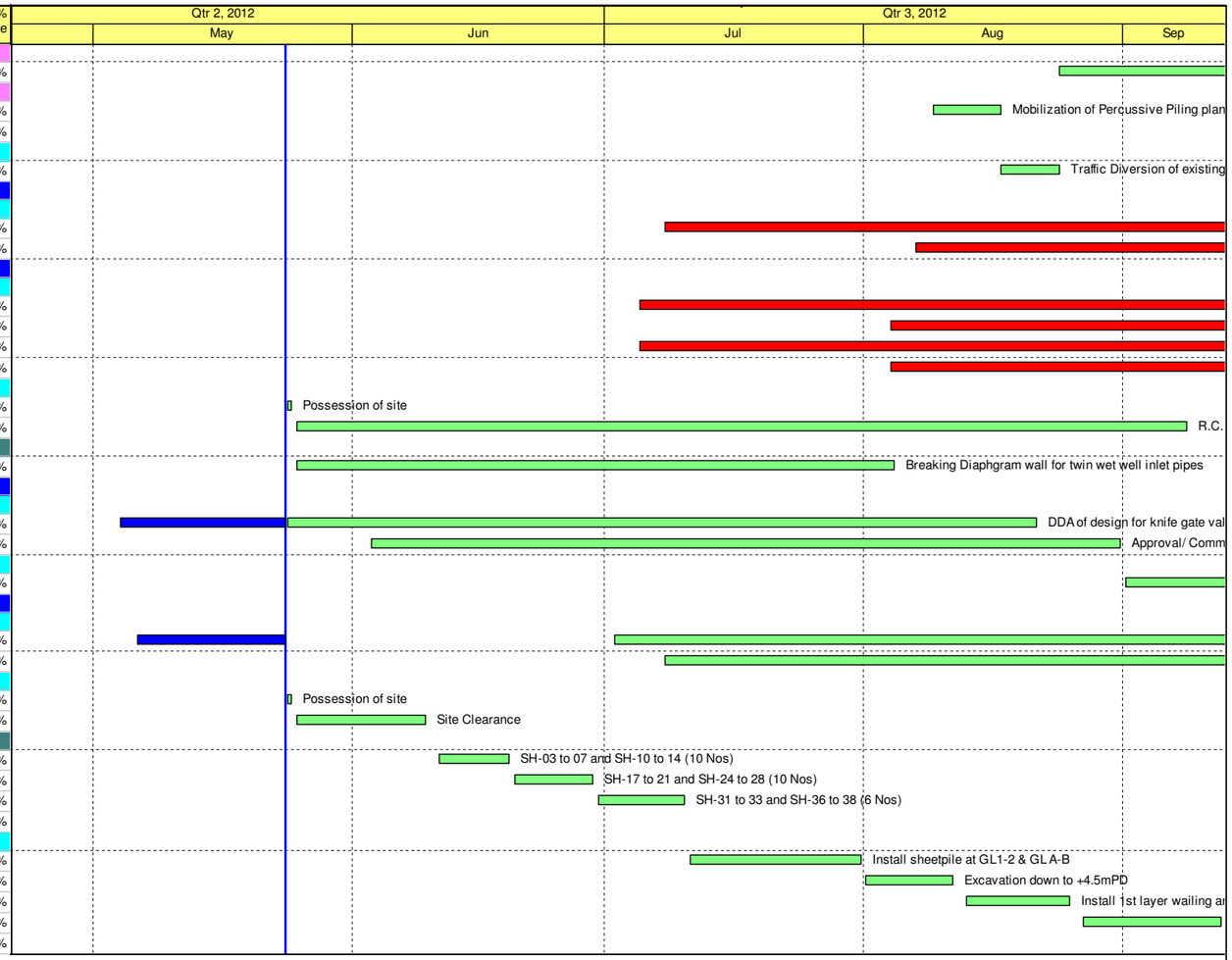
Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Activity % Complete
Zone 1, on EVA						
P903210	Driven H-Pile (For MFC)	21	24-Aug-12	18-Sep-12	7	0%
Zone 2, within Portion 4						
P903150	Mobilization of Percussive Piling plants	7	09-Aug-12	17-Aug-12	7	0%
P903160	Driven H-pile (For MFC, DOU, Odour Duct Bridge, 70 Nos)	45	18-Sep-12	13-Nov-12	75	0%
Civil Works						
P400375	Traffic Diversion of existing traffic to temporary road (Two Stage)	6	17-Aug-12	24-Aug-12	7	0%
Portion 4 (Deodourization Unit No. 3 & 1b and Odour duct bridge)						
Submission of design of E&M works						
P403000	DDA of design for the DOU No. 3 & 1b (AIP No. 13)	210	08-Jul-12	02-Feb-13	-43	0%
P403010	Approval/ Comment of DDA for the DOU No. 3 & 1b	220	07-Aug-12	14-Mar-13	-43	0%
Portion 5 (Inlet Chamber)						
Submission of design of E&M works						
P501210	Submission of design for the MEICA & BS works for inlet chamber	100	05-Jul-12	12-Oct-12	-31	0%
P501220	Approval/ comment for the design of the MEICA and BS works for inlet chamber	100	04-Aug-12	11-Nov-12	-31	0%
P501230	Submission of design of knife gate valves	80	05-Jul-12	22-Sep-12	-36	0%
P501240	Approval/ comment for the design of knife gate valves	80	04-Aug-12	22-Oct-12	-36	0%
R.C. Works						
P400630	Possession of site	1	24-May-12	24-May-12	353	0%
P400631	R.C. works for plinth of pipeworks and valves	90	25-May-12	08-Sep-12	376	0%
Diaphgram Wall opening						
P400635	Breaking Diaphgram wall for twin wet well inlet pipes	60	25-May-12	04-Aug-12	286	0%
Portion 6 (Valve Chamber)						
Submission of design of E&M works						
P501310	DDA of design for knife gate valves (AIP No. 22)	90	04-May-12	21-Aug-12	98	0%
P501320	Approval/ Comment of DDA for knife gate valves	90	03-Jun-12	31-Aug-12	98	0%
Procurement/ Order/ Manufacturing/ Delivery						
P501720	Procurement / Purchase Order of Knife gate Valves	30	01-Sep-12	30-Sep-12	98	0%
Portion 8 (Extension of Sodium Hypochlorite Storage Compound)						
Submission of design of E&M works						
P801000	DDA of NAHCLO storage, transfer and dosage system (AIP No. 12)	150	06-May-12	28-Nov-12	48	0%
P801010	Approval/ comment of DDA for the MEICA & BS NaHCLO storage compound	150	08-Jul-12	04-Dec-12	48	0%
Foundation Works						
P800000	Possession of site	1	24-May-12	24-May-12	104	0%
P800010	Site Clearance	14	25-May-12	09-Jun-12	87	0%
Re-driving test for existing daido Piles						
P800020	SH-03 to 07 and SH-10 to 14 (10 Nos)	8	11-Jun-12	19-Jun-12	87	0%
P800030	SH-17 to 21 and SH-24 to 28 (10 Nos)	8	20-Jun-12	29-Jun-12	87	0%
P800040	SH-31 to 33 and SH-36 to 38 (6 Nos)	8	30-Jun-12	10-Jul-12	87	0%
P800050	SH-01, 02, 08, 09, 15, 16, 22, 23, 29, 30, 34 & 35	12	20-Sep-12	05-Oct-12	87	0%
Excavation and Lateral Support for Substructure						
P802000	Install sheetpile at GL1-2 & GL A-B	18	11-Jul-12	31-Jul-12	87	0%
P802005	Excavation down to +4.5mPD	10	01-Aug-12	11-Aug-12	87	0%
P802010	Install 1st layer wailing and struts at +4.8mPD	12	13-Aug-12	25-Aug-12	87	0%
P802030	Install temporary prop at +2.9mPD	15	27-Aug-12	12-Sep-12	87	0%
P802040	Excavation for exposing daido pile heads	6	13-Sep-12	19-Sep-12	87	0%



