Leader –JEC Joint Venture

Contract No. DC/2009/23

HATS Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Monthly Environmental Monitoring and Audit Report October 2011

(Version 1.1)

Certified By _____

(Environmental Team Leader)

REMARKS:

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

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

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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

28 November 2011
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/2009/23
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Condition 4.4 – Monthly EM&A Report for October 2011 (no. 9) Version 1.1

I refer to the revised Monthly EM&A for October 2011 (version 1.1) submitted by ETL on 25 November 2011 via email. In accordance with Condition 4.4 of Environmental Permit No. EP-322/2008/E, I hereby verify the captioned Monthly EM&A Report.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Dr. Anne F Kerr
Independent Environmental Checker

c.c.	Ove Arup & Partners HK Ltd.	Mr. Ted Y F Tang	Fax: (2370 4377)
	Leader and JEC JV	Mr. Rex Lau	By email
	Cinotech Consultants Ltd.	Dr. Priscilla Choy	By email

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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
HATS 2A	Harbour Area Treatment Scheme Stage 2A
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

EXECUTIVE SUMMARY

Introduction

1. This is the 9th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract No. DC/2009/23 "HATS Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central" (The Project) which documents the key information of EM&A and environmental monitoring works by Contract DC/2007/23 HATS Stage 2A with same Environmental Permit (Permit No. EP-322/2008/E) for October 2011.

2. The site activities undertaken for in the reporting month included:
   - Sewage pipe diversion & Pre-drill for piling for section 1 at North Point PTW;
   - Demolition of existing screen chamber and modification of D.O System at North Point PTW;
   - Piling for New F.S. Building at North Point PTW; and
   - Modification works on existing PTW office & Construction of Temp. Workshop & Gen. Store at Wan Chai East PTW;
   - Erection of Work shop at Wan Chai East PTW; and
   - Erection of Relocation of Grip and Screening Handling Area at Central PTW.

Environmental Monitoring Works

3. The environmental monitoring works of the Project was conducted by the ET for the Contract: DC/2007/23 under HATS 2A with same Environmental Permit and in accordance with the EM&A Manual. The monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

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

Monitoring Station	Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
		Action Level	Limit Level	Action Level	Limit Level	
AM1	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM2	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM3	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
AM4	1-hr TSP	0	0	0	0	N/A
	24-hr TSP	0	0	0	0	N/A
NM1	Noise	0	0	0	0	N/A
NM2	Noise	0	0	0	0	N/A
NM3	Noise	0	0	0	0	N/A

1-hour TSP Monitoring

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

Construction Noise

7. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

8. Licenses/Permits granted to the Project include the Environmental Permit (EP) and Registered as a Chemical Waste Producer for North Point, Wan Chai East and Central PTWs sites and the water discharge licenses of North Point, Wan Chai East and Central PTWs.

Environmental Mitigation Implementation Schedule

9. According to the EIA Report Section 3.74, 4.56, 6.384, 9.154 and 13.44, air quality, noise, water quality, waste management and landscape and visual would be the key environmental issues and mitigation measures shall be implemented during the construction phase. Details of the implementation of mitigation measures are provided in the **Appendix J**.

Key Information in the Reporting Month

10. Summary of key information in the reporting month is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Status of submissions under EP	0	Monthly Environmental Monitoring and Audit Report for September 2011	Submitted to EPD on 18 October 2011	No Comment	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Summary of Complaints and Prosecutions

11. No environmental complaint and prosecution was received for the Project in the reporting month.

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

Future Key Issues

13. Major site activities for the coming two months include:
    - Demolition of existing screen chamber and modification of D.O System at North Point PTW;
    - Modification works on existing PTW office & Construction of Temp. Workshop & Gen. Store at Wan Chai East PTW;
    - Erection of Work shop at Wan Chai East PTW;
    - Erection of Relocation of Grip and Screening Handling Area at Central PTW; and
    - Piling for New F.S. Building at North Point PTW.

14. The environmental concerns in coming months are mainly waste water control, dust and noise generated from the demolition and construction works.

1. INTRODUCTION

Background

1.1 The Project 'HATS Stage 2A - Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central with Contract No: DC/2009/23' mainly comprises the following major works:

- Decommissioning, demolition and removal of existing structures and buildings, including the assoicated E&M works;
- Relocation of sewers, control room, workshop equipment and the associated E&M works; and
- Construction of new buildings and structures.

1.2 The general location plan of the Project is shown in **Figure 1**.

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

1.4 Leader and JEC Joint Venture (hereafter called the LJJV) was commissioned by the DSD to undertake the construction of the Contract No.DC/2009/23 "Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central". The date of commencement of construction of the Project is on 14th February 2011.

1.5 Cinotech Consultants Limited was commissioned by LJJV to undertake the Environmental Monitoring and Audit (EM&A) works for the project and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP.

1.6 This is the 9th monthly EM&A report summarizing the EM&A works conducted for the Project in October 2011.

Project Organizations

1.7 The contacts of the Project are shown in **Table 1.1** and the organization chart of ET for Contract is shown in **Figure 2**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.
Ove Arup & Partners Hong Kong Ltd	Engineer's Representative	Mr. Ted Tang	Principle Resident Engineer	2370-4311
	Coordinator	Ms. Natalie Kwok	Resident Engineer	67948844
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089
		Mr. Gary Lau	Project Coordinator & Audit Team Leader	2151 2098
Mott MacDonald	Independent Environmental Checker	Dr. Anne Kerr	Independent Environmental Checker	28285757

Party	Role	Name	Position	Phone No.
Leader and JEC Joint Venture	Contractor	Mr. Rex Lau	Site Agent	22723680
		Mr. Lawrence Lam	Environmental Officer	9650 9410

Construction Programme

1.8 The site activities undertaken in the reporting month included:

- Sewage pipe diversion & Pre-drill for piling for section 1 at North Point PTW;
- Demolition of existing screen chamber and modification of D.O System at North Point PTW;
- Piling for New F.S. Building at North Point PTW; and
- Modification works on existing PTW office & Construction of Temp. Workshop & Gen. Store at Wan Chai East PTW;
- Erection of Work shop at Wan Chai East PTW; and
- Erection of Relocation of Grip and Screening Handling Area at Central PTW.

Summary of EM&A Requirements

1.9 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. 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.

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

1.11 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely dust, noise levels, and audit works conducted for the Project in October 2011. For the methodology and QA/QC procedures of the monitoring parameters, please refer to the monthly report for the Contract DC/2007/23.

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, AM1, AM2, AM3 and AM4 were selected for impact dust monitoring for the Project. Table 2.1 describes the air quality monitoring locations, which are also depicted in **Figure 1**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
AM1	DC/2007/23	Chan's Creative School
AM2		Hong Kong & Islands Regional Office, WSD
AM3		Wan Chai East PTW
AM4		A Location within the DSD Central PTW

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Monitoring Station	Model and Make	
	HVS Sampler	Calibrator
AM1	GMWS-2310 ACCU-VOL (S/N 1808)	CM-AIR-43 (S/N 0438320)
AM2	GMWS-2310 ACCU-VOL (S/N 0145)	
AM3	GMWS-2310 ACCU-VOL (S/N 0481)	
AM4	GMWS-2310 ACCU-VOL (S/N 9315)	

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 C**.

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 procedures are presented in the monthly report for Contract DC/2007/23.

Results and Observations

2.6 **Table 2.4** summarizes the monitoring results at AM1, AM2, AM3 and AM4 in reporting month.

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

Air Quality Monitoring Station	Average $\mu g/m^3$	Range $\mu g/m^3$	Action Level $\mu g/m^3$	Limit Level $\mu g/m^3$
1 hour TSP				
AM1	131	83-178	340	500
AM2	143	101-183	352	
AM3	137	91-272	355	
AM4	151	94-250	393	
24 hours TSP				
AM1	79	67-91	185	260
AM2	74	62-85	182	
AM3	70	62-80	181	
AM4	76	61-86	211	

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 F.**

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 F.**

2.9 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are extracted from the monthly reports of Contract DC/2007/23 and shown in **Appendix D**.

2.10 According to field observations during site inspection, 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 NM1, NM2 and NM3 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.**

Table 3.1 Location of Noise Monitoring Stations

Monitoring Station	Monitored By	Location of Measurement
NM1	DC/2007/23	Chan's Creative School
NM2		Hyde Building
NM3		Goldfield Building

Monitoring Equipment

3.3 **Table 3.2** summarizes the noise monitoring equipments. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Monitoring Station	Model and Make	
	Sound Level Meter	Calibrator
NM1	Rion NL-31 (S/N 00983400) and (S/N 00603867)	Rion NC-73 (S/N 10997142)
NM2		
NM3		

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 C**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NM1 NM2 NM3	L_{eq}(30 min.) dB(A)	0700-1900 hrs. on weekdays	Once per week

Monitoring Methodology and QA/QC Procedures

3.5 The monitoring methodology and QA/QC procedure could be referring to the monthly report for Contract DC/2007/23.

Results and Observations

3.6 **Table 3.4** summarizes the monitoring results at NM1, NM2 and NM3 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.)
NM1	66.8-67.4	75.0
NM2	72.9-74.3	
NM3	74.1-74.8	

3.7 The construction noise monitoring at the designated locations was conducted by the ET of Contract: DC/2007/23 as scheduled in the reporting month. The monitoring results could be referring to Annex C6, D6 and E6 of the monthly report for Contract DC/2007/23.

3.8 No construction work was conducted during the restricted hours under the Project in the reporting month.

3.9 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in **Appendix F.**

3.10 Noise monitoring results and graphical presentations are extracted from the monthly report of Contract DC/2007/23 and shown in **Appendix E**.

3.11 The major noise sources identified at the designated noise monitoring stations were traffic noise and 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 Project site.

4.2 Environmental site audits were conducted on 6, 13, 20 and 27 October 2011. 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 landscape and visual mitigation measures 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 of Contract DC/2007/23. The monitoring procedures were reviewed by its ET.

Status of Environmental Licensing and Permitting

4.6 All permits/licenses obtained for the Contract DC/2009/23 are summarized in **Table 4.1**.

Table 4.1 Summary of Environmental Licensing and Permit Status for Contract DC/2009/23

Ref. No.	Valid Period		Details	Status
	From	To		
Water Discharge License				
WT00009228-2011	27/5/2011	31/5/2016	Location: North Point PTW	Valid
WT00008990-2011	27/4/2011	30/4/2016	Location: Wan Chai East PTW	
WT00008877-2011	13/4/2011	30/4/2016	Location: Central PTW	
Registered Chemical Waste Producer				
5213-153-L2743-01	15/02/2011	N/A	Location: North Point PTW	Valid
5213-115-L2737-01	26/01/2011	N/A	Location: Wan Chai East PTW	
5213-134-L2745-01	16/02/2011	N/A	Location: Central PTW	

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 and recommendations for the Projects are summarized in **Table 4.2.**

Table 4.2 Observations and Recommendations of Site Audit

Parameters	Date/Ref. Number	Observations	Follow Up Action
Water Quality	**13/10/2011 R-01**	To provide sand bags at Central PTW to prevent the wastewater spoilage.	Sand bags were provided to stop the wastewater spillage.
	20/10/2011 R-01	Bund should be provided to surround the drilling area at NP NTW before the commencement of drilling works.	Concrete bunds were provided to surround the drilling area at NP PTW.
Air Quality	N/A	There was no observation in the reporting period.	N/A
Waste/ Chemical Management	**6/10/2011 R-01**	To clear the stagnant water in drip tray in NP PTW as chemical waste.	The generator and the drip tray were removed from site during the site inspection.
Noise	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
Permit/ Licenses	N/A	There was no observation in the reporting period.	N/A

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

4.13 No Action/Limit Level exceedance was recorded.

Landscape and Visual

4.14 No non-compliance was recorded.

Summary of Complaints and Prosecutions

4.15 No environmental complaint and prosecution was received for the Project in the reporting month.

4.16 There were no environmental complaint and prosecution received since the commencement of the Project. 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;
- Provision well maintenance on the storage facilities 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; and
- Silt and dust getting into the public area by the leaving site vehicles at the site exits without adequate wheel washing facilities.

Monitoring Schedule for the Next Month

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

Construction Program for the Next Month

5.3 The tentative construction program is 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 All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

6.5 Environmental site audits were conducted as 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 According to the environmental audit performed in the reporting month, the following recommendations were made for coming reporting month:

Dust Impact

- 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 provide adequate water spraying when conducting demolition works at North Point PTW.

Noise Impact

- 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 Impact

- To identify any discharge of wastewater from the construction site;
- To avoid any discharge of wastewater by-pass/ without the desilting facilities from the construction site;
- To avoid water from accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed.

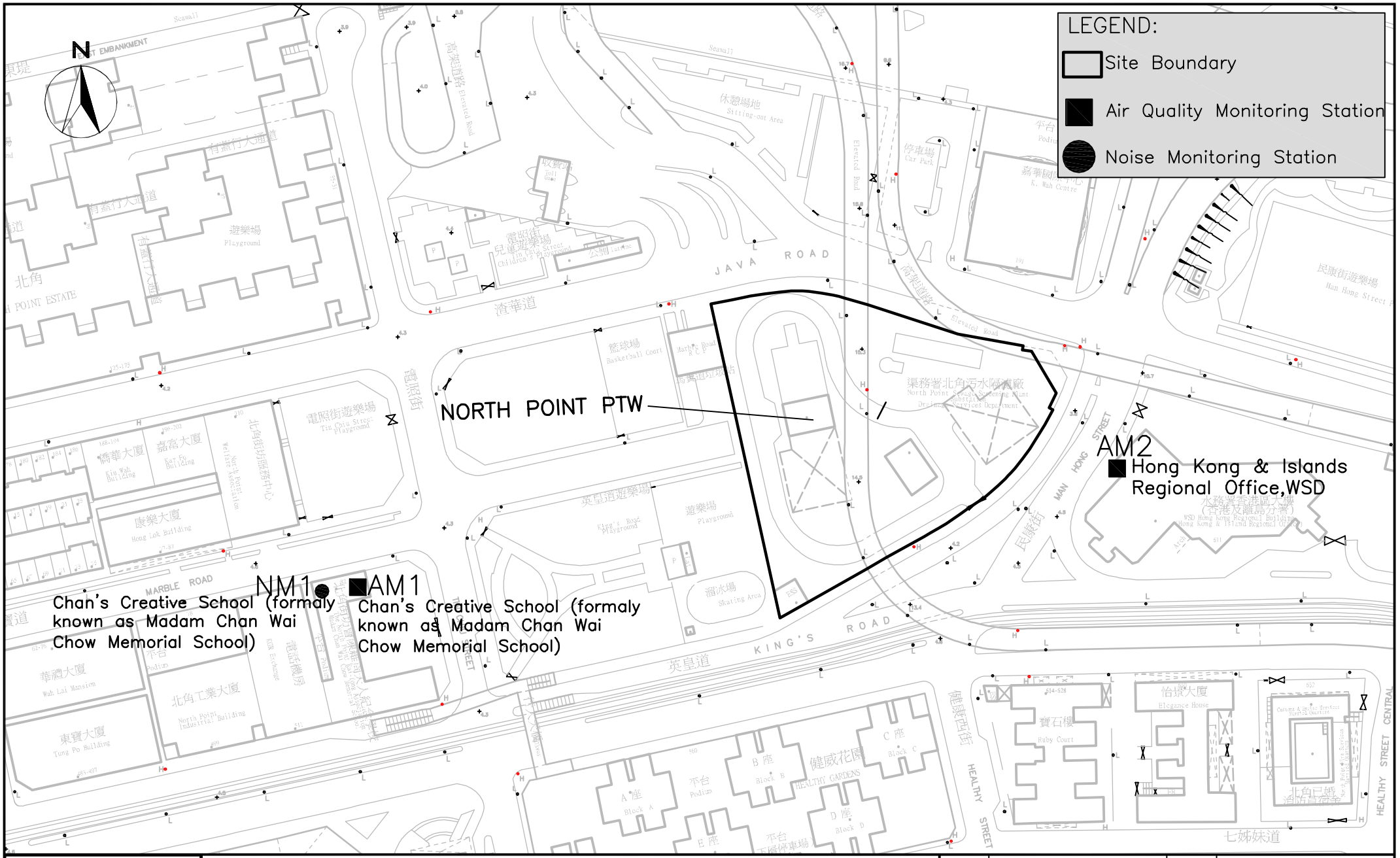
Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment;
- To well maintain the equipments 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

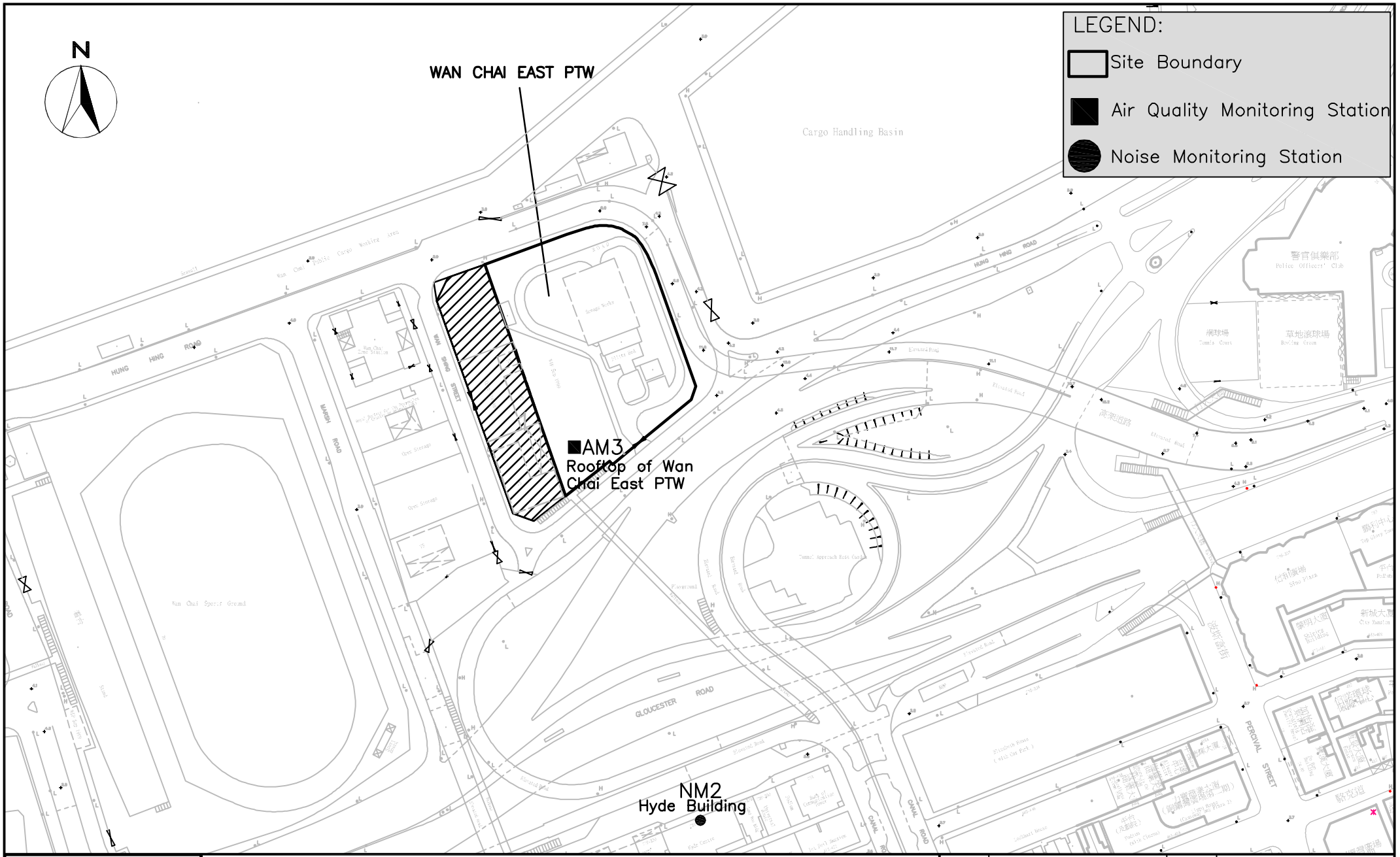


CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (North Point)

SCALE	N.T.S	DATE	11 MAR 2011
CHECK	GL	DRAWN	TW
PROJECT NO.	MA11003	FIGURE NO.	1A
		REV	–



CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (Wan Chai East)

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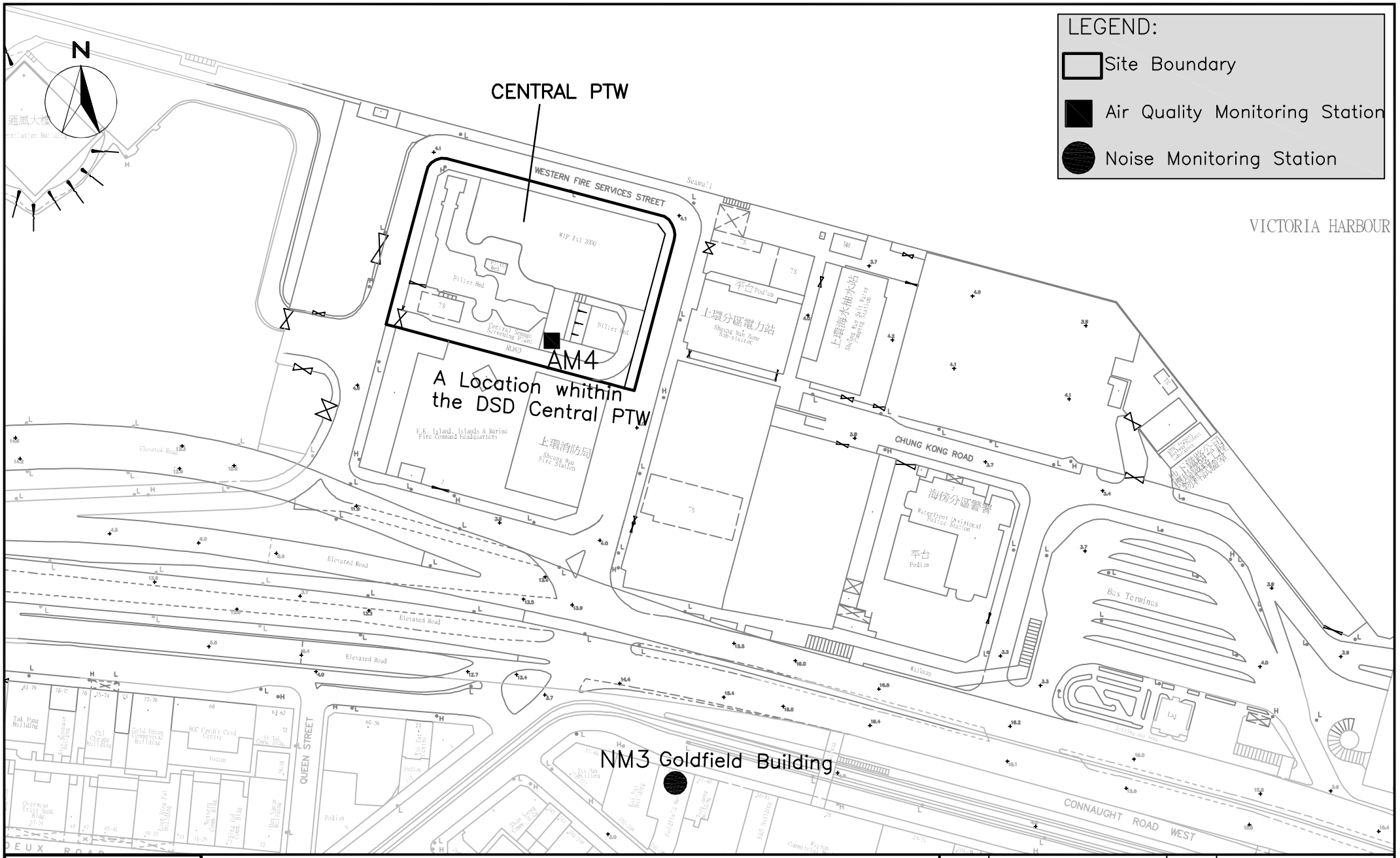
PROJECT NO.	MA11003	FIGURE NO.	1B
		REV	–

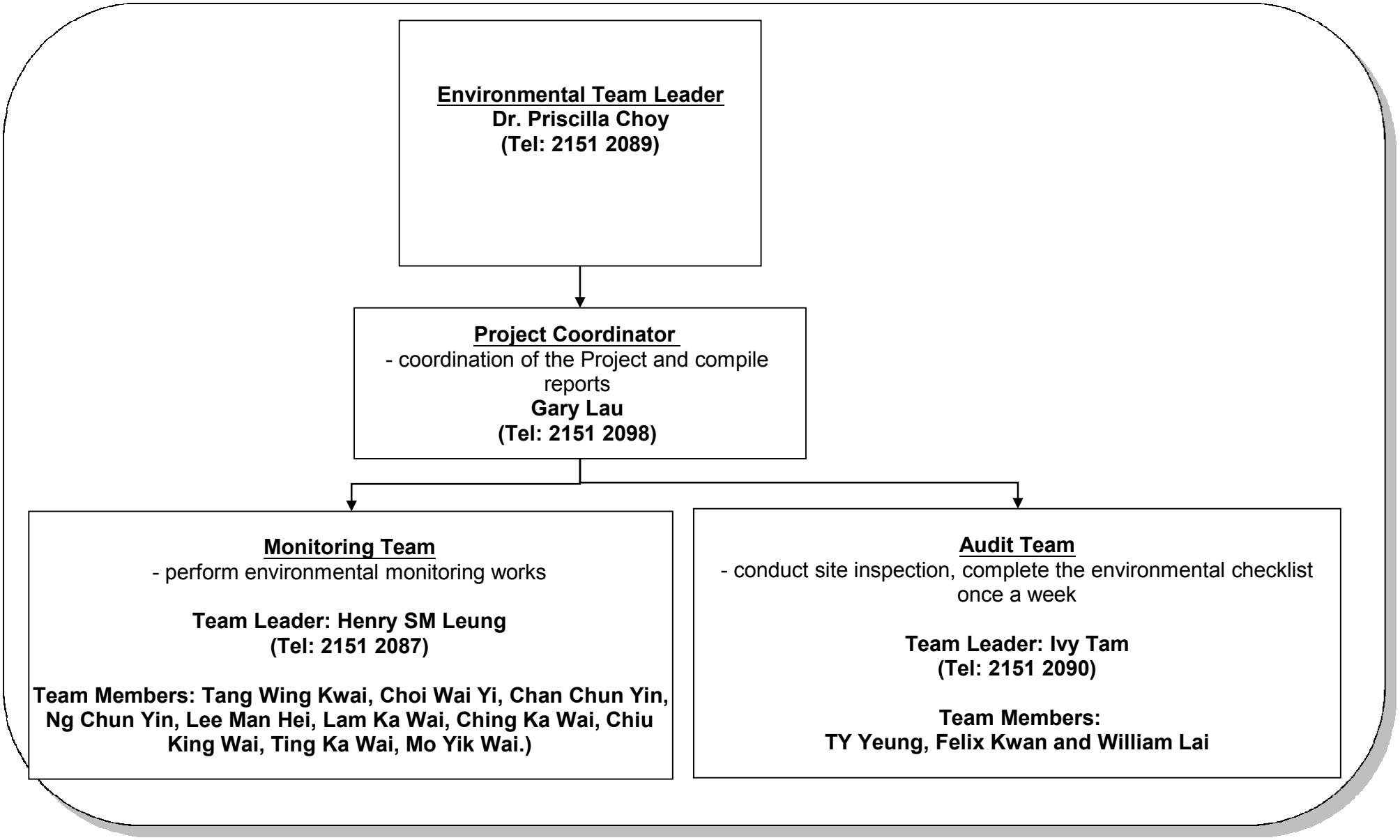


CINOTECH consultants limited

Contract No. DC/2009/23 – Harbour Area Treatment Stage 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality & Noise Monitoring Stations (Central)

SCALE	N.T.S	DATE	11 MAR 2011
CHECK	GL	DRAWN	TW
PROJECT NO.	MA11003	FIGURE NO.	1C
		REV	–



Title: HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central ET's Organization Chart	Scale: N.T.S	Project No.: MA11003	CINOTECH
	Date: May 11	Figure: 2	

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE QUALITY

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
AM1	340	185	500	260
AM2	352	182		
AM3	355	181		
AM4	393	211		

Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
NM1, NM2 and NM3	0700-1900 hours on normal weekdays	When one documented complaint is received	75

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	20/09/2011

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1785
Service Date	:	25 April 2011
Slope (m)	:	2.00506
Intercept (b)	:	-0.02062
Correlation Coefficient(r)	:	0.99998

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1011
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.6	3.540	1.776	65	64.8
2	13 holes	10.3	3.201	1.607	59	58.8
3	10 holes	7.0	2.639	1.326	48	47.9
4	7 holes	5.2	2.274	1.145	41	40.9
5	5 holes	3.0	1.727	0.872	31	30.9

Sampler Calibration Relationship

Slope(m):37.793 Intercept(b): -2.163 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 23/09/2011

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	20/09/2011

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1785
Service Date	:	25 April 2011
Slope (m)	:	2.00506
Intercept (b)	:	-0.02062
Correlation Coefficient(r)	:	0.99998

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1011
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.367	1.690	61	60.8
2	13 holes	9.2	3.025	1.519	54	53.9
3	10 holes	7.1	2.657	1.336	47	46.9
4	7 holes	4.5	2.116	1.065	36	35.9
5	5 holes	2.8	1.669	0.843	27	26.9

Sampler Calibration Relationship

Slope(m):39.950 Intercept(b): -6.675 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 23/09/2011

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	20/09/2011

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1785
Service Date	:	25 April 2011
Slope (m)	:	2.00506
Intercept (b)	:	-0.02062
Correlation Coefficient(r)	:	0.99998

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1011
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.0	3.455	1.733	62	61.8
2	13 holes	8.8	2.959	1.486	52	51.9
3	10 holes	6.8	2.601	1.307	44	43.9
4	7 holes	4.8	2.185	1.100	36	35.9
5	5 holes	2.8	1.669	0.843	25	24.9

Sampler Calibration Relationship

Slope(m):41.407 Intercept(b): -9.892 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 23/09/2011

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4
Calibrated by	:	K.T.Ho
Date	:	20/09/2011

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	1785
Service Date	:	25 April 2011
Slope (m)	:	2.00506
Intercept (b)	:	-0.02062
Correlation Coefficient(r)	:	0.99998

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1011
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.367	1.690	63	62.8
2	13 holes	8.4	2.891	1.452	53	52.9
3	10 holes	6.8	2.601	1.307	47	46.9
4	7 holes	4.8	2.185	1.100	38	37.9
5	5 holes	2.6	1.608	0.812	26	25.9

Sampler Calibration Relationship

Slope(m):42.130 Intercept(b): -8.322 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 23/09/2011

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 25, 2011 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 1785 Pa (mm) - 746.76

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	1.3870	3.2	2.00
2	NA	NA	1.00	0.9830	6.4	4.00
3	NA	NA	1.00	0.8780	7.9	5.00
4	NA	NA	1.00	0.8350	8.9	5.50
5	NA	NA	1.00	0.6900	12.9	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9917	0.7150	1.4113		0.9957	0.7179	0.8874
0.9873	1.0044	1.9959		0.9913	1.0085	1.2549
0.9853	1.1222	2.2315		0.9893	1.1268	1.4030
0.9841	1.1785	2.3405		0.9881	1.1833	1.4715
0.9787	1.4184	2.8227		0.9827	1.4242	1.7747
Qstd slope (m) =		2.00506		Qa slope (m) =		1.25553
intercept (b) =		-0.02062		intercept (b) =		-0.01297
coefficient (r) =		0.99998		coefficient (r) =		0.99998
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}

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

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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. : 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*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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.

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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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 No. : C105886

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00983400

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C105886.

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 : 26 October 2010

Certified by : K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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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. : C105886

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00983400

TEST CONDITIONS

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

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 25 October 2010 ***JOB NO.*** : IC10-2726

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 : *L L Cheung* *Date : 26 October 2010*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C105886

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	C100067
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		114.1

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

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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.

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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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 No. : C113870

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10997142

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C113870.

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 : 11 July 2011

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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. : C113870

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-73
SERIAL NO. : 10997142

TEST CONDITIONS

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

TEST SPECIFICATIONS

Calibration

DATE OF TEST : 11 July 2011 ***JOB NO.*** : IC11-1713

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 : 11 July 2011*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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. : C113870

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

5.1.1 Before Adjustment

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.3	± 0.5	± 0.2

5.1.2 After Adjustment

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

5.2.1 Before Adjustment

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

5.2.2 After Adjustment

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

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C113870

Calibration Report

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.

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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APPENDIX C
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Impact Air Quality and Noise Monitoring Schedule for October 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Oct
						National Day
2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
		Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM3) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)	Chung Yeung Festival	1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)		
9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
	Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM3) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)			1-hr & 24-hr TSP (AM4) 1-hr & 24-hr TSP (AM3)
16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)			Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM3) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)	
23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
	1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)			Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM3) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2)
30-Oct	31-Oct					

Air Quality Monitoring Station

AM1 - Works site boundary of DC/2007/23
AM2 - Hong Kong & Islands Regional Office, WSD
AM3 - Wan Chai East PTW
AM4 - A Location within the DSD Central PTW

Noise Monitoring Station

NM1 - Chan's Creative School
NM2 - Hyde Building
NM3 - Goldfield Building

Contract No. DC/2009/23 HATS 2A – Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central

Tentative Impact Air Quality and Noise Monitoring Schedule for November 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Nov	2-Nov	3-Nov	4-Nov	5-Nov
			1-hr & 24-hr TSP (AM3) Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)	
6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov
		1-hr & 24-hr TSP (AM3) Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)		
13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov
	1-hr & 24-hr TSP (AM3) Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)		1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)			1-hr & 24-hr TSP (AM3) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)
20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov
		Noise Monitoring (NM1) 1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM2)			1-hr & 24-hr TSP (AM3) Noise Monitoring (NM2) 1-hr & 24-hr TSP (AM4) Noise Monitoring (NM3)	
27-Nov	28-Nov	29-Nov	30-Nov			
	1-hr & 24-hr TSP (AM1) 1-hr & 24-hr TSP (AM2) Noise Monitoring (NM1)					

Air Quality Monitoring Station

AM1 - Works site boundary of DC/2007/23
AM2 - Hong Kong & Islands Regional Office, WSD
AM3 - Wan Chai East PTW
AM4 - A Location within the DSD Central PTW

Noise Monitoring Station

NM1 - Chan's Creative School
NM2 - Hyde Building
NM3 - Goldfield Building

Noise Monitoring (NM3)

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

Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

1-hour TSP Monitoring Results

Station AM1

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 (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-11	11:22	12:22	Fine	104	340	500	Construction work in progress	27	<5	1808	9797
	12:25	13:25	Fine	83	340	500	Construction work in progress	27	<5	1808	9799
	13:30	14:30	Fine	102	340	500	Construction work in progress	27	<5	1808	9800
12-Oct-11	9:40	10:40	Rainy	102	340	500	Construction work in progress	27	<5	1808	9804
	10:42	11:42	Rainy	115	340	500	Construction work in progress	27	<5	1808	9805
	11:44	12:44	Rainy	143	340	500	Construction work in progress	27	<5	1808	9807
18-Oct-11	9:00	10:00	Sunny	146	340	500	Construction work in progress	27	<5	1808	9812
	10:02	11:02	Sunny	164	340	500	Construction work in progress	27	<5	1808	9813
	11:04	12:04	Sunny	139	340	500	Construction work in progress	27	<5	1808	9817
24-Oct-11	10:25	11:25	Sunny	178	340	500	Construction work in progress	27	<5	1808	0024
	11:27	12:27	Sunny	173	340	500	Construction work in progress	27	<5	1808	0025
	12:30	13:30	Sunny	153	340	500	Construction work in progress	27	<5	1808	9819
29-Oct-11	9:00	10:00	Sunny	122	340	500	Construction work in progress	27	<5	1808	9951
	10:02	11:02	Sunny	115	340	500	Construction work in progress	27	<5	1808	9952
	11:04	12:04	Sunny	120	340	500	Construction work in progress	27	<5	1808	9953
			Min.	**83**							
			Max.	**178**							
			Average	**131**							