Actual Work
Remaining Work
Critical Remaining Work
◆ Milestone

Contract No. DC/2009/10

HATS Stage 2A - Upgrading works at StoneCutters Island Sewage Treatement Works

Three Months Rolling Programme (24 May 2012 to 24 Aug 2012)

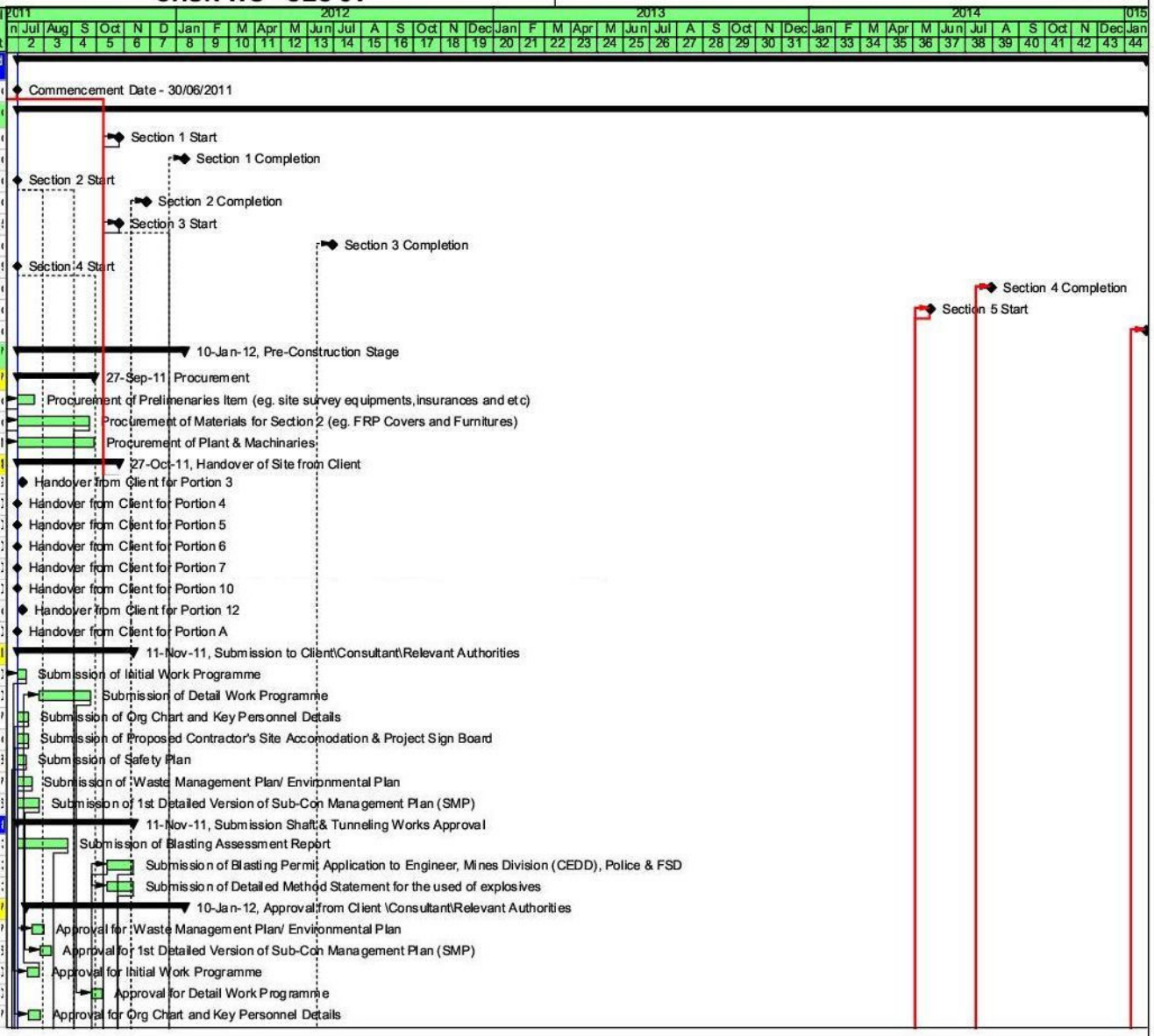
Date	Revision	Checked	Approved

Harbour Area Treatment Scheme Stage 2A - Initial Work Programme

CHUN WO - CEC JV

09-Jul-11 12:08

Activity Name	Original Duration	Start	Finish
Harbour Area Treatment Scheme Stage 2	1263d	30-Jun-11	26-Jan-15
Commencement Date - 30/06/2011	0d	30-Jun-11	
Sectional Completion Milestones	1263d	30-Jun-11	26-Jan-15
Section 1 Start	0d	27-Oct-11	
Section 1 Completion	0d		10-Jan-12*
Section 2 Start	0d	30-Jun-11*	
Section 2 Completion	0d		26-Nov-11*
Section 3 Start	0d	27-Oct-11	
Section 3 Completion	0d		28-Jun-12*
Section 4 Start	0d	30-Jun-11	
Section 4 Completion	0d		30-Jul-14*
Section 5 Start	0d	22-May-14	
Section 5 Completion	0d		26-Jan-15*
Pre-Construction Stage	188d	30-Jun-11	10-Jan-12
Procurement	87d	30-Jun-11	27-Sep-11
Procurement of Prelimenaries Item (eg. site survey eq	21d	30-Jun-11	20-Jul-11
Procurement of Materials for Section 2 (eg. FRP Cove	84d	30-Jun-11	21-Sep-11
Procurement of Plant & Machinaries	90d	30-Jun-11	27-Sep-11
Handover of Site from Client	115d	30-Jun-11	27-Oct-11
Handover from Client for Portion 3	0d	07-Jul-11*	
Handover from Client for Portion 4	0d	30-Jun-11	
Handover from Client for Portion 5	0d	30-Jun-11	
Handover from Client for Portion 6	0d	30-Jun-11	
Handover from Client for Portion 7	0d	30-Jun-11	
Handover from Client for Portion 10	0d	30-Jun-11	
Handover from Client for Portion 12	0d	07-Jul-11*	
Handover from Client for Portion A	0d	30-Jun-11*	
Submission to Client\Consultant\Relevant Author	130d	30-Jun-11	11-Nov-11
Submission of Initial Work Programme	12d	30-Jun-11	11-Jul-11
Submission of Detail Work Programme	60d	26-Jul-11	23-Sep-11
Submission of Org Chart and Key Personnel Details	14d	30-Jun-11	13-Jul-11
Submission of Proposed Contractor's Site Accomodati	14d	30-Jun-11	13-Jul-11
Submission of Safety Plan	11d	30-Jun-11	10-Jul-11
Submission of Waste Management Plan/ Environmen	18d	30-Jun-11	17-Jul-11
Submission of 1st Detailed Version of Sub-Con Manag	27d	30-Jun-11	26-Jul-11
Submission Shaft & Tunneling Works Approval	130d	30-Jun-11	11-Nov-11
Submission of Blasting Assessment Report	60d	30-Jun-11	28-Aug-11
Submission of Blasting Permit Application to Engine	30d	13-Oct-11	11-Nov-11
Submission of Detailed Method Statement for the us	30d	13-Oct-11	11-Nov-11
Approval from Client \Consultant\Relevant Autho	177d	11-Jul-11	10-Jan-12
Approval for Waste Management Plan/ Environmental	14d	18-Jul-11	31-Jul-11
Approval for 1st Detailed Version of Sub-Con Manage	14d	27-Jul-11	09-Aug-11
Approval for Initial Work Programme	14d	12-Jul-11	25-Jul-11
Approval for Detail Work Programme	14d	24-Sep-11	07-Oct-11
Approval for Org Chart and Key Personnel Details	14d	14-Jul-11	27-Jul-11



Actual Work ◆ Milestone
Remaining Work ▼ Summary
Critical Work

DC/2009/18 - HARBOUR AREA TREATMENT SCHEME STAGE 2A - Upgrading Works at Stonecutters Island Sewage Treatment Works - Effluent Tunnel and Disinfection Facilities.

INITIAL WORK PROGRAMME, REV.0 (1st Submission)