* Wind Speed data is presented in the Meteorological Data table

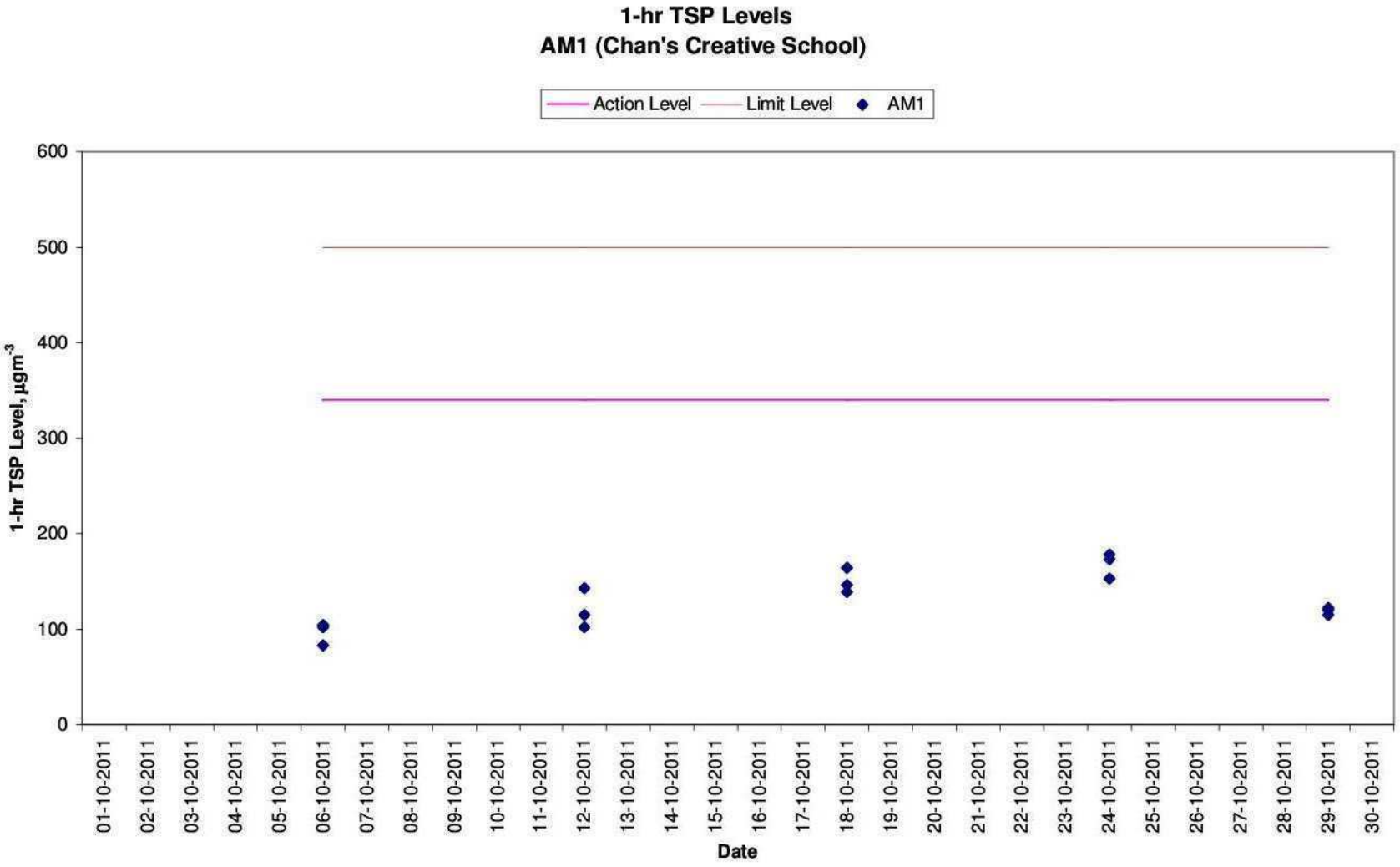
Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

1-hour TSP Monitoring Results

Station AM2

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 (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-11	11:00	12:00	Fine	136	352	500	Construction work in progress	27	<5	0145	9802
	12:03	13:03	Fine	120	352	500	Construction work in progress	27	<5	0145	9803
	13:05	14:05	Fine	101	352	500	Construction work in progress	27	<5	0145	9806
12-Oct-11	9:20	10:20	Rainy	165	352	500	Construction work in progress	27	<5	0145	9808
	10:22	11:22	Rainy	110	352	500	Construction work in progress	27	<5	0145	9822
	11:24	12:24	Rainy	124	352	500	Construction work in progress	27	<5	0145	9809
18-Oct-11	9:20	10:20	Sunny	174	352	500	Construction work in progress	27	<5	0145	9811
	10:22	11:22	Sunny	163	352	500	Construction work in progress	27	<5	0145	9814
	11:24	12:24	Sunny	156	352	500	Construction work in progress	27	<5	0145	9818
24-Oct-11	10:45	11:45	Sunny	183	352	500	Construction work in progress	27	<5	0145	0023
	11:47	12:47	Sunny	167	352	500	Construction work in progress	27	<5	0145	0026
	12:50	13:50	Sunny	152	352	500	Construction work in progress	27	<5	0145	9820
29-Oct-11	9:30	10:30	Sunny	158	352	500	Construction work in progress	27	<5	0145	9955
	10:32	11:32	Sunny	125	352	500	Construction work in progress	27	<5	0145	9956
	11:34	12:34	Sunny	112	352	500	Construction work in progress	27	<5	0145	9957
			Min.	**101**							
			Max.	**183**							
			Average	**143**							

* Wind Speed data is presented in the Meteorological Data table


1-hr TSP Levels
AM1 (Chan's Creative School)
Action Level
Limit Level
AM1
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
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26-10-2011
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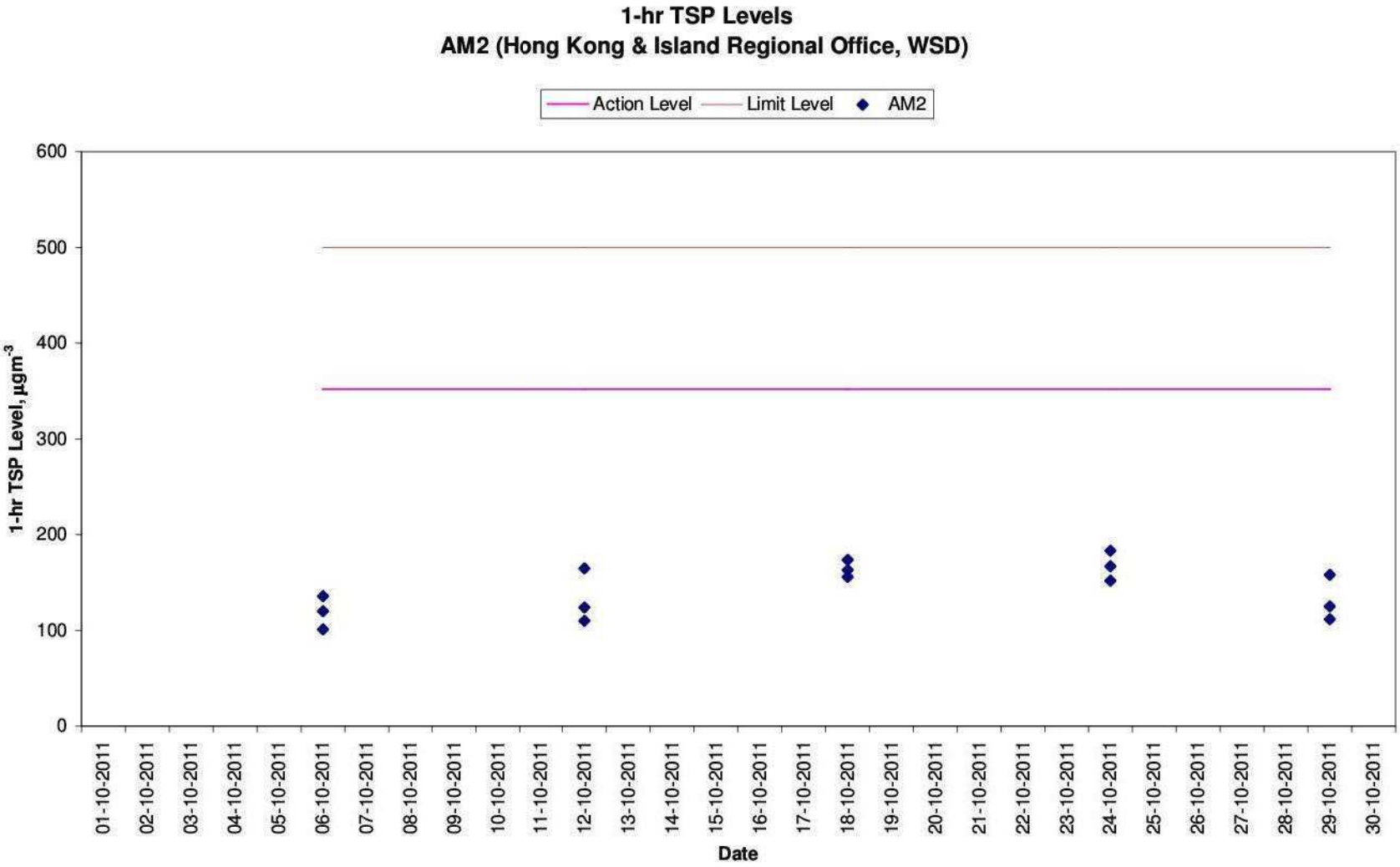
28-10-2011
29-10-2011
30-10-2011
Date


1-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)
Action Level
Limit Level
AM2
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
23-10-2011
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

24-hour TSP Monitoring Results

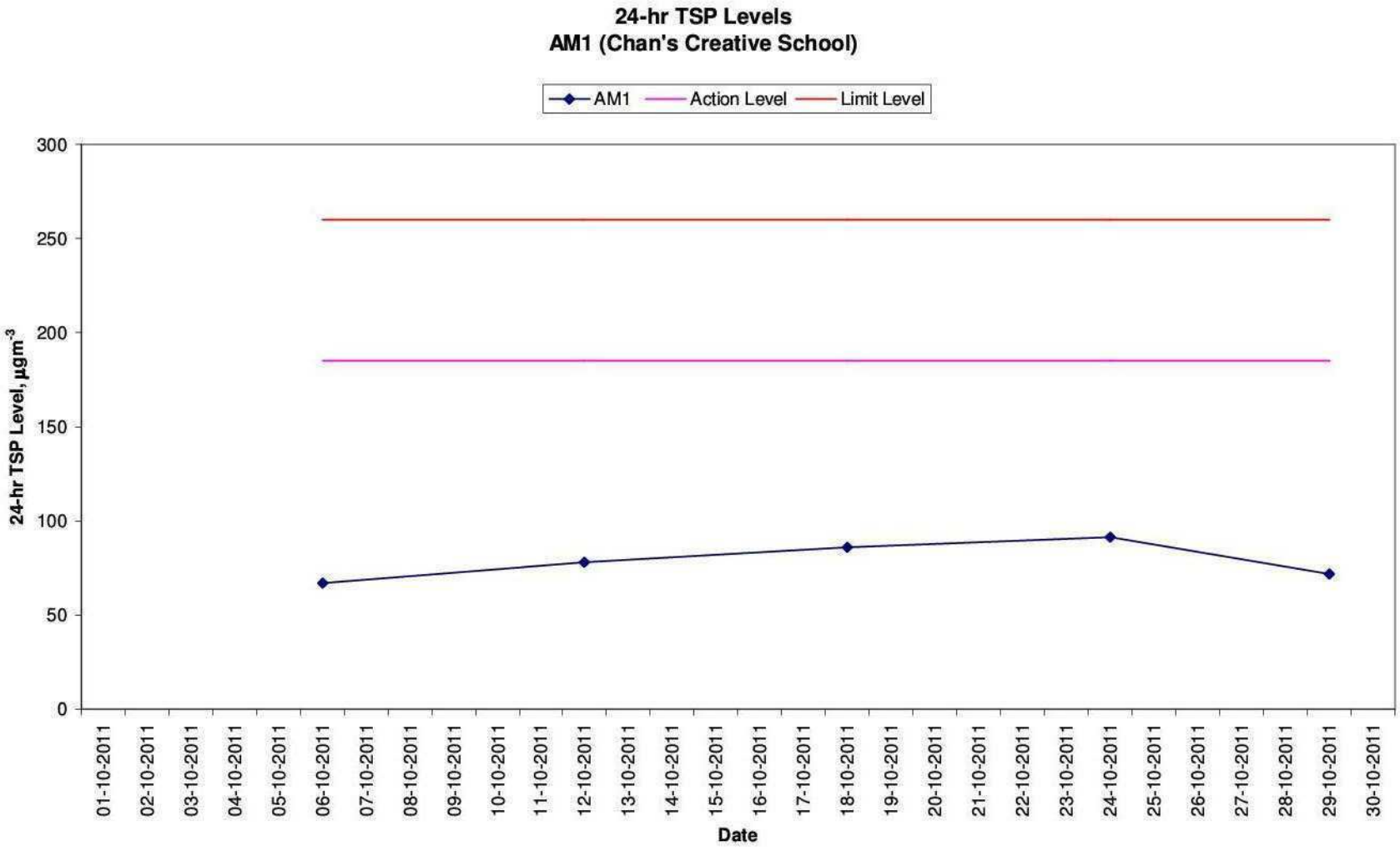
Station AM1

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-Oct-11	15:10	07-Oct-11	15:10	Fine	2.8911	3.0087	13326.03	13350.03	24.00	1.22	1.22	1.22	67	185	260	Construction work in progress	1808	9801
12-Oct-11	13:45	13-Oct-11	13:45	Rainy	2.8616	2.9989	13353.03	13377.03	24.00	1.22	1.22	1.22	78	185	260	Construction work in progress	1808	9821
18-Oct-11	12:10	19-Oct-11	12:10	Sunny	2.8147	2.9656	13380.03	13404.03	24.00	1.22	1.22	1.22	86	185	260	Construction work in progress	1808	9015
24-Oct-11	13:32	25-Oct-11	13:32	Sunny	2.8139	2.9745	13407.03	13431.03	24.00	1.22	1.22	1.22	91	185	260	Construction work in progress	1808	0028
29-Oct-11	12:06	30-Oct-11	12:06	Sunny	2.8450	2.9711	13434.03	13458.03	24.00	1.22	1.22	1.22	72	185	260	Construction work in progress	1808	9954
												Min.	67					
												Max.	91					
												Average	79					

24-hour TSP Monitoring Results

Station AM2

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-Oct-11	15:30	07-Oct-11	15:30	Fine	2.8524	2.9597	13911.93	13935.93	24.00	1.21	1.21	1.21	62	182	260	Construction work in progress	0145	9798
12-Oct-11	12:26	13-Oct-11	12:26	Rainy	2.8696	2.9924	13938.93	13962.93	24.00	1.21	1.21	1.21	70	182	260	Construction work in progress	0145	9810
18-Oct-11	12:25	19-Oct-11	12:25	Sunny	2.8755	3.0114	13965.93	13989.93	24.00	1.21	1.21	1.21	78	182	260	Construction work in progress	0145	9816
24-Oct-11	13:52	25-Oct-11	13:52	Sunny	2.8223	2.9709	13992.93	14016.93	24.00	1.21	1.21	1.21	85	182	260	Construction work in progress	0145	0027
29-Oct-11	12:36	30-Oct-11	12:36	Sunny	2.8642	2.9949	13994.93	14018.93	24.00	1.21	1.21	1.21	75	182	260	Construction work in progress	0145	9958
												Min.	62					
												Max.	85					
												Average	74					


24-hr TSP Levels
AM1 (Chan's Creative School)
AM1
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
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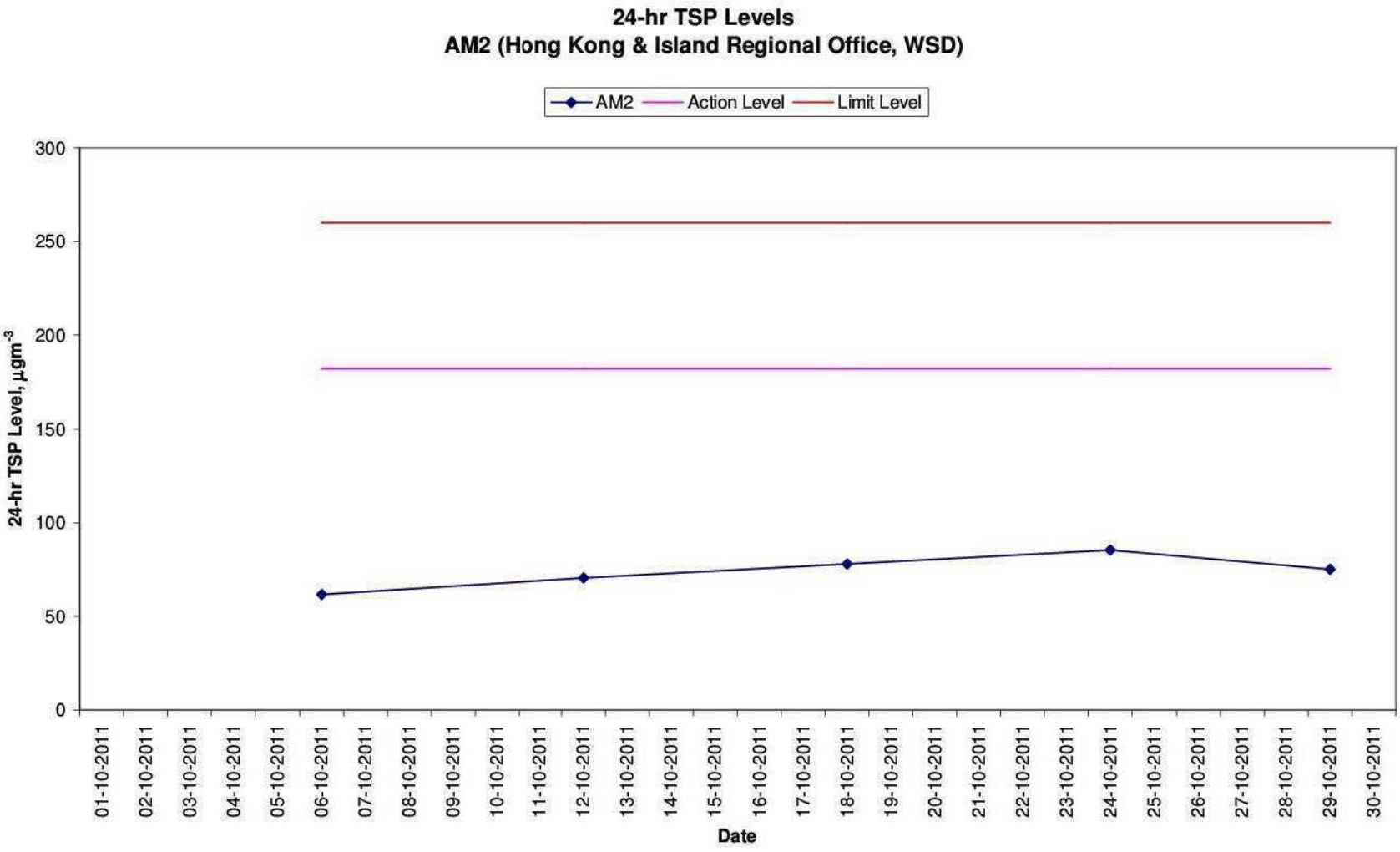
30-10-2011
Date


24-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)
AM2
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
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21-10-2011
22-10-2011
23-10-2011
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

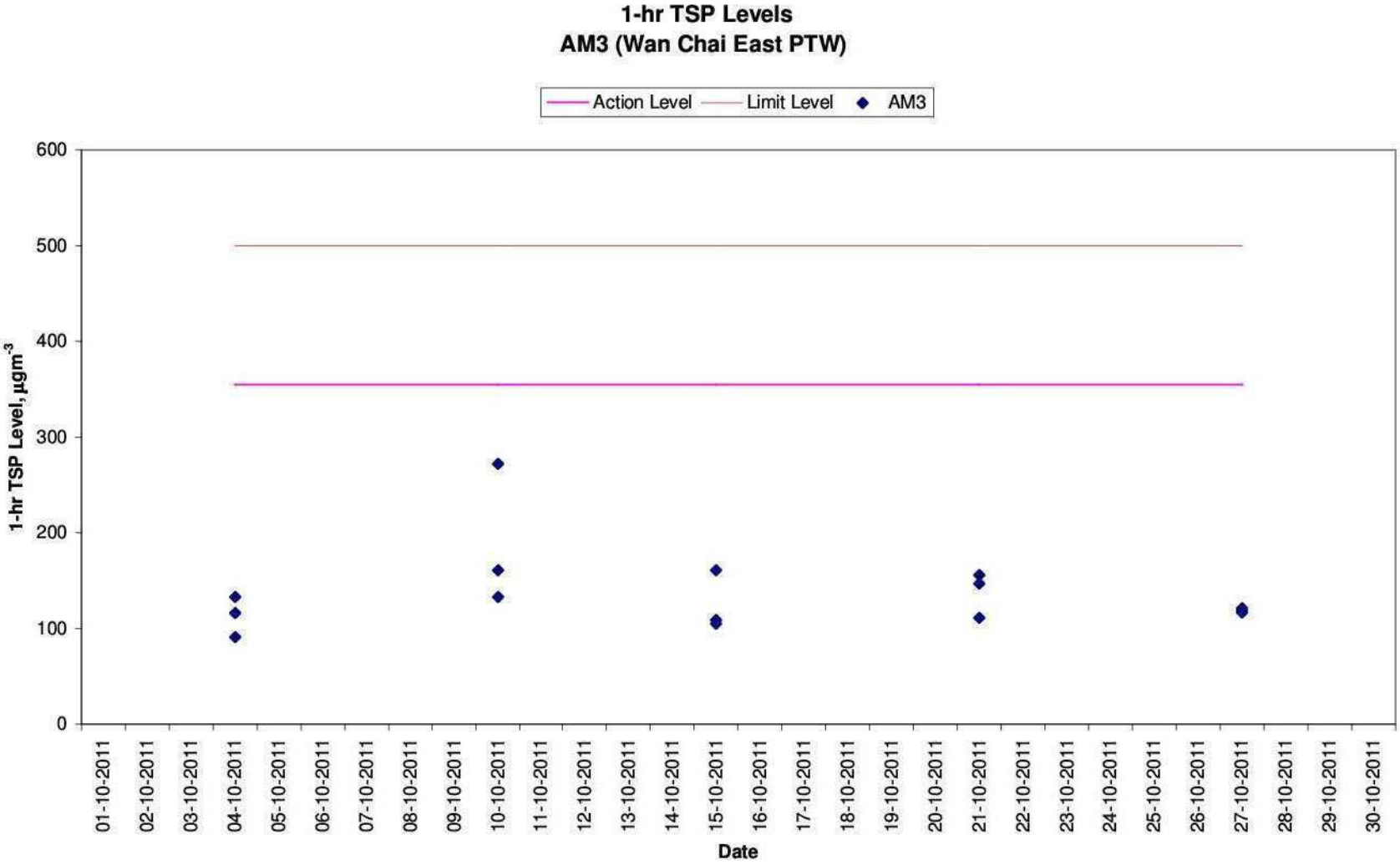
Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

1-hour TSP Monitoring Results

Station AM3

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 (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Oct-11	12:10	13:10	Fine	133	355	500	Construction work in progress	26	<5	0481	1152
	13:12	14:12	Fine	116	355	500	Construction work in progress	26	<5	0481	1153
	14:14	15:14	Fine	91	355	500	Construction work in progress	26	<5	0481	1155
10-Oct-11	12:10	13:10	Cloudy	272	355	500	Construction work in progress	28	<5	0481	1156
	13:12	14:12	Cloudy	133	355	500	Construction work in progress	28	<5	0481	1171
	14:14	15:14	Cloudy	161	355	500	Construction work in progress	28	<5	0481	1173
15-Oct-11	11:50	12:50	Sunny	161	355	500	Construction work in progress	27	<5	0481	1174
	12:12	13:12	Sunny	105	355	500	Construction work in progress	27	<5	0481	1175
	13:54	14:54	Sunny	109	355	500	Construction work in progress	27	<5	0481	1176
21-Oct-11	8:48	9:48	Sunny	111	355	500	Construction work in progress	27	<5	0481	1178
	9:50	10:50	Sunny	147	355	500	Construction work in progress	27	<5	0481	1180
	10:58	11:58	Sunny	156	355	500	Construction work in progress	27	<5	0481	1191
27-Oct-11	8:00	9:00	Sunny	119	355	500	Construction work in progress	25	<5	0481	1192
	9:02	10:02	Sunny	121	355	500	Construction work in progress	25	<5	0481	1193
	10:04	11:04	Sunny	117	355	500	Construction work in progress	25	<5	0481	1194
			Min.	**91**							
			Max.	**272**							
			Average	**137**							

* Wind Speed data is presented in the Meteorological Data table


1-hr TSP Levels
AM3 (Wan Chai East PTW)
Action Level
Limit Level
AM3
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
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19-10-2011
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22-10-2011
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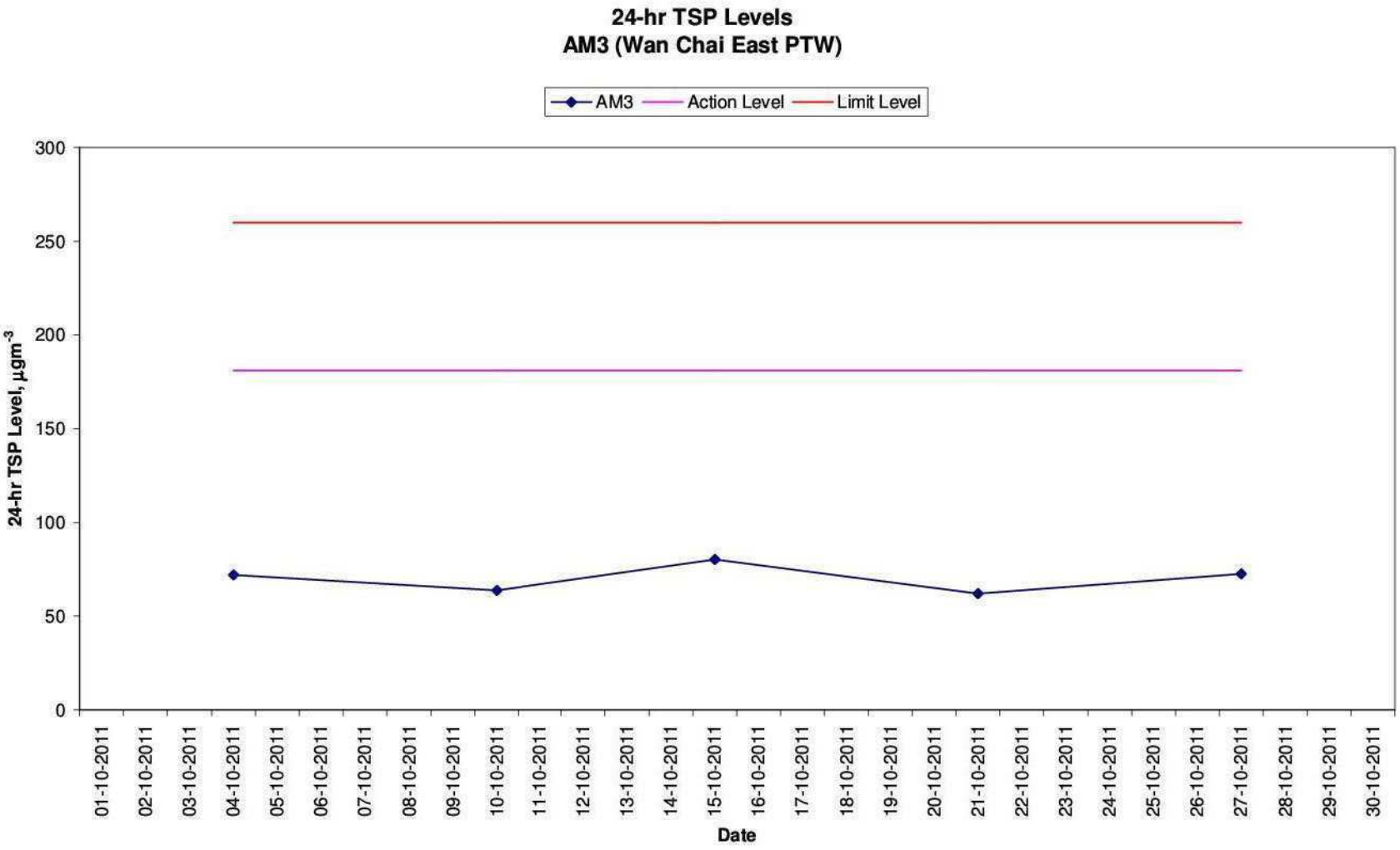
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

24-hour TSP Monitoring Results

Station AM3

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 ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)			
04-Oct-11	15:20	05-Oct-11	15:20	Fine	2.8494	2.9790	5513.32	5537.32	24.00	1.25	1.25	1.25	72	181	260	Constrcution work in progress	0481	1154
10-Oct-11	15:30	11-Oct-11	15:30	Cloudy	2.8553	2.9701	5540.32	5564.32	24.00	1.25	1.25	1.25	64	181	260	Constrcution work in progress	0481	1172
15-Oct-11	15:00	16-Oct-11	15:00	Sunny	2.8417	2.9860	5567.32	5591.32	24.00	1.25	1.25	1.25	80	181	260	Constrcution work in progress	0481	1177
21-Oct-11	12:00	22-Oct-11	12:00	Sunny	2.8565	2.9680	5594.32	5618.32	24.00	1.25	1.25	1.25	62	181	260	Constrcution work in progress	0481	1179
27-Oct-11	11:10	01-Oct-11	11:10	Sunny	2.8809	3.0115	5621.32	5645.32	24.00	1.25	1.25	1.25	73	181	260	Constrcution work in progress	0481	1195
												Min.	62					
												Max.	80					
												Average	70					


24-hr TSP Levels
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
23-10-2011
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

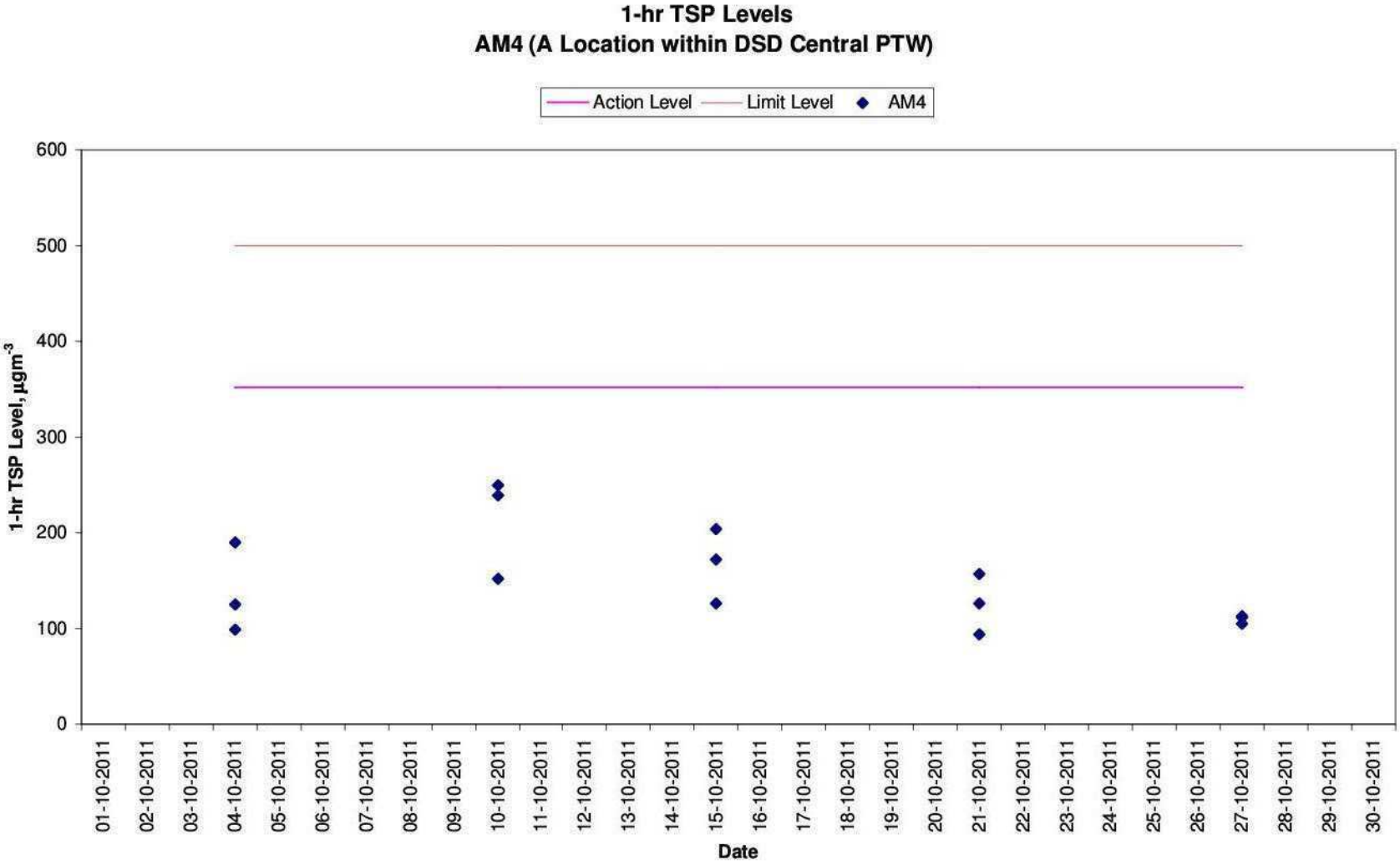
Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

1-hour TSP Monitoring Results

Station AM4

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 (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Oct-11	8:00	9:00	Fine	125	352	500	Construction work in progress	26	<5	9315	1148
	9:02	10:02	Fine	99	352	500	Construction work in progress	26	<5	9315	1150
	10:10	11:10	Fine	190	352	500	Construction work in progress	26	<5	9315	1161
10-Oct-11	8:00	9:00	Cloudy	250	352	500	Construction work in progress	28	<5	9315	1164
	9:02	10:02	Cloudy	152	352	500	Construction work in progress	28	<5	9315	1165
	10:10	11:10	Cloudy	239	352	500	Construction work in progress	28	<5	9315	1167
15-Oct-11	8:00	9:00	Sunny	172	352	500	Construction work in progress	27	<5	9315	1166
	9:02	10:02	Sunny	204	352	500	Construction work in progress	27	<5	9315	1168
	10:04	11:04	Sunny	126	352	500	Construction work in progress	27	<5	9315	1170
21-Oct-11	12:40	13:40	Sunny	157	352	500	Construction work in progress	25	<5	9315	1181
	14:00	15:00	Sunny	94	352	500	Construction work in progress	25	<5	9315	1183
	15:06	16:06	Sunny	126	352	500	Construction work in progress	25	<5	9315	1184
27-Oct-11	12:00	13:00	Sunny	112	352	500	Construction work in progress	25	<5	9315	1185
	13:02	14:02	Sunny	105	352	500	Construction work in progress	25	<5	9315	1186
	14:08	15:08	Sunny	113	352	500	Construction work in progress	25	<5	9315	1157
			Min.	**94**							
			Max.	**250**							
			Average	**151**							