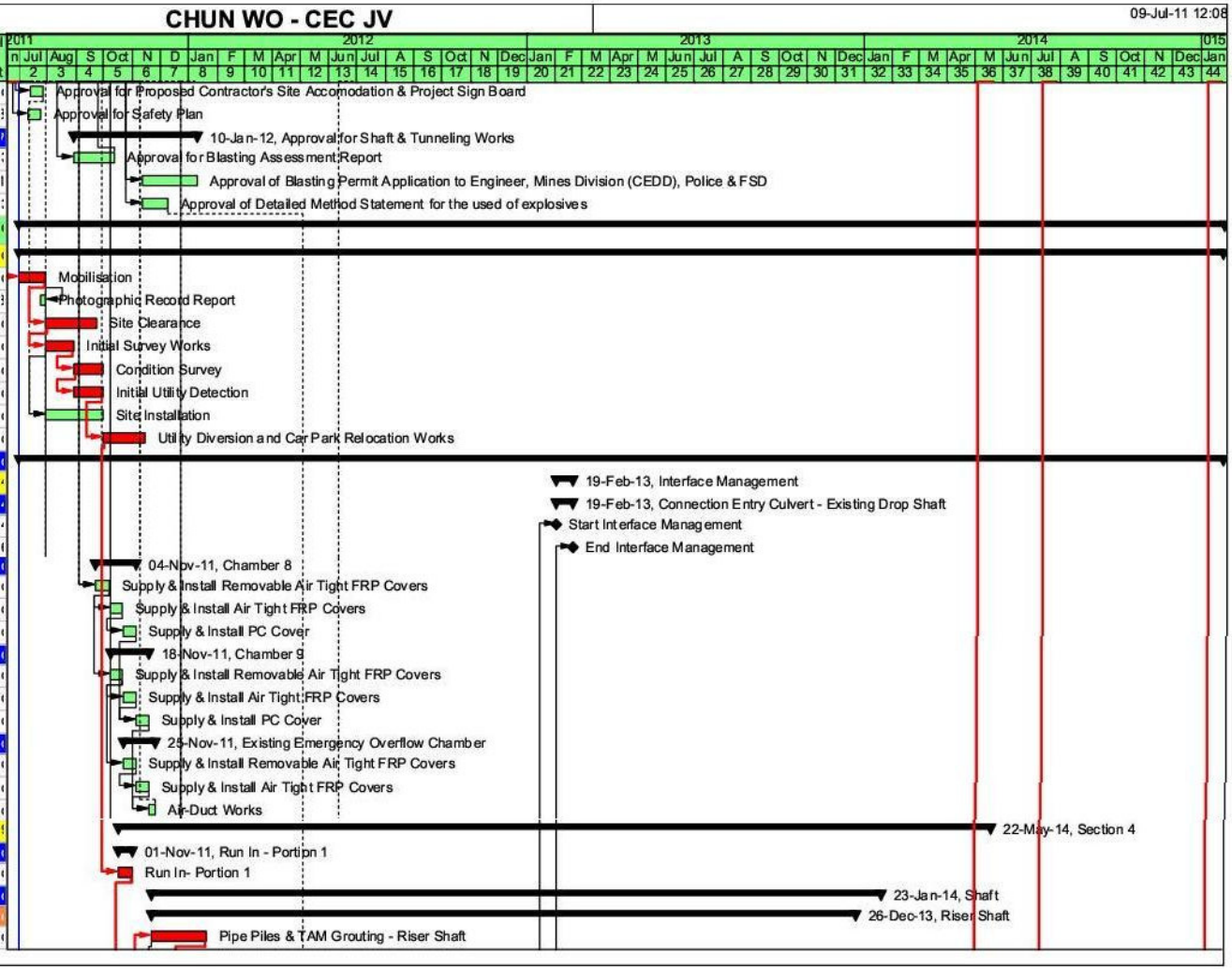
Date	Revision	Checked	Approved
11-Jul-11	Initial Work Programme		

Harbour Area Treatment Scheme Stage 2A - Initial Work Programme

CHUN WO - CEC JV

09-Jul-11 12:08

Activity Name	Original Duration	Start	Finish
Approval for Proposed Contractor's Site Accomodation	14d	14-Jul-11	27-Jul-11
Approval for Safety Plan	14d	11-Jul-11	24-Jul-11
Approval for Shaft & Tunneling Works	128d	29-Aug-11	10-Jan-12
Approval for Blasting Assessment Report	45d	29-Aug-11	12-Oct-11
Approval of Blasting Permit Application to Engineer,	60d	12-Nov-11	10-Jan-12
Approval of Detailed Method Statement for the used	28d	12-Nov-11	09-Dec-11
Construction Stage	1263d	30-Jun-11	26-Jan-15
Preliminaries	1262d	30-Jun-11	24-Jan-15
Mobilisation	24d	30-Jun-11	30-Jul-11
Photographic Record Report	5d	25-Jul-11	30-Jul-11
Site Clearance	42d	30-Jul-11	23-Sep-11
Initial Survey Works	24d	30-Jul-11	30-Aug-11
Condition Survey	24d	30-Aug-11	30-Sep-11
Initial Utility Detection	24d	30-Aug-11	30-Sep-11
Site Installation	48d	30-Jul-11	30-Sep-11
Utility Diversion and Car Park Relocation Works	36d	30-Sep-11	14-Nov-11
Reccuring Items	1262d	30-Jun-11	24-Jan-15
Interface Management	17d	01-Feb-13	19-Feb-13
Connection Entry Culvert - Existing Drop Shaft	17d	01-Feb-13	19-Feb-13
Start Interface Management	0d	01-Feb-13	
End Interface Management	0d		19-Feb-13
Chamber 8	42d	22-Sep-11	04-Nov-11
Supply & Install Removable Air Tight FRP Covers	12d	22-Sep-11	07-Oct-11
Supply & Install Air Tight FRP Covers	12d	08-Oct-11	21-Oct-11
Supply & Install PC Cover	12d	22-Oct-11	04-Nov-11
Chamber 9	41d	08-Oct-11	18-Nov-11
Supply & Install Removable Air Tight FRP Covers	12d	08-Oct-11	21-Oct-11
Supply & Install Air Tight FRP Covers	12d	22-Oct-11	04-Nov-11
Supply & Install PC Cover	12d	05-Nov-11	18-Nov-11
Existing Emergency Overflow Chamber	33d	22-Oct-11	25-Nov-11
Supply & Install Removable Air Tight FRP Covers	12d	22-Oct-11	04-Nov-11
Supply & Install Air Tight FRP Covers	12d	05-Nov-11	18-Nov-11
Air-Duct Works	6d	19-Nov-11	25-Nov-11
Section 4	918d	17-Oct-11	22-May-14
Run In - Portion 1	14d	17-Oct-11	01-Nov-11
Run In- Portion 1	13d	17-Oct-11	01-Nov-11
Shaft	767d	22-Nov-11	23-Jan-14
Riser Shaft	740d	22-Nov-11	26-Dec-13
Pipe Piles & TAM Grouting - Riser Shaft	49d	22-Nov-11	20-Jan-12