* Wind Speed data is presented in the Meteorological Data table

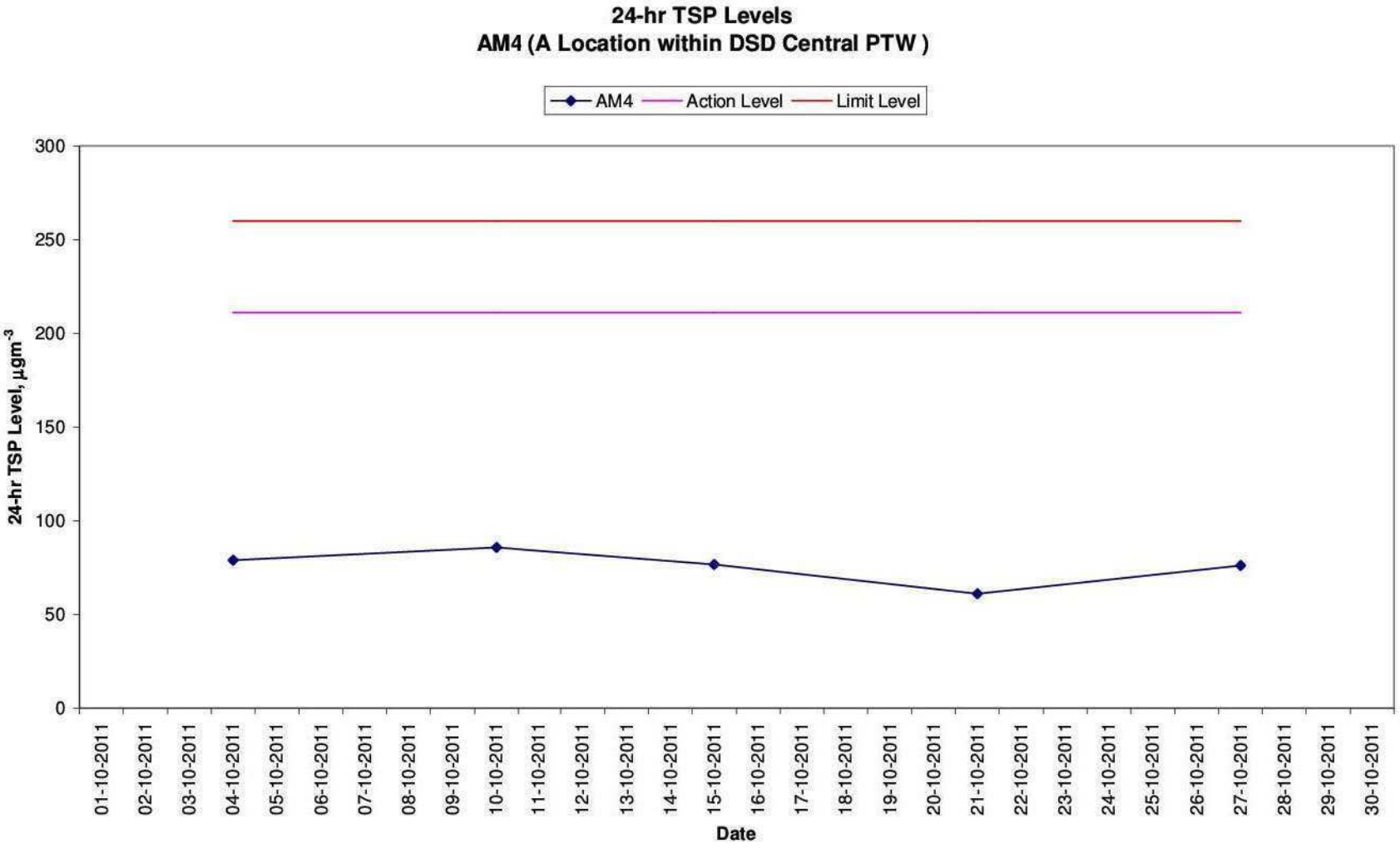

1-hr TSP Levels
AM4 (A Location within DSD Central PTW)
Action Level
Limit Level
AM4
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
23-10-2011
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

Appendix D - 1-hour and 24-hour TSP Monitoring Results and Graphical Presentations

24-hour TSP Monitoring Results

Station AM4

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 ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)			
04-Oct-11	11:20	05-Oct-11	11:20	Fine	2.8659	3.0071	13445.85	13469.85	24.00	1.24	1.24	1.24	79	211	260	Construction work in progress	9315	1162
10-Oct-11	11:20	11-Oct-11	11:20	Cloudy	2.8540	3.0073	13472.85	13496.85	24.00	1.24	1.24	1.24	86	211	260	Construction work in progress	9315	1163
15-Oct-11	11:06	16-Oct-11	11:06	Sunny	2.8234	2.9602	13499.85	13523.85	24.00	1.24	1.24	1.24	77	211	260	Construction work in progress	9315	1169
21-Oct-11	16:08	22-Oct-11	16:08	Sunny	2.8358	2.9449	13526.85	13550.85	24.00	1.24	1.24	1.24	61	211	260	Construction work in progress	9315	1182
27-Oct-11	15:00	01-Oct-11	15:00	Sunny	2.8497	2.9855	13553.85	13577.85	24.00	1.24	1.24	1.24	76	211	260	Construction work in progress	9315	1159
												Min.	61					
												Max.	86					
												Average	76					


24-hr TSP Levels
AM4 (A Location within DSD Central PTW)
AM4
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01-10-2011
02-10-2011
03-10-2011
04-10-2011
05-10-2011
06-10-2011
07-10-2011
08-10-2011
09-10-2011
10-10-2011
11-10-2011
12-10-2011
13-10-2011
14-10-2011
15-10-2011
16-10-2011
17-10-2011
18-10-2011
19-10-2011
20-10-2011
21-10-2011
22-10-2011
23-10-2011
24-10-2011
25-10-2011
26-10-2011
27-10-2011
28-10-2011
29-10-2011
30-10-2011
Date

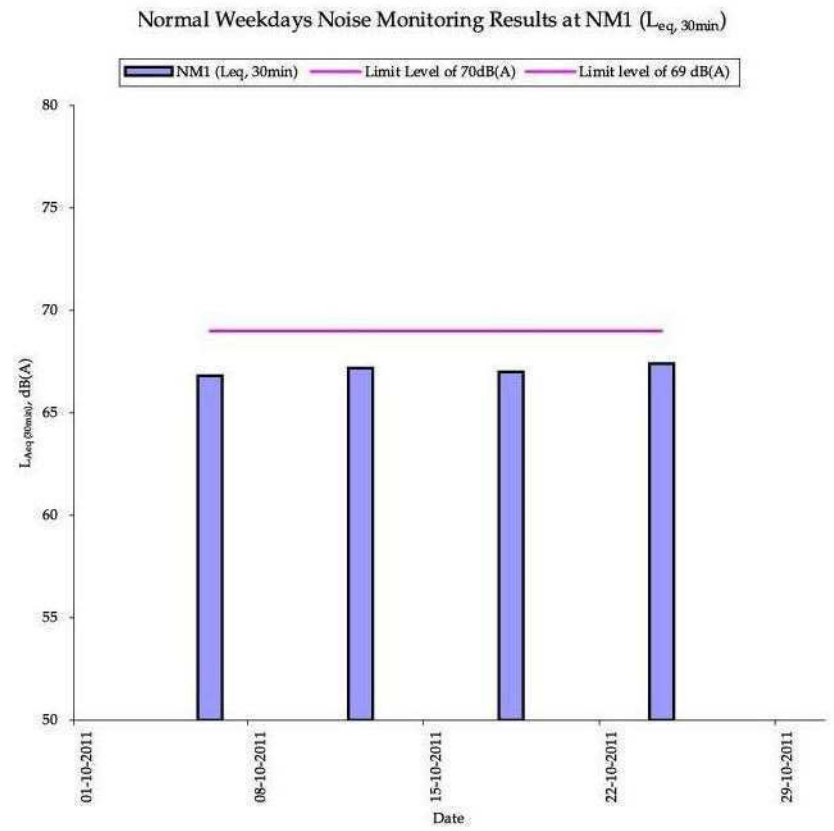
APPENDIX E
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - Noise Monitoring Results and Graphical Presentations

Daytime Noise Monitoring Results

Station NM1

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. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Oct-11	14:35	15:05	Fine	66.8	69.0	64.5	No outdoor construction	Mainly Traffic noise	-	26	0.3	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
12-Oct-11	13:05	13:35	Cloudy	67.2	69.2	64.6	Noise from nearby playground	Mainly Traffic noise	-	26	0.3	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
18-Oct-11	9:35	10:05	Sunny	67.0	68.4	64.5	Noise from nearby playground	Mainly Traffic noise	-	26	0.3	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
24-Oct-11	9:50	10:20	Sunny	67.4	69.1	64.9	noise from nearby recycle shop	Mainly Traffic noise	-	26	0.3	RION- NL31 (S/N 0063867)	RION - NC73 (S/N 10997142)
			Min.	**66.8**									
			Max.	**67.4**									



Remark:

- 70dB(A) was adopted as the Limit Level during school normal teaching period in the reporting period

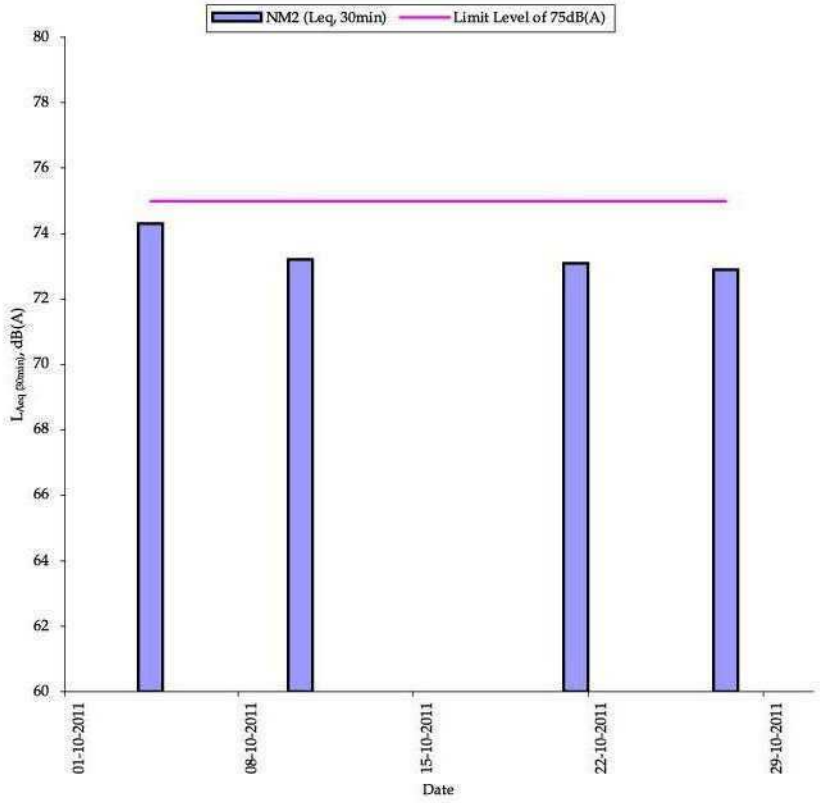
Appendix E - Noise Monitoring Results and Graphical Presentations

Daytime Noise Monitoring Results

Station NM2

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. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Oct-11	14:35	15:05	Cloudy	74.3	75.2	73.4	-	Traffic noise	-	28	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
10-Oct-11	14:23	14:53	Cloudy	73.2	74.2	72.5	Lifting, Excavation (Near site)	Traffic noise	-	28	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
21-Oct-11	10:05	10:35	Sunny	73.1	73.9	72.4	Excavation, Lifting (Near Site)	Traffic noise	-	27	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
27-Oct-11	10:20	10:50	Sunny	72.9	74.4	72.6	Lifting, Excavation (Near site)	Traffic noise	-	27	0.2	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
			Min.	**72.9**									
			Max.	**74.3**									

Normal Weekdays Noise Monitoring Results at NM2 ($L_{eq, 30min}$)



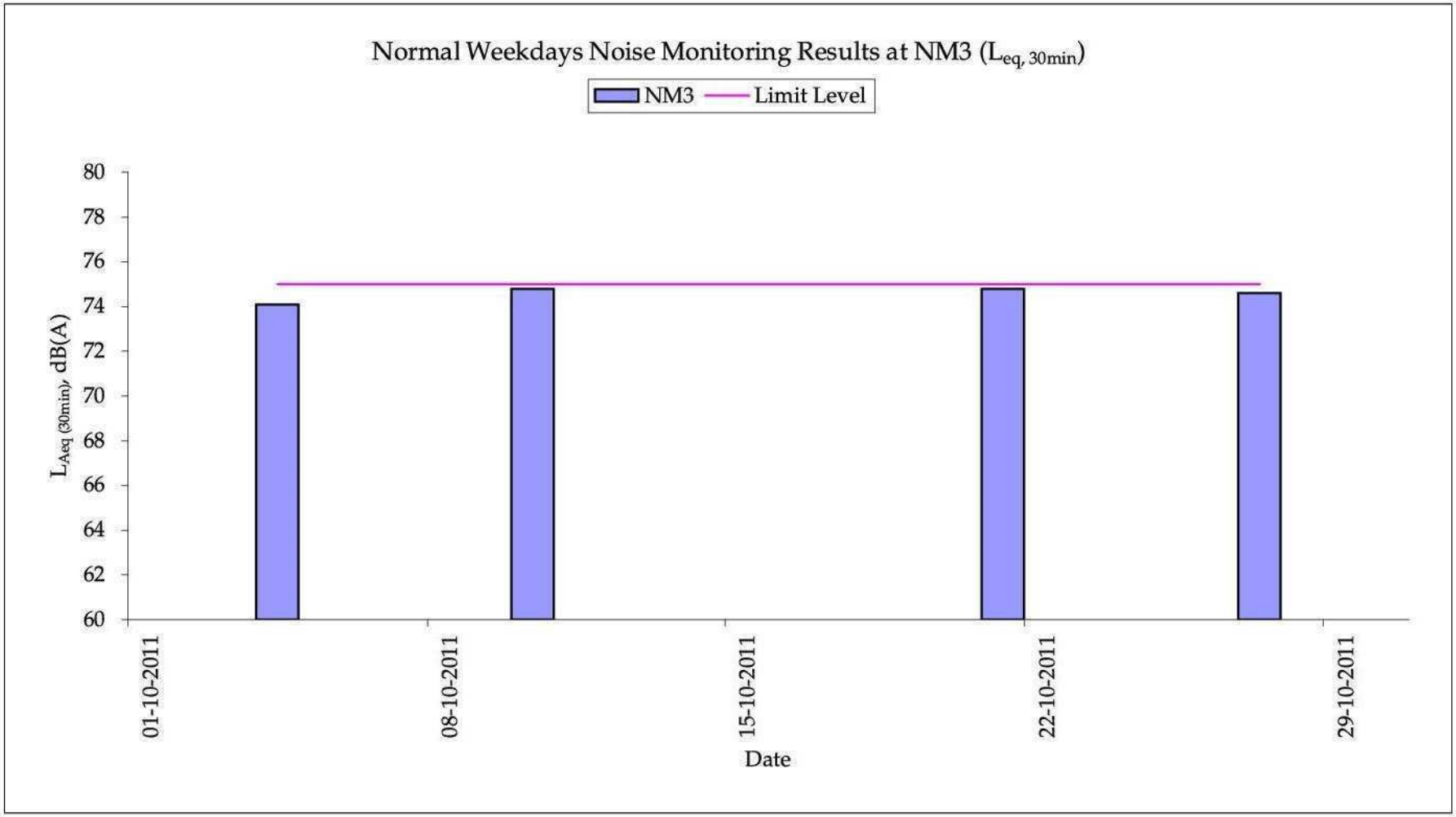
Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period

Annex E6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM3

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							
04-Oct-11	10:20	10:50	Cloudy	74.1	75.8	72.4	-	Mainly traffic noise	-	28	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
10-Oct-11	9:18	9:48	Cloudy	74.8	76.0	72.7	-	Mainly traffic noise	-	28	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
21-Oct-11	14:15	14:45	Sunny	74.8	76.2	73.0	-	Mainly traffic noise	-	27	0.5	RION- NL31 (S/N 00983400)	RION - NC73 (S/N 10997142)
27-Oct-11	14:20	14:50	Sunny	74.6	76.0	72.3	-	Mainly traffic noise	-	27	0.2	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
			Min.	**74.1**									
			Max.	**74.8**									


Normal Weekdays Noise Monitoring Results at NM3 ($L_{eq, 30min}$)
NM3
Limit Level
80
78
76
74
72
70
68
66
64
62
60
$L_{Aeq\ (30min)}$, dB(A)
01-10-2011
08-10-2011
15-10-2011
22-10-2011
29-10-2011
Date

APPENDIX F
SUMMARY OF EXCEEDANCE

APPENDIX F – SUMMARY OF EXCEEDANCE

Reporting Month: October 2011

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

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

c) Exceedance Report for Construction Noise (NIL)

APPENDIX G
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	111106
Date	6 October 2011 (Thursday)
Time	14:00 – 15:15

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

Ref. No.	Remarks/Observations	Related Item No.
111006-R01	***Part A - Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • To clear the stagnant water in drip tray in NP PTW as chemical waste. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • Previous audit session (Ref. No.110930), all environmental deficiency was improved by the Contractor.	E 7ii

	Name	Signature	Date
Recorded by	Gary Lau		7 October 2011
Checked by	Dr. Priscilla Choy		7 October 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	111013
Date	13 October 2011 (Thursday)
Time	14:00 – 16:30

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

Ref. No.	Remarks/Observations	Related Item No.
111013-R01	***Part A - Water Quality*** • To provide sand bags at Central PTW to prevent the wastewater spoilage. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • Previous audit session (Ref. No.111006), all environmental deficiency was improved by the Contractor. ***Remarks:*** • The Contractor is reminded to surround the drilling area with sand bags and provide sedimentation facilities once the drilling work started at NP PTW.	A 2

	Name	Signature	Date
Recorded by	Gary Lau		13 October 2011
Checked by	Dr. Priscilla Choy		13 October 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	111020
Date	20 October 2011 (Thursday)
Time	14:00 – 16:00

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

Ref. No.	Remarks/Observations	Related Item No.
111021-R01	***Part A - Water Quality*** • Bund should be provided to surround the drilling area at NP NTW before the commencement of drilling works. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • Previous audit session (Ref. No.111013), all environmental deficiency was improved by the Contractor. ***Remarks:*** • Tree Condition of T 013 should be inspected to ensure it is at good condition.	A 2

	Name	Signature	Date
Recorded by	Gary Lau		21 October 2011
Checked by	Dr. Priscilla Choy		21 October 2011

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	111027
Date	27 October 2011 (Thursday)
Time	14:00 – 16:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part A - Water Quality • No environmental deficiency was identified during the site inspection. ***Part B – Landscape and Visual*** • No environmental deficiency was identified during the site inspection. ***Part C - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part D – Noise*** • No environmental deficiency was identified during the site inspection. ***Part E –Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part F - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Follow up:*** • Previous audit session (Ref. No.111020.), all environmental deficiency was improved by the Contractor. ***Remarks:*** • To entirely cover the concrete mixers before they operate in NP PTW.	

	Name	Signature	Date
Recorded by	Gary Lau		28 October 2011
Checked by	Dr. Priscilla Choy		28 October 2011

APPENDIX H
SUMMARY OF AMOUNT OF WASTE GENERATED

Name of Department : Harbour Area Treatment Scheme Stage 2A – Upgrading of Preliminary Treatment Works at North Point , Wan Chai East and Central

Contract No. : DC/2009/23

APPENDIX E MONTHLY SUMMARY WASTE FLOW TABLE FOR 2011 (YEAR)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
JAN	0	0	0	0	0	0	0	0	0	0	0
FEB	0	0	0	0	0	0	0	0	0	0	0
MAR	0	0	0	0	0	0	0	0	0	0	0
APR	0.056	0.054	0	0	0.002	0	0	0	0	0	0
MAY	0.242	0.066	0	0	0.176	0	0	0	0	0	0
JUNE	0.295	0.098	0	0	0.197	0	0	0	0	0	0.04
SUB-TOTAL	0.0593	0.0218	0	0	0.375	0	0	0	0	0	0.04
JULY	0.0974	0.0545	0	0	0.0429	0	0	0	0	0	0.04
AUG	0.03072	0.02288	0	0	0.00784	0	0	0	0	0	0.01
SEPT	0.2818	0.1668	0	0	0.115	0	0	0	0	0	0.03
OCT	0.3133	0.1715	0	0	0.1418	0	0	0	0	0	0.05
NOV											
DEC											
TOTAL	0.782	0.437	0.000	0.000	0.683	0.000	0.000	0.000	0.000	0.000	0.170

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *											
Total	Borken	Reused in the	Reused in	Disposal as	Import Fill	Metals	Paper /	Plastics (3)	Chemical	Other, e.g.
[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
18.2	3	1.73	1	7	0	0	2.47	0	1	2

Notes :
(1) The performance targets are given in PS Clause 6(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site.
(3) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
* (4) The contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where to total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m3. (PS Clause 5(4)(b) referes).
[Delete Note (4) and the table above on the forecast, where inapplicable].

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 J-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 Status
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
	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 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	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
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.		^
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)		^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	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 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 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	All construction sites	^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	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 minimise 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	^
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals;		^
	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.		^
9.115	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.		^

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	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	^
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.		N/A
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

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
E	**Terrestrial Ecology**		
10.94	To implement effective noise mitigation measures as recommended in Section 4 of EIA.	All construction sites	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
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	^
	Existing trees to be retained on site should be carefully protected during construction.		*
	Trees unavoidably affected by the works should be transplanted where practical.		^
	Compensatory tree planting should be provided to compensate for felled trees.		^
	Control of night-time lighting.		^
Table 13.7	Erection of decorative screen hoarding compatible with the surrounding setting.	All construction sites	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;
	N/A Not Applicable;
	* Recommendation was made during site audit but improved/rectified by the contractor.
	# Recommendation was made during site audit and to be improved / rectified by the contractor.
	X Non-compliance of mitigation measure;
	● Non-compliance but rectified by the contractor;

APPENDIX K
COMPLAINT LOG

APPENDIX K – COMPLAINT LOG

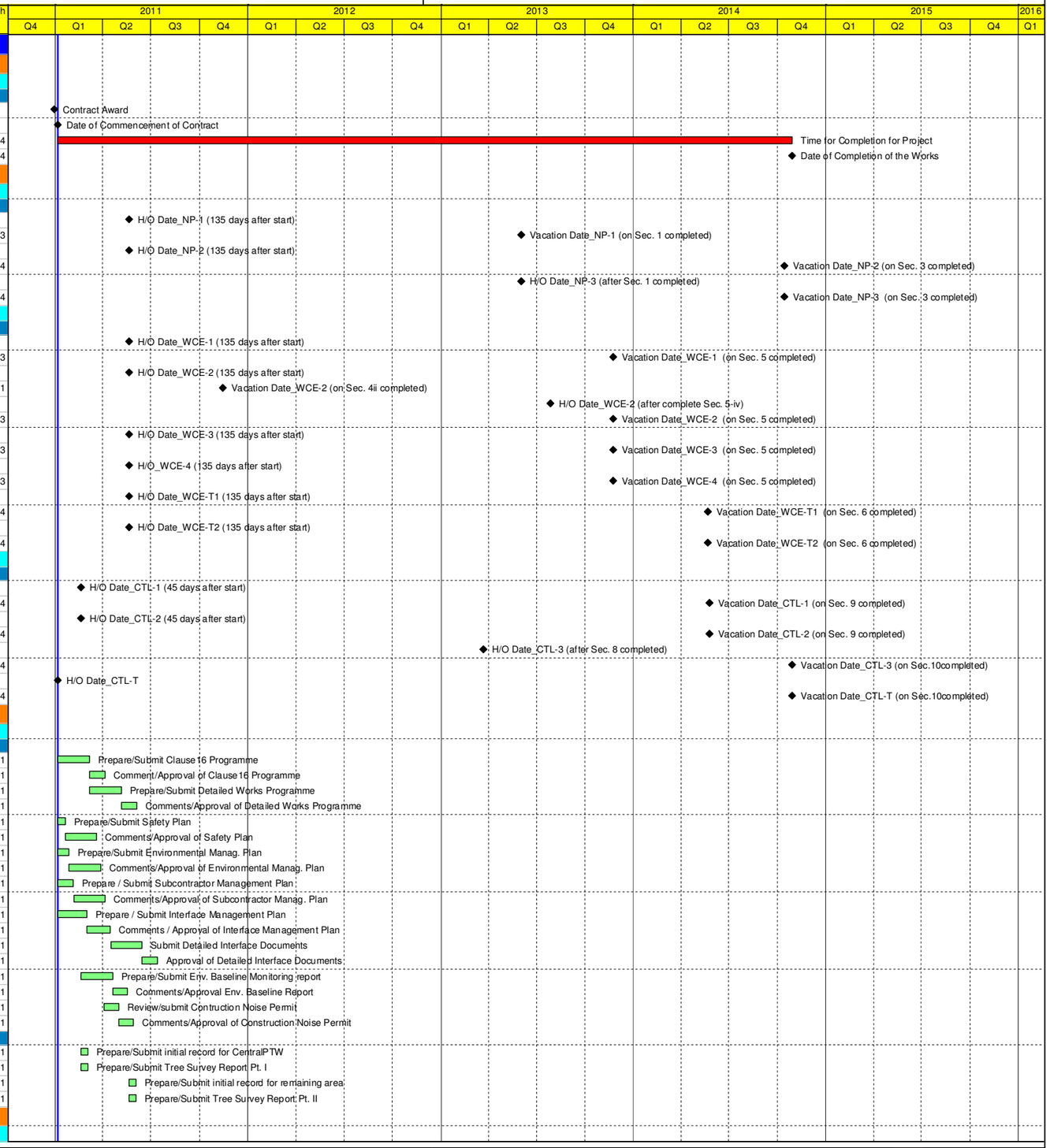
Reporting Month: October 2011

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

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

APPENDIX L
CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
DSD - HATSS2 Upgrading of PTW (DC/2009/23)							
Particulars							
Key Dates							
Commencement / Completion							
FGN0010	Contract Award	0		30-Dec-10 A		06-Jan-11	
FGN0030	Date of Commencement of Contract	0	0	06-Jan-11		06-Jan-11	
FGN0040	Time for Completion for Project	1393	0	06-Jan-11	29-Oct-14	06-Jan-11	29-Oct-14
FGN0050	Date of Completion of the Works	0	0		29-Oct-14		29-Oct-14
Portion of the Site							
North Point							
Possession / Vacation of Portions							
FNP00010	H/O Date_NP-1 (135 days after start)	0	0	20-May-11		20-May-11	
FNP00020	Vacation Date_NP-1 (on Sec. 1 completed)	0	0		01-Jun-13		01-Jun-13
FNP00030	H/O Date_NP-2 (135 days after start)	0	29	20-May-11		18-Jun-11	
FNP00040	Vacation Date_NP-2 (on Sec. 3 completed)	0	0		14-Oct-14		14-Oct-14
FNP00050	H/O Date_NP-3 (after Sec. 1 completed)	0	0	02-Jun-13		02-Jun-13	
FNP00060	Vacation Date_NP-3 (on Sec. 3 completed)	0	0		14-Oct-14		14-Oct-14
Wan Chai East							
Possession / Vacation of Portions							
FWC00010	H/O Date_WCE-1 (135 days after start)	0	0	20-May-11		20-May-11	
FWC00020	Vacation Date_WCE-1 (on Sec. 5 completed)	0	0		23-Nov-13		23-Nov-13
FWC00030	H/O Date_WCE-2 (135 days after start)	0	0	20-May-11		20-May-11	
FWC00040	Vacation Date_WCE-2 (on Sec. 4ii completed)	0	0		14-Nov-11		14-Nov-11
FWC00050	H/O Date_WCE-2 (after complete Sec. 5-iv)	0	0	27-Jul-13		27-Jul-13	
FWC00060	Vacation Date_WCE-2 (on Sec. 5 completed)	0	0		23-Nov-13		23-Nov-13
FWC00070	H/O Date_WCE-3 (135 days after start)	0	59	20-May-11		18-Jul-11	
FWC00080	Vacation Date_WCE-3 (on Sec. 5 completed)	0	0		23-Nov-13		23-Nov-13
FWC00090	H/O_WCE-4 (135 days after start)	0	59	20-May-11		18-Jul-11	
FWC00100	Vacation Date_WCE-4 (on Sec. 5 completed)	0	0		23-Nov-13		23-Nov-13
FWC00110	H/O Date_WCE-T1 (135 days after start)	0	205	20-May-11		11-Dec-11	
FWC00120	Vacation Date_WCE-T1 (on Sec. 6 completed)	0	0		22-May-14		22-May-14
FWC00130	H/O Date_WCE-T2 (135 days after start)	0	205	20-May-11		11-Dec-11	
FWC00140	Vacation Date_WCE-T2 (on Sec. 6 completed)	0	0		22-May-14		22-May-14
Central							
Possession / Vacation of Portions							
FCT00110	H/O Date_CTL-1 (45 days after start)	0	0	19-Feb-11		19-Feb-11	
FCT00120	Vacation Date_CTL-1 (on Sec. 9 completed)	0	0		25-May-14		25-May-14
FCT00130	H/O Date_CTL-2 (45 days after start)	0	50	19-Feb-11		10-Apr-11	
FCT00140	Vacation Date_CTL-2 (on Sec. 9 completed)	0	0		25-May-14		25-May-14
FCT00150	H/O Date_CTL-3 (after Sec. 8 completed)	0	0	22-Mar-13		22-Mar-13	
FCT00160	Vacation Date_CTL-3 (on Sec.10completed)	0	0		29-Oct-14		29-Oct-14
FCT00170	H/O Date_CTL-T	0	806	06-Jan-11		22-Mar-13	
FCT00180	Vacation Date_CTL-T (on Sec.10completed)	0	0		29-Oct-14		29-Oct-14
Management Plans and Programmes							
Contractor's Design, Submission / Approval							
Particulars							
FGN0200	Prepare/Submit Clause16 Programme	60	11	06-Jan-11	06-Mar-11	17-Jan-11	17-Mar-11
FGN0210	Comment/Approval of Clause16 Programme	30	41	07-Mar-11	05-Apr-11	17-Apr-11	16-May-11
FGN0220	Prepare/Submit Detailed Works Programme	60	11	07-Mar-11	05-May-11	18-Mar-11	16-May-11
FGN0230	Comments/Approval of Detailed Works Programme	30	11	06-May-11	04-Jun-11	17-May-11	15-Jun-11
FGN0250	Prepare/Submit Safety Plan	14	159	06-Jan-11	19-Jan-11	14-Jun-11	27-Jun-11
FGN0260	Comments/Approval of Safety Plan	60	159	20-Jan-11	20-Mar-11	28-Jun-11	26-Aug-11
FGN0300	Prepare/Submit Environmental Manag. Plan	21	152	06-Jan-11	26-Jan-11	07-Jun-11	27-Jun-11
FGN0310	Comments/Approval of Environmental Manag. Plan	60	152	27-Jan-11	27-Mar-11	28-Jun-11	26-Aug-11
FGN0330	Prepare / Submit Subcontractor Management Plan	30	143	06-Jan-11	04-Feb-11	29-May-11	27-Jun-11
FGN0340	Comments/Approval of Subcontractor Manag. Plan	60	143	05-Feb-11	05-Apr-11	28-Jun-11	26-Aug-11
FGN0400	Prepare / Submit Interface Management Plan	55	43	06-Jan-11	01-Mar-11	18-Feb-11	13-Apr-11
FGN0410	Comments / Approval of Interface Management Plan	45	43	02-Mar-11	15-Apr-11	14-Apr-11	28-May-11
FGN0420	Submit Detailed Interface Documents	60	43	16-Apr-11	14-Jun-11	29-May-11	27-Jul-11
FGN0430	Approval of Detailed Interface Documents	30	43	15-Jun-11	14-Jul-11	28-Jul-11	26-Aug-11
FGN0440	Prepare/Submit Env. Baseline Monitoring report	60	71	19-Feb-11	19-Apr-11	01-May-11	29-Jun-11
FGN0445	Comments/Approval Env. Baseline Report	28	71	20-Apr-11	17-May-11	30-Jun-11	27-Jul-11
FGN0448	Review/submit Contruction Noise Permit	28	129	04-Apr-11	01-May-11	11-Aug-11	07-Sep-11
FGN0449	Comments/Approval of Construction Noise Permit	28	129	02-May-11	29-May-11	08-Sep-11	05-Oct-11
Technical Information & Drawings							
FGN0450	Prepare/Submit initial record for CentralPTW	14	50	19-Feb-11	04-Mar-11	10-Apr-11	23-Apr-11
FGN0455	Prepare/Submit Tree Survey Report Pt. I	14	50	19-Feb-11	04-Mar-11	10-Apr-11	23-Apr-11
FGN0460	Prepare/Submit initial record for remaining area	14	50	20-May-11	02-Jun-11	09-Jul-11	22-Jul-11
FGN0465	Prepare/Submit Tree Survey Report Pt. II	14	13	20-May-11	02-Jun-11	02-Jun-11	15-Jun-11
Civil & Geo. Submission							
Contractor's Design, Submission and Approval							



DSD - HATSS2 Upgrading of PTW (DC/2009/23)