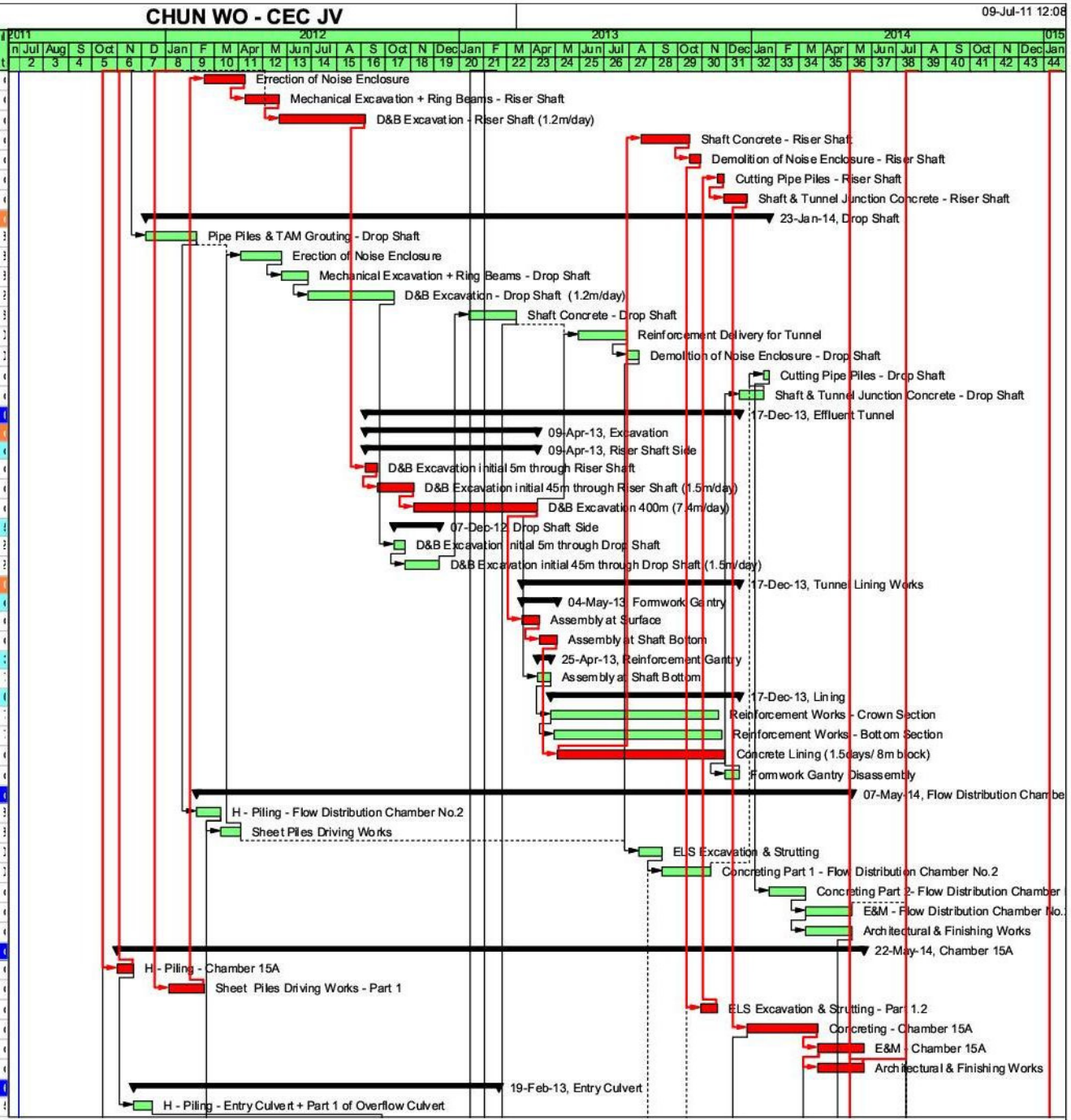


Harbour Area Treatment Scheme Stage 2A - Initial Work Programme

CHUN WO - CEC JV

09-Jul-11 12:08

Activity Name	Original Duration	Start	Finish
Erection of Noise Enclosure	42d	18-Feb-12	09-Apr-12
Mechanical Excavation + Ring Beams - Riser Sh	35d	09-Apr-12	21-May-12
D&B Excavation - Riser Shaft (1.2m/day)	72d	21-May-12	06-Sep-12
Shaft Concrete - Riser Shaft	46d	16-Aug-13	16-Oct-13
Demolition of Noise Enclosure - Riser Shaft	12d	16-Oct-13	30-Oct-13
Cutting Pipe Piles - Riser Shaft	6d	20-Nov-13	27-Nov-13
Shaft & Tunnel Junction Concrete - Riser Shaft	24d	27-Nov-13	26-Dec-13
Drop Shaft	754d	07-Dec-11	23-Jan-14
Pipe Piles & TAM Grouting - Drop Shaft	49d	07-Dec-11	08-Feb-12
Erection of Noise Enclosure	42d	03-Apr-12	24-May-12
Mechanical Excavation + Ring Beams - Drop Sha	27d	24-May-12	26-Jun-12
D&B Excavation - Drop Shaft (1.2m/day)	69d	26-Jun-12	12-Oct-12
Shaft Concrete - Drop Shaft	48d	14-Jan-13	14-Mar-13
Reinforcement Delivery for Tunnel	48d	30-May-13	29-Jul-13
Demolition of Noise Enclosure - Drop Shaft	12d	29-Jul-13	13-Aug-13
Cutting Pipe Piles - Drop Shaft	6d	16-Jan-14	23-Jan-14
Shaft & Tunnel Junction Concrete - Drop Shaft	24d	17-Dec-13	16-Jan-14
Effluent Tunnel	453d	06-Sep-12	17-Dec-13
Excavation	209d	06-Sep-12	09-Apr-13
Riser Shaft Side	209d	06-Sep-12	09-Apr-13
D&B Excavation initial 5m through Riser Shaft	10d	06-Sep-12	21-Sep-12
D&B Excavation initial 45m through Riser Sha	30d	21-Sep-12	06-Nov-12
D&B Excavation 400m (7.4m/day)	105d	06-Nov-12	09-Apr-13
Drop Shaft Side	54d	12-Oct-12	07-Dec-12
D&B Excavation initial 5m through Drop Shaft	10d	12-Oct-12	26-Oct-12