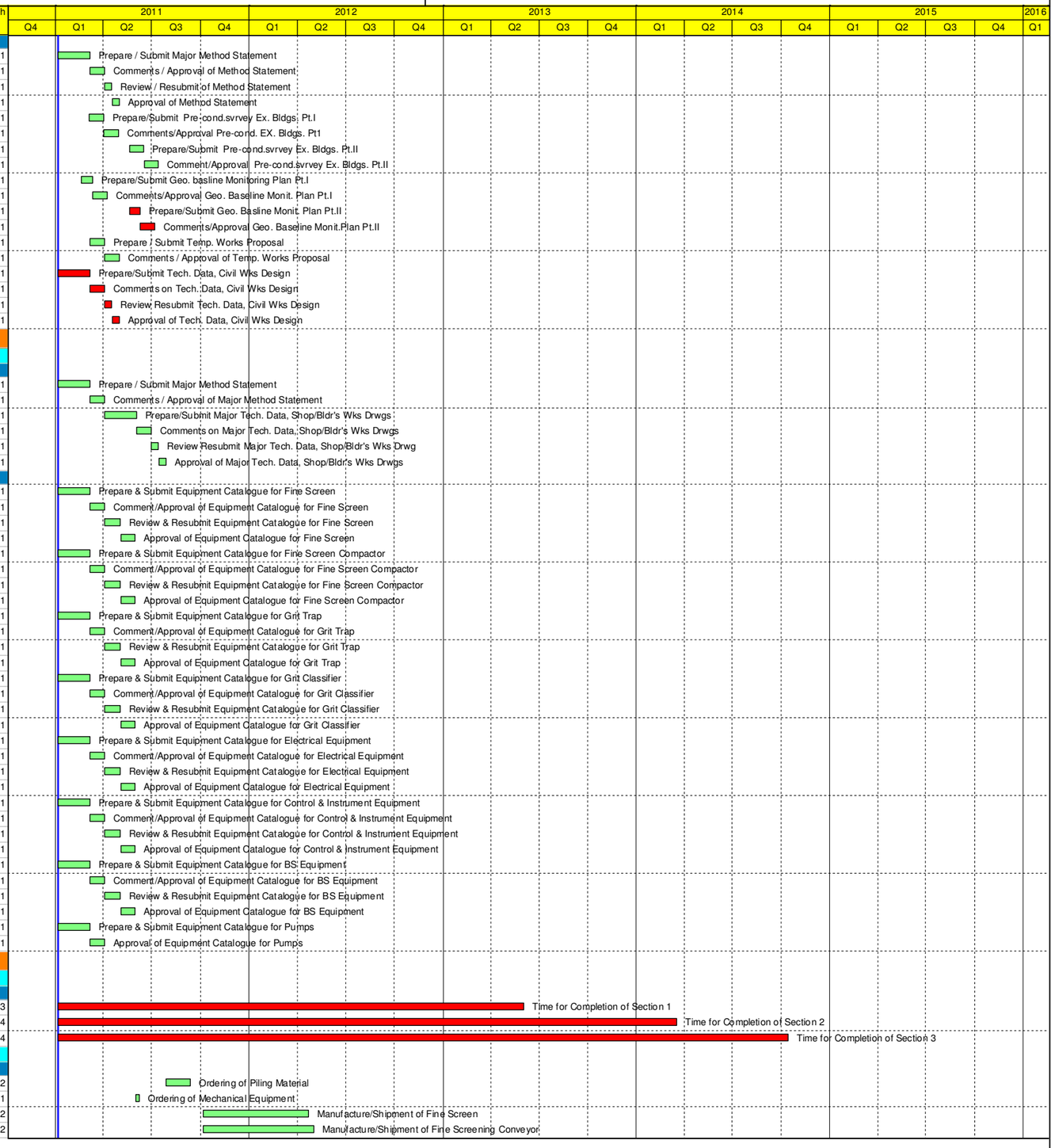
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
Technical Information & Drawings							
FGN0600	Prepare / Submit Major Method Statement	60	14	06-Jan-11	06-Mar-11	20-Jan-11	20-Mar-11
FGN0610	Comments / Approval of Method Statement	28	14	07-Mar-11	03-Apr-11	21-Mar-11	17-Apr-11
FGN0611	Review / Resubmit of Method Statement	14	47	04-Apr-11	17-Apr-11	21-May-11	03-Jun-11
FGN0612	Approval of Method Statement	14	47	18-Apr-11	01-May-11	04-Jun-11	17-Jun-11
FGN0620	Prepare/Submit Pre-cond.svrvey Ex. Bldgs. Pt.I	28	50	05-Mar-11	01-Apr-11	24-Apr-11	21-May-11
FGN0625	Comments/Approval Pre-cond. EX. Bldgs. Pt1	28	50	02-Apr-11	29-Apr-11	22-May-11	18-Jun-11
FGN0630	Prepare/Submit Pre-cond.svrvey Ex. Bldgs. Pt.II	28	7	20-May-11	16-Jun-11	27-May-11	23-Jun-11
FGN0635	Comment/Approval Pre-cond.svrvey Ex. Bldgs. Pt.II	28	7	17-Jun-11	14-Jul-11	24-Jun-11	21-Jul-11
FGN0640	Prepare/Submit Geo. basline Monitoring Plan Pt.I	21	71	19-Feb-11	11-Mar-11	01-May-11	21-May-11
FGN0645	Comments/Approval Geo. Baseline Monit. Plan Pt.I	28	71	12-Mar-11	08-Apr-11	22-May-11	18-Jun-11
FGN0650	Prepare/Submit Geo. Basline Monit. Plan Pt.II	21	0	20-May-11	09-Jun-11	20-May-11	09-Jun-11
FGN0655	Comments/Approval Geo. Baseline Monit.Plan Pt.II	28	0	10-Jun-11	07-Jul-11	10-Jun-11	07-Jul-11
FGN0700	Prepare / Submit Temp. Works Proposal	28	95	07-Mar-11	03-Apr-11	10-Jun-11	07-Jul-11
FGN0750	Comments / Approval of Temp. Works Proposal	28	95	04-Apr-11	01-May-11	08-Jul-11	04-Aug-11
FGN0900	Prepare/Submit Tech. Data, Civil Wks Design	60	0	06-Jan-11	06-Mar-11	06-Jan-11	06-Mar-11
FGN0950	Comments on Tech. Data, Civil Wks Design	28	0	07-Mar-11	03-Apr-11	07-Mar-11	03-Apr-11
FGN1000	Review Resubmit Tech. Data, Civil Wks Design	14	0	04-Apr-11	17-Apr-11	04-Apr-11	17-Apr-11
FGN1050	Approval of Tech. Data, Civil Wks Design	14	0	18-Apr-11	01-May-11	18-Apr-11	01-May-11
Electrical & Mechanical Submission							
Contractor's Design, Submission and Approval							
Technical Information & Drawings							
FGN1100	Prepare / Submit Major Method Statement	60	50	06-Jan-11	06-Mar-11	25-Feb-11	25-Apr-11
FGN1150	Comments / Approval of Major Method Statement	28	50	07-Mar-11	03-Apr-11	26-Apr-11	23-May-11
FGN1200	Prepare/Submit Major Tech. Data, Shop/Bldr's Wks Drwgs	60	50	04-Apr-11	02-Jun-11	24-May-11	22-Jul-11
FGN1250	Comments on Major Tech. Data, Shop/Bldr's Wks Drwgs	28	50	03-Jun-11	30-Jun-11	23-Jul-11	19-Aug-11
FGN1300	Review Resubmit Major Tech. Data, Shop/Bldr's Wks Drwg	14	117	01-Jul-11	14-Jul-11	26-Oct-11	08-Nov-11
FGN1350	Approval of Major Tech. Data, Shop/Bldr's Wks Drwgs	14	117	15-Jul-11	28-Jul-11	09-Nov-11	22-Nov-11
Equipment Catalogue and Samples							
FGN1400	Prepare & Submit Equipment Catalogue for Fine Screen	60	1	06-Jan-11	06-Mar-11	07-Jan-11	07-Mar-11
FGN1410	Comment/Approval of Equipment Catalogue for Fine Screen	28	1	07-Mar-11	03-Apr-11	08-Mar-11	04-Apr-11
FGN1420	Review & Resubmit Equipment Catalogue for Fine Screen	30	1	04-Apr-11	03-May-11	05-Apr-11	04-May-11
FGN1430	Approval of Equipment Catalogue for Fine Screen	28	1	04-May-11	31-May-11	05-May-11	01-Jun-11
FGN1440	Prepare & Submit Equipment Catalogue for Fine Screen Comp...	60	1	06-Jan-11	06-Mar-11	07-Jan-11	07-Mar-11
FGN1450	Comment/Approval of Equipment Catalogue for Fine Screen Co...	28	1	07-Mar-11	03-Apr-11	08-Mar-11	04-Apr-11
FGN1460	Review & Resubmit Equipment Catalogue for Fine Screen Com...	30	1	04-Apr-11	03-May-11	05-Apr-11	04-May-11
FGN1470	Approval of Equipment Catalogue for Fine Screen Compactor	28	1	04-May-11	31-May-11	05-May-11	01-Jun-11
FGN1480	Prepare & Submit Equipment Catalogue for Grit Trap	60	1	06-Jan-11	06-Mar-11	07-Jan-11	07-Mar-11
FGN1490	Comment/Approval of Equipment Catalogue for Grit Trap	28	1	07-Mar-11	03-Apr-11	08-Mar-11	04-Apr-11
FGN1500	Review & Resubmit Equipment Catalogue for Grit Trap	30	1	04-Apr-11	03-May-11	05-Apr-11	04-May-11
FGN1510	Approval of Equipment Catalogue for Grit Trap	28	1	04-May-11	31-May-11	05-May-11	01-Jun-11
FGN1520	Prepare & Submit Equipment Catalogue for Grit Classifier	60	1	06-Jan-11	06-Mar-11	07-Jan-11	07-Mar-11
FGN1530	Comment/Approval of Equipment Catalogue for Grit Classifier	28	1	07-Mar-11	03-Apr-11	08-Mar-11	04-Apr-11
FGN1540	Review & Resubmit Equipment Catalogue for Grit Classifier	30	1	04-Apr-11	03-May-11	05-Apr-11	04-May-11
FGN1550	Approval of Equipment Catalogue for Grit Classifier	28	1	04-May-11	31-May-11	05-May-11	01-Jun-11
FGN1560	Prepare & Submit Equipment Catalogue for Electrical Equipment	60	13	06-Jan-11	06-Mar-11	19-Jan-11	19-Mar-11
FGN1570	Comment/Approval of Equipment Catalogue for Electrical Equip...	28	13	07-Mar-11	03-Apr-11	20-Mar-11	16-Apr-11
FGN1580	Review & Resubmit Equipment Catalogue for Electrical Equipm...	30	13	04-Apr-11	03-May-11	17-Apr-11	16-May-11
FGN1590	Approval of Equipment Catalogue for Electrical Equipment	28	13	04-May-11	31-May-11	17-May-11	13-Jun-11
FGN1600	Prepare & Submit Equipment Catalogue for Control & Instrume...	60	39	06-Jan-11	06-Mar-11	14-Feb-11	14-Apr-11
FGN1610	Comment/Approval of Equipment Catalogue for Control & Instru...	28	39	07-Mar-11	03-Apr-11	15-Apr-11	12-May-11
FGN1620	Review & Resubmit Equipment Catalogue for Control & Instrum...	30	39	04-Apr-11	03-May-11	13-May-11	11-Jun-11
FGN1630	Approval of Equipment Catalogue for Control & Instrument Equi...	28	39	04-May-11	31-May-11	12-Jun-11	09-Jul-11
FGN1640	Prepare & Submit Equipment Catalogue for BS Equipment	60	33	06-Jan-11	06-Mar-11	08-Feb-11	08-Apr-11
FGN1650	Comment/Approval of Equipment Catalogue for BS Equipment	28	33	07-Mar-11	03-Apr-11	09-Apr-11	06-May-11
FGN1660	Review & Resubmit Equipment Catalogue for BS Equipment	30	33	04-Apr-11	03-May-11	07-May-11	05-Jun-11
FGN1670	Approval of Equipment Catalogue for BS Equipment	28	33	04-May-11	31-May-11	06-Jun-11	03-Jul-11
FGN1680	Prepare & Submit Equipment Catalogue for Pumps	60	137	06-Jan-11	06-Mar-11	23-May-11	21-Jul-11
FGN1690	Approval of Equipment Catalogue for Pumps	28	137	07-Mar-11	03-Apr-11	22-Jul-11	18-Aug-11
North Point PTW							
Key Dates							
Time for Completion							
FGN0070	Time for Completion of Section 1	878	0	06-Jan-11	01-Jun-13	06-Jan-11	01-Jun-13
FGN0080	Time for Completion of Section 2	1168	0	06-Jan-11	18-Mar-14	06-Jan-11	18-Mar-14
FGN0090	Time for Completion of Section 3	1378	0	06-Jan-11	14-Oct-14	06-Jan-11	14-Oct-14
Procurement							
Order / Manufacturing / Shipment / Delivery							
FGN1800	Ordering of Piling Material	45	117	29-Jul-11	11-Sep-11	23-Nov-11	06-Jan-12
FGN2000	Ordering of Mechanical Equipment	7	61	01-Jun-11	07-Jun-11	01-Aug-11	07-Aug-11
FGN2050	Manufacture/Shipment of Fine Screen	200	101	06-Oct-11	22-Apr-12	15-Jan-12	01-Aug-12
FGN2100	Manufacture/Shipment of Fine Screening Conveyor	210	64	06-Oct-11	02-May-12	09-Dec-11	05-Jul-12