D&B Excavation initial 45m through Drop Sha	30d	26-Oct-12	07-Dec-12
Tunnel Lining Works	263d	21-Mar-13	17-Dec-13
Formwork Gantry	43d	21-Mar-13	04-May-13
Assembly at Surface	18d	21-Mar-13	12-Apr-13
Assembly at Shaft Bottom	18d	12-Apr-13	04-May-13
Reinforcement Gantry	16d	09-Apr-13	25-Apr-13
Assembly at Shaft Bottom	14d	09-Apr-13	25-Apr-13
Lining	228d	25-Apr-13	17-Dec-13
Reinforcement Works - Crown Section	169d	25-Apr-13	21-Nov-13
Reinforcement Works - Bottom Section	169d	29-Apr-13	25-Nov-13
Concrete Lining (1.5days/ 8m block)	169d	04-May-13	29-Nov-13
Formwork Gantry Disassembly	15d	29-Nov-13	17-Dec-13
Flow Distribution Chamber No.2	795d	08-Feb-12	07-May-14
H - Piling - Flow Distribution Chamber No.2	26d	08-Feb-12	09-Mar-12
Sheet Piles Driving Works	21d	09-Mar-12	03-Apr-12
ELS Excavation & Strutting	23d	13-Aug-13	11-Sep-13
Concreting Part 1 - Flow Distribution Chamber No.2	48d	11-Sep-13	11-Nov-13
Concreting Part 2- Flow Distribution Chamber No.2	36d	23-Jan-14	10-Mar-14
E&M - Flow Distribution Chamber No.2	48d	10-Mar-14	07-May-14
Architectural & Finishing Works	48d	10-Mar-14	07-May-14
Chamber 15A	904d	01-Nov-11	22-May-14
H - Piling - Chamber 15A	18d	01-Nov-11	22-Nov-11
Sheet Piles Driving Works - Part 1	36d	04-Jan-12	18-Feb-12
ELS Excavation & Strutting - Part 1.2	18d	30-Oct-13	20-Nov-13
Concreting - Chamber 15A	72d	26-Dec-13	25-Mar-14
E&M - Chamber 15A	48d	25-Mar-14	22-May-14
Architectural & Finishing Works	48d	25-Mar-14	22-May-14
Entry Culvert	439d	22-Nov-11	19-Feb-13
H - Piling - Entry Culvert + Part 1 of Overflow Culvert	20d	22-Nov-11	15-Dec-11

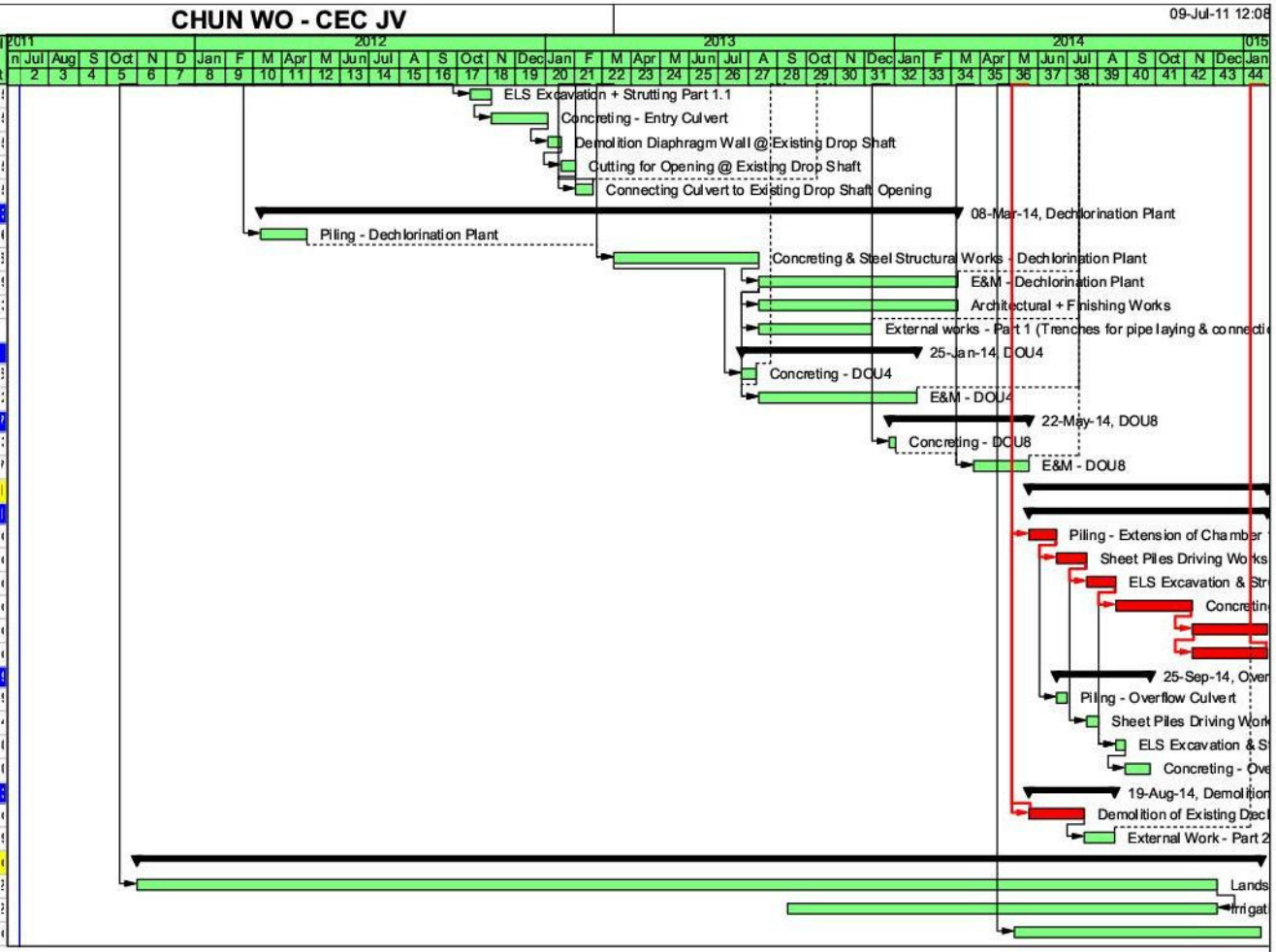


Harbour Area Treatment Scheme Stage 2A - Initial Work Programme

CHUN WO - CEC JV

09-Jul-11 12:08

Activity Name	Original Duration	Start	Finish
ELS Excavation + Strutting Part 1.1	18d	15-Oct-12	05-Nov-12
Concreting - Entry Culvert	50d	05-Nov-12	04-Jan-13
Demolition Diaphragm Wall @ Existing Drop Shaft	12d	04-Jan-13	18-Jan-13
Cutting for Opening @ Existing Drop Shaft	12d	18-Jan-13	01-Feb-13
Connecting Culvert to Existing Drop Shaft Opening	12d	01-Feb-13	19-Feb-13
Dechlorination Plant	706d	09-Mar-12	08-Mar-14
Piling - Dechlorination Plant	40d	09-Mar-12	26-Apr-12
Concreting & Steel Structural Works - Dechlorinatio	123d	14-Mar-13	12-Aug-13
E&M - Dechlorination Plant	168d	12-Aug-13	08-Mar-14
Architectural + Finishing Works	168d	12-Aug-13	08-Mar-14
External works - Part 1 (Trenches for pipe laying &	96d	12-Aug-13	09-Dec-13
DOU4	176d	25-Jul-13	25-Jan-14
Concreting - DOU4	12d	25-Jul-13	09-Aug-13
E&M - DOU4	135d	12-Aug-13	25-Jan-14
DOU8	143d	26-Dec-13	22-May-14
Concreting - DOU8	6d	26-Dec-13	03-Jan-14
E&M - DOU8	48d	25-Mar-14	22-May-14
Section 5	240d	22-May-14	26-Jan-15
Extension of Chamber	240d	22-May-14	26-Jan-15
Piling - Extension of Chamber 15	24d	22-May-14	20-Jun-14
Sheet Piles Driving Works - Part 2	25d	20-Jun-14	21-Jul-14
ELS Excavation & Strutting - Part 2	24d	21-Jul-14	20-Aug-14
Concreting - Extension of Chamber 15	63d	20-Aug-14	08-Nov-14
E&M - Extension of Chamber 15	65d	08-Nov-14	26-Jan-15
Architectural & Finishing Works - Extension of Chan	65d	08-Nov-14	26-Jan-15
Overflow Culvert	92d	20-Jun-14	25-Sep-14
Piling - Overflow Culvert	8d	20-Jun-14	30-Jun-14
Sheet Piles Driving Works - Overflow Culvert	10d	21-Jul-14	02-Aug-14
ELS Excavation & Strutting - Overflow Culvert	8d	20-Aug-14	30-Aug-14
Concreting - Overflow Culvert	20d	30-Aug-14	25-Sep-14
Demolition of Existing Dechlorination Plant	86d	22-May-14	19-Aug-14
Demolition of Existing Dechlorination Plant	48d	22-May-14	19-Jul-14
External Work - Part 2 (Concrete Pavement)	24d	19-Jul-14	19-Aug-14
Landscape Works	1138d	01-Nov-11	19-Jan-15
Landscaping Softwork	918d	01-Nov-11	05-Dec-14
Irrigation System	450d	11-Sep-13	05-Dec-14
Establishment Works	258d	07-May-14	19-Jan-15



APPENDIX M
CORRESPONDENCES FOR TERMINATION OF CONSTRUCTION PHASE EM&A PROGRAMME (DC/2009/05)

Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme Division
5/F., Western Magistracy,
2A Pok Fu Lam Road, Hong Kong

渠務署
污水處理服務科
淨化海港計劃部
香港薄扶林道 2A 號
西區裁判法院 5 樓

本署檔號 Our Ref : ( ) in DSD SS 8/4369DS/DC200905/26
來函檔號 Your Ref : 24888/(DC/2009/05)/M15/900/0019
電　　話 Telephone : (852) 2159 3400
圖文傳真 Fax : (852) 2833 9162

Urgent By Fax

25 July 2012

Ove Arup & Partners Hong Kong Ltd.,
Level 5, Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon,
Hong Kong.

(Attn.: Mr. S. Y. Chan)

Dear Sirs,

Contract No. DC/2009/05
Harbour Area Treatment Scheme (HATS) Stage 2A
Construction of Interconnection Tunnel and Diaphragm Wall
for Main Pumping Station at Stonecutters Island Sewage Treatment Works
Completion of Section III of the Works

I refer to your above referenced letter dated 17 July 2012 recommending that the Engineer certifies Section III of the Works being substantially completed on 6 July 2012 in accordance with GCC Clause 53, and providing a list of outstanding and defective works on that day.

I would like to inform you that I have no objection for the Engineer to certify that Section III of the Works was substantially completed on 6 July 2012 in accordance with GCC Clause 53.

Yours faithfully,

(Henry K. M. CHAU)
Chief Engineer/Harbour Area Treatment Scheme
Drainage Services Department

c.c. PRE (Attn. : Mr. Ted Y. F. Tang) 23704377
HKMC/WLC

AECOM
8/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong
香港新界沙田鄉事會路138號
新城市中央廣場第2座8樓
www.aecom.com

+852 3922 9000 tel
+852 3922 9797 fax

Your Ref:
Our Ref: 60143571/C/pwyn12073101

By Fax (2370 2086) and Hand

China State Construction Engineering (Hong Kong) Ltd.
27/F, China Overseas Building,
139 Hennessy Road,
Hong Kong

Attn: Mr. Chris Leung / Gary Hong

31 July 2012

Dear Sir,

**Contract No. DC/2009/05 – Harbour Area Treatment Scheme Stage 2A,
Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works**

Termination of Construction Phase EM&A Programme

According to the information provided by Mr William Yu (RE), the construction works had been substantially completed on 6 July 2012 which referred to a Certificate of Completion from DSD on 25 July 2012 (Ref: DSD SS 8/4369DS/DC200905/26). Upon the review of the works during our site inspection on 31 July 2012, we considered that those outstanding works are short-term and minor in nature, significant environmental impact are not anticipated. Besides, no monitoring exceedance, complaint and prosecution has been recorded during the previous three months in this project. In this regard, we hereby propose to terminate the construction phase EM&A programme for Contract No. DC/2009/05.

By copy of this letter, we would also like to seek agreement from RE and IEC on our proposal.

Should you require further information, please do not hesitate to contact our Ms. Edith Ng at 3922 9407.

Yours faithfully
For and on behalf of
AECOM Asia Co. Ltd.

Y T Tang
Executive Director
Environment

Encl.

cc.	IEC (Mott MacDonald)	Dr. Anne Kerr	Fax No. 2827 1823
	ER (Arup)	Mr. Ted Tang	Fax No. 2370 4377

Our ref KMY/AFK/FY/TK/T261332/22.01/L-0417
T 2828 5757
E Anne.Kerr@mottmac.com.hk
Your ref -

Mott MacDonald

CE/Harbour Area Treatment Scheme
Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme Division
5/F, Western Magistracy
2A Pokfulam Road, Hong Kong

8 August 2012
By Post

Attn: Mr. Danny Tang

Dear Sir,

Agreement No. CE 8/2009(EP)
Harbour Area Treatment Scheme (HATS) Stage 2A
Independent Environmental Checker for Construction Phase – Investigation

Contract No. DC/2009/05
Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works

Termination of Construction Phase EM&A Programme

I refer to the captioned proposal (with ref. 60143571/C/pwyn12073101) dated 31 July 2012 and received by us on the same day via email. We have no comment on the termination of construction phase EM&A programme for Contract no. DC/2009/05.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Dr. Anne F Kerr
Independent Environmental Checker

c.c.	Arup	Mr. Ted Tang	Fax: 2370 4377
	AECOM	Ms. Edith Ng	Fax: 2317 7609

DRAINAGE SERVICES DEPARTMENT
HATS DIVISION
Engineer's Representative's Site Office
Stonecutters Island Sewage Treatment Works
Unit A, 129 Container Port Road South
Stonecutters Island, Kowloon
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Tel : (852) 2370 4311 Fax : (852) 2370 4377

ARUP
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
China

www arup.com

BY HAND

Your ref N/A
Our ref 24888/(DC/2009/05)/M45/250/0138
Date 14 August 2012

China State – Shanghai Tunnel Joint Venture
29/F China Overseas Building
139 Hennessy Road
Hong Kong

For the attention of Mr Chris Leung, Site Agent

Dear Sirs

Contract No. DC/2009/05
Harbour Area Treatment Scheme Stage 2A –
Construction of Interconnection Tunnel and Diaphragm Wall for Main Pumping Station at Stonecutters Island Sewage Treatment Works
Completion of EM&A Programme

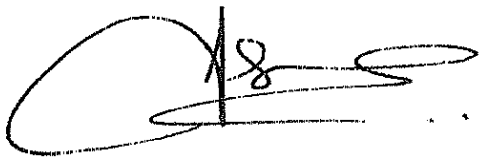
We refer to 'Completion Certificate No. 4 – Completion of Section III of the Works' issued by the Engineer to you on 27 July 2012 (ref: 24888/DWT/M15/SYC/TYF/JMS/GA-2881). The substantial completion date of Section III was 6 July 2012.

Following a site inspection on 31 July 2012 by the Environmental Team (AECOM Asia Co. Ltd.) it was stated in their letter dated 31 July 2012 (ref: 60143571/C/pwyn12073101) that no significant environmental impact due to the outstanding works were anticipated. The subsequent letter from the Independent Environmental Checker (IEC), dated 8 August 2012 (ref. KMY/AFK/FY/TK/T261332/22.01/L-0417) advised of 'no objection' in ceasing the environmental monitoring. As such, we confirm that we have no objection in principle to ceasing the EM&A monitoring under Contract No. DC/2009/05 on 31 July 2012.

We take the opportunity to record that the environmental monitoring works established by DC/2009/05 were handed over to Contract No. DC/2009/10 on 1 August 2012 for continuation of the EM&A programme under the HATS 2A Project, as per the discussion in the pre-hand over meeting between Contract DC/2009/10 and IEC on 27 June 2012 (items 2.1, 2.2 of the minutes of meeting refers).

Please liaise with your Environmental Team and incorporate the above into the final EM&A report.

Yours faithfully



Jeremy Mark Sparrow
CRE / Engineer's Representative

Encl.(A4x1)

cc	Mr W L Chan	- E5/HATS, DSD	(w/e)	Fax no.: 2833 9162
	Ms Kinka Sit	- EME/ST2, DSD	(w/e)	Fax no.: 2991 4233
	Dr Anne Kerr	- IEC, Mott MacDonald	(w/e)	Fax no.:2827 1823
	Dr Priscilla Choy	- Cinotech, ET for DC/2009/10	(w/e)	Fax no.:3107 1388
	Mr John Hamilton	- RSS for DC/2009/10	(w/e)	
	Mr S Y Chan	- The Engineer, Arup	(w/e)	

IYF/JMS/GA/WY/CHT/hkp

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中國建築-上海隧道聯營
CHINA STATE - SHANGHAI TUNNEL JOINT VENTURE

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Your Ref.:
Our Ref.: CSSTJV/CCO/2012/E.2.1/10.21/3752
Date: 15 August 2012

By Fax & Post
Fax no. 3922 9797

AECOM
8/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn.: Mr. Y T Tang

Dear Sir

Drainage Services Department
DC/2009/05 – Harbour Area Treatment Scheme Stage 2A
Construction of Interconnection Tunnel and Diaphragm Wall for
Main Pumping Station at Stonecutters Island Sewage Treatment Works
Termination of Construction Phase EM&A Programme

We refer to your letter ref. 60143571/C/pwyn12073101 dated 31 July 2012 and we have no objection to your proposal of terminating the construction phase EM&A works on 31 July 2012 for our Contract Arup has shown no objection to your proposal and letter is also enclosed for your reference.

Yours faithfully
For and on behalf of
China State – Shanghai Tunnel Joint Venture

Chris Leung
Site Agent

Encl.

CL/GH/wl