Actual Work Critical Remaining Work

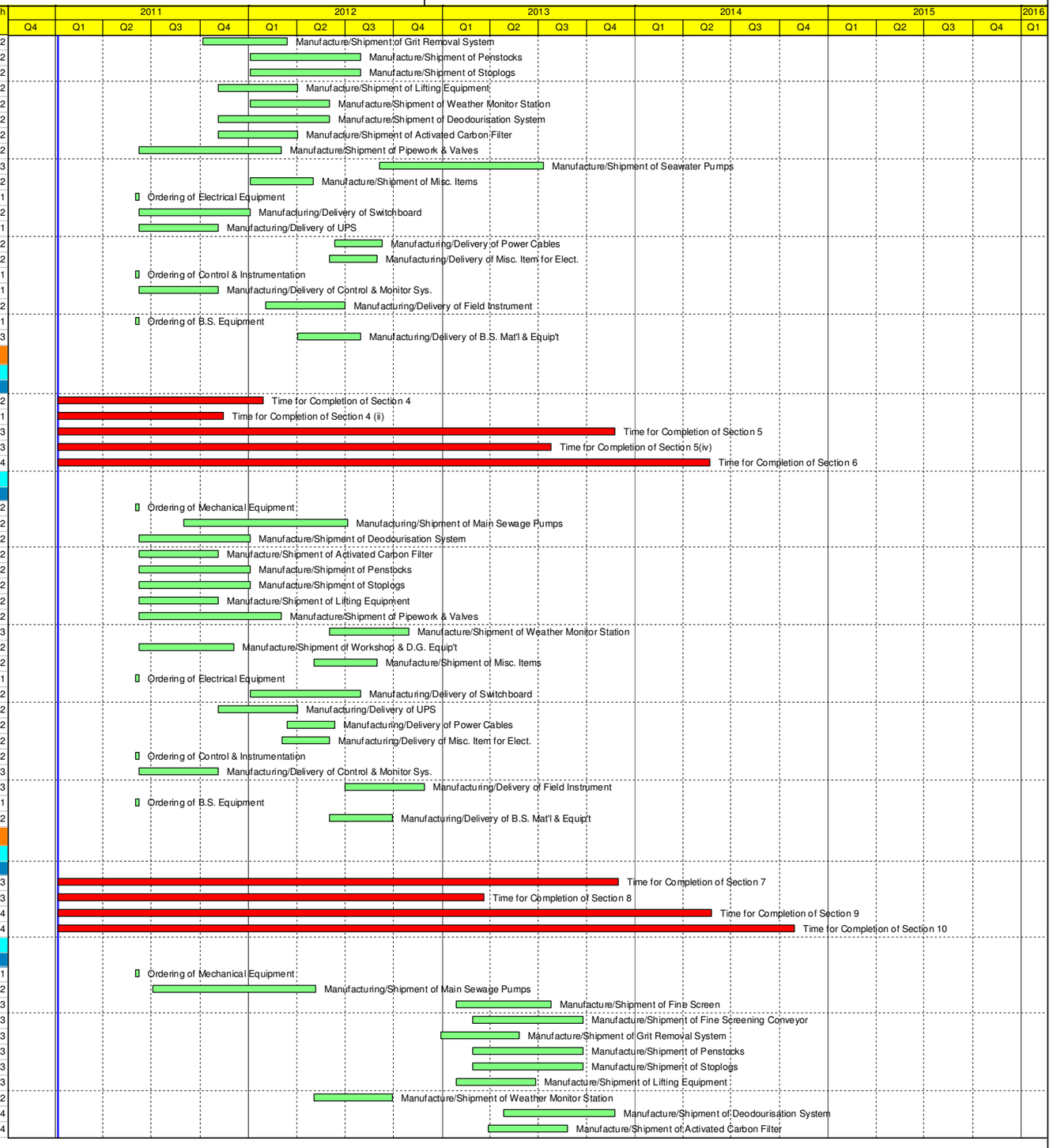
Remaining Work Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
FGN2150	Manufacture/Shipment of Grit Removal System	160	141	06-Oct-11	13-Mar-12	24-Feb-12	01-Aug-12
FGN2200	Manufacture/Shipment of Penstocks	210	1	04-Jan-12	31-Jul-12	05-Jan-12	01-Aug-12
FGN2250	Manufacture/Shipment of Stoplogs	210	1	04-Jan-12	31-Jul-12	05-Jan-12	01-Aug-12
FGN2300	Manufacture/Shipment of Lifting Equipment	150	121	05-Nov-11	02-Apr-12	05-Mar-12	01-Aug-12
FGN2350	Manufacture/Shipment of Weather Monitor Station	150	61	04-Jan-12	01-Jun-12	05-Mar-12	01-Aug-12
FGN2400	Manufacture/Shipment of Deodourisation System	210	42	05-Nov-11	01-Jun-12	17-Dec-11	13-Jul-12
FGN2450	Manufacture/Shipment of Activated Carbon Filter	150	121	05-Nov-11	02-Apr-12	05-Mar-12	01-Aug-12
FGN2500	Manufacture/Shipment of Pipework & Valves	270	151	08-Jun-11	03-Mar-12	06-Nov-11	01-Aug-12
FGN2550	Manufacture/Shipment of Seawater Pumps	310	160	05-Sep-12	11-Jul-13	12-Feb-13	18-Dec-13
FGN2650	Manufacture/Shipment of Misc. Items	120	83	04-Jan-12	02-May-12	27-Mar-12	24-Jul-12
FGN3100	Ordering of Electrical Equipment	7	13	01-Jun-11	07-Jun-11	14-Jun-11	20-Jun-11
FGN3150	Manufacturing/Delivery of Switchboard	210	13	08-Jun-11	03-Jan-12	21-Jun-11	16-Jan-12
FGN3200	Manufacturing/Delivery of UPS	150	43	08-Jun-11	04-Nov-11	21-Jul-11	17-Dec-11
FGN3300	Manufacturing/Delivery of Power Cables	90	108	12-Jun-12	09-Sep-12	28-Sep-12	26-Dec-12
FGN3400	Manufacturing/Delivery of Misc. Item for Elect.	90	118	02-Jun-12	30-Aug-12	28-Sep-12	26-Dec-12
FGN3500	Ordering of Control & Instrumentation	7	55	01-Jun-11	07-Jun-11	26-Jul-11	01-Aug-11
FGN3550	Manufacturing/Delivery of Control & Monitor Sys.	150	55	08-Jun-11	04-Nov-11	02-Aug-11	29-Dec-11
FGN3600	Manufacturing/Delivery of Field Instrument	150	97	03-Feb-12	01-Jul-12	10-May-12	06-Oct-12
FGN3700	Ordering of B.S. Equipment	7	198	01-Jun-11	07-Jun-11	16-Dec-11	22-Dec-11
FGN3750	Manufacturing/Delivery of B.S. Mat'l & Equip't	120	198	03-Apr-12	31-Jul-12	18-Oct-12	14-Feb-13
Wan Chai East PTW							
Key Dates							
Time for Completion							
FGN0100	Time for Completion of Section 4	388	0	06-Jan-11	28-Jan-12	06-Jan-11	28-Jan-12
FGN0105	Time for Completion of Section 4 (ii)	313	0	06-Jan-11	14-Nov-11	06-Jan-11	14-Nov-11
FGN0110	Time for Completion of Section 5	1053	0	06-Jan-11	23-Nov-13	06-Jan-11	23-Nov-13
FGN0115	Time for Completion of Section 5(iv)	933	0	06-Jan-11	26-Jul-13	06-Jan-11	26-Jul-13
FGN0120	Time for Completion of Section 6	1233	0	06-Jan-11	22-May-14	06-Jan-11	22-May-14
Procurement							
Order / Manufacturing / Shipment / Delivery							
FGN4100	Ordering of Mechanical Equipment	7	245	01-Jun-11	07-Jun-11	01-Feb-12	07-Feb-12
FGN4150	Manufacturing/Shipment of Main Sewage Pumps	310	160	01-Sep-11	06-Jul-12	08-Feb-12	13-Dec-12
FGN4200	Manufacture/Shipment of Deodourisation System	210	42	08-Jun-11	03-Jan-12	20-Jul-11	14-Feb-12
FGN4250	Manufacture/Shipment of Activated Carbon Filter	150	121	08-Jun-11	04-Nov-11	07-Oct-11	04-Mar-12
FGN4300	Manufacture/Shipment of Penstocks	210	1	08-Jun-11	03-Jan-12	09-Jun-11	04-Jan-12
FGN4350	Manufacture/Shipment of Stoplogs	210	1	08-Jun-11	03-Jan-12	09-Jun-11	04-Jan-12
FGN4400	Manufacture/Shipment of Lifting Equipment	150	121	08-Jun-11	04-Nov-11	07-Oct-11	04-Mar-12
FGN4500	Manufacture/Shipment of Pipework & Valves	270	127	08-Jun-11	03-Mar-12	13-Oct-11	08-Jul-12
FGN4550	Manufacture/Shipment of Weather Monitor Station	150	127	02-Jun-12	29-Oct-12	07-Oct-12	05-Mar-13
FGN4600	Manufacture/Shipment of Workshop & D.G. Equip't	180	306	08-Jun-11	04-Dec-11	09-Apr-12	05-Oct-12
FGN4650	Manufacture/Shipment of Misc. Items	120	83	03-May-12	30-Aug-12	25-Jul-12	21-Nov-12
FGN4700	Ordering of Electrical Equipment	7	33	01-Jun-11	07-Jun-11	04-Jul-11	10-Jul-11
FGN4750	Manufacturing/Delivery of Switchboard	210	59	04-Jan-12	31-Jul-12	03-Mar-12	28-Sep-12
FGN4800	Manufacturing/Delivery of UPS	150	43	05-Nov-11	02-Apr-12	18-Dec-11	15-May-12
FGN4850	Manufacturing/Delivery of Power Cables	90	33	14-Mar-12	11-Jun-12	16-Apr-12	14-Jul-12
FGN4900	Manufacturing/Delivery of Misc. Item for Elect.	90	43	04-Mar-12	01-Jun-12	16-Apr-12	14-Jul-12
FGN4950	Ordering of Control & Instrumentation	7	487	01-Jun-11	07-Jun-11	30-Sep-12	06-Oct-12
FGN5000	Manufacturing/Delivery of Control & Monitor Sys.	150	487	08-Jun-11	04-Nov-11	07-Oct-12	05-Mar-13
FGN5050	Manufacturing/Delivery of Field Instrument	150	97	02-Jul-12	28-Nov-12	07-Oct-12	05-Mar-13
FGN5100	Ordering of B.S. Equipment	7	54	01-Jun-11	07-Jun-11	25-Jul-11	31-Jul-11
FGN5150	Manufacturing/Delivery of B.S. Mat'l & Equip't	120	54	02-Jun-12	29-Sep-12	26-Jul-12	22-Nov-12
Central PTW							
Key Dates							
Time for Completion							
FGN0130	Time for Completion of Section 7	1059	0	06-Jan-11	29-Nov-13	06-Jan-11	29-Nov-13
FGN0140	Time for Completion of Section 8	806	0	06-Jan-11	21-Mar-13	06-Jan-11	21-Mar-13
FGN0150	Time for Completion of Section 9	1236	0	06-Jan-11	25-May-14	06-Jan-11	25-May-14
FGN0160	Time for Completion of Section 10	1393	0	06-Jan-11	29-Oct-14	06-Jan-11	29-Oct-14
Procurement							
Order / Manufacturing / Shipment / Delivery							
FGN5450	Ordering of Mechanical Equipment	7	1	01-Jun-11	07-Jun-11	02-Jun-11	08-Jun-11
FGN5550	Manufacturing/Shipment of Main Sewage Pumps	310	137	03-Jul-11	07-May-12	17-Nov-11	21-Sep-12
FGN5600	Manufacture/Shipment of Fine Screen	180	124	28-Jan-13	26-Jul-13	01-Jun-13	27-Nov-13
FGN5650	Manufacture/Shipment of Fine Screening Conveyor	210	64	27-Feb-13	24-Sep-13	02-May-13	27-Nov-13
FGN5700	Manufacture/Shipment of Grit Removal System	150	184	29-Dec-12	27-May-13	01-Jul-13	27-Nov-13
FGN5750	Manufacture/Shipment of Penstocks	210	64	27-Feb-13	24-Sep-13	02-May-13	27-Nov-13
FGN5800	Manufacture/Shipment of Stoplogs	210	64	27-Feb-13	24-Sep-13	02-May-13	27-Nov-13
FGN5850	Manufacture/Shipment of Lifting Equipment	150	154	28-Jan-13	26-Jun-13	01-Jul-13	27-Nov-13
FGN5900	Manufacture/Shipment of Weather Monitor Station	150	23	03-May-12	29-Sep-12	26-May-12	22-Oct-12
FGN5950	Manufacture/Shipment of Deodourisation System	210	42	28-Apr-13	23-Nov-13	09-Jun-13	04-Jan-14
FGN6000	Manufacture/Shipment of Activated Carbon Filter	150	132	29-Mar-13	25-Aug-13	08-Aug-13	04-Jan-14



DSD - HATSS2 Upgrading of PTW (DC/2009/23)

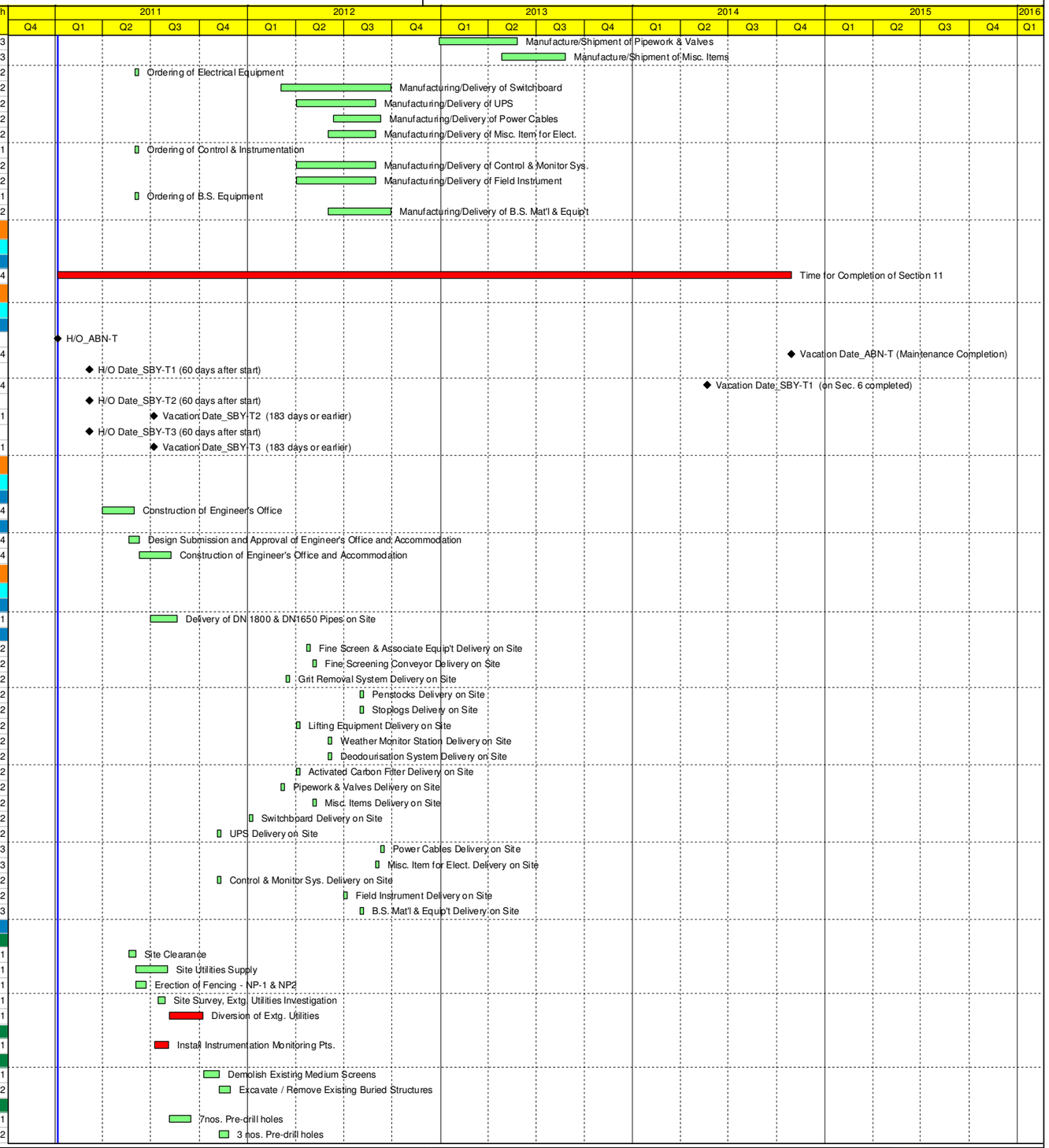
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
FGN6050	Manufacture/Shipment of Pipework & Valves	150	173	29-Dec-12	27-May-13	20-Jun-13	16-Nov-13
FGN6100	Manufacture/Shipment of Misc. Items	120	83	28-Apr-13	25-Aug-13	20-Jul-13	16-Nov-13
FGN6150	Ordering of Electrical Equipment	7	283	01-Jun-11	07-Jun-11	10-Mar-12	16-Mar-12
FGN6200	Manufacturing/Delivery of Switchboard	210	13	04-Mar-12	29-Sep-12	17-Mar-12	12-Oct-12
FGN6250	Manufacturing/Delivery of UPS	150	43	03-Apr-12	30-Aug-12	16-May-12	12-Oct-12
FGN6300	Manufacturing/Delivery of Power Cables	90	33	12-Jun-12	09-Sep-12	15-Jul-12	12-Oct-12
FGN6350	Manufacturing/Delivery of Misc. Item for Elect.	90	43	02-Jun-12	30-Aug-12	15-Jul-12	12-Oct-12
FGN6500	Ordering of Control & Instrumentation	7	39	01-Jun-11	07-Jun-11	10-Jul-11	16-Jul-11
FGN6550	Manufacturing/Delivery of Control & Monitor Sys.	150	39	03-Apr-12	30-Aug-12	12-May-12	08-Oct-12
FGN6600	Manufacturing/Delivery of Field Instrument	150	39	03-Apr-12	30-Aug-12	12-May-12	08-Oct-12
FGN6650	Ordering of B.S. Equipment	7	33	01-Jun-11	07-Jun-11	04-Jul-11	10-Jul-11
FGN6700	Manufacturing/Delivery of B.S. Mat'l & Equip't	120	33	02-Jun-12	29-Sep-12	05-Jul-12	01-Nov-12
SISTW							
Key Dates							
Time For Completion							
FGN0170	Time for Completion of Section 11	1393	0	06-Jan-11	29-Oct-14	06-Jan-11	29-Oct-14
Temporary Land							
Key Dates							
Possession / Vacation of Portions							
FGN0350	H/O_ABN-T	0	0	06-Jan-11*		06-Jan-11	
FGN0355	Vacation Date_ABN-T (Maintenance Completion)	0	0		29-Oct-14		29-Oct-14
FGN0360	H/O Date_SBY-T1 (60 days after start)	0	0	06-Mar-11*		06-Mar-11	
FGN0365	Vacation Date_SBY-T1 (on Sec. 6 completed)	0	0		22-May-14		22-May-14
FGN0370	H/O Date_SBY-T2 (60 days after start)	0	0	06-Mar-11*		06-Mar-11	
FGN0375	Vacation Date_SBY-T2 (183 days or earlier)	0	0		07-Jul-11*		07-Jul-11
FGN0380	H/O Date_SBY-T3 (60 days after start)	0	0	06-Mar-11*		06-Mar-11	
FGN0385	Vacation Date_SBY-T3 (183 days or earlier)	0	0		07-Jul-11*		07-Jul-11
Engineer's Office and Accommodation							
Key Dates							
Aberdeen Office							
FGN0500	Construction of Engineer's Office	61	1247	01-Apr-11*	31-May-11	30-Aug-14	29-Oct-14
Wan Chai Office and Accommodation							
FGN0505	Design Submission and Approval of Engineer's Office and Acco...	21	1178	20-May-11	09-Jun-11	10-Aug-14	30-Aug-14
FGN0510	Construction of Engineer's Office and Accommodation	60	1178	10-Jun-11	08-Aug-11	31-Aug-14	29-Oct-14
Works for Section 1							
North Point							
Civil Works Material Delivery on Site							
FNP00110	Delivery of DN 1800 & DN1650 Pipes on Site	50	50	01-Jul-11	19-Aug-11	20-Aug-11	08-Oct-11
E&M Equipment / Material Delivery on Site							
FNP10100	Fine Screen & Associate Equip't Delivery on Site	7	101	23-Apr-12	29-Apr-12	02-Aug-12	08-Aug-12
FNP10150	Fine Screening Conveyor Delivery on Site	7	91	03-May-12	09-May-12	02-Aug-12	08-Aug-12
FNP10200	Grit Removal System Delivery on Site	7	141	14-Mar-12	20-Mar-12	02-Aug-12	08-Aug-12
FNP10250	Penstocks Delivery on Site	7	1	01-Aug-12	07-Aug-12	02-Aug-12	08-Aug-12
FNP10300	Stoplogs Delivery on Site	7	1	01-Aug-12	07-Aug-12	02-Aug-12	08-Aug-12
FNP10350	Lifting Equipment Delivery on Site	7	121	03-Apr-12	09-Apr-12	02-Aug-12	08-Aug-12
FNP10400	Weather Monitor Station Delivery on Site	7	61	02-Jun-12	08-Jun-12	02-Aug-12	08-Aug-12
FNP10450	Deodourisation System Delivery on Site	7	61	02-Jun-12	08-Jun-12	02-Aug-12	08-Aug-12
FNP10500	Activated Carbon Filter Delivery on Site	7	121	03-Apr-12	09-Apr-12	02-Aug-12	08-Aug-12
FNP10550	Pipework & Valves Delivery on Site	7	151	04-Mar-12	10-Mar-12	02-Aug-12	08-Aug-12
FNP10600	Misc. Items Delivery on Site	7	91	03-May-12	09-May-12	02-Aug-12	08-Aug-12
FNP10700	Switchboard Delivery on Site	7	313	04-Jan-12	10-Jan-12	12-Nov-12	18-Nov-12
FNP10750	UPS Delivery on Site	7	368	05-Nov-11	11-Nov-11	07-Nov-12	13-Nov-12
FNP10800	Power Cables Delivery on Site	7	108	10-Sep-12	16-Sep-12	27-Dec-12	02-Jan-13
FNP10850	Misc. Item for Elect. Delivery on Site	7	118	31-Aug-12	06-Sep-12	27-Dec-12	02-Jan-13
FNP10950	Control & Monitor Sys. Delivery on Site	7	388	05-Nov-11	11-Nov-11	27-Nov-12	03-Dec-12
FNP11000	Field Instrument Delivery on Site	7	148	02-Jul-12	08-Jul-12	27-Nov-12	03-Dec-12
FNP11100	B.S. Mat'l & Equip't Delivery on Site	7	198	01-Aug-12	07-Aug-12	15-Feb-13	21-Feb-13
Civil Works							
Site Clearance & Prep. Works							
FNP12000	Site Clearance	14	29	20-May-11	02-Jun-11	18-Jun-11	01-Jul-11
FNP12010	Site Utilities Supply	60	65	03-Jun-11	01-Aug-11	07-Aug-11	05-Oct-11
FNP12050	Erection of Fencing - NP-1 & NP2	20	29	03-Jun-11	22-Jun-11	02-Jul-11	21-Jul-11
FNP12150	Site Survey, Extg. Utilities Investigation	14	7	15-Jul-11	28-Jul-11	22-Jul-11	04-Aug-11
FNP12200	Diversion of Extg. Utilities	65	0	05-Aug-11	08-Oct-11	05-Aug-11	08-Oct-11
Geotechnical / Structural Monitoring							
FNP12160	Install Instrumentation Monitoring Pts.	28	0	08-Jul-11	04-Aug-11	08-Jul-11	04-Aug-11
Demolition Works							
FNP12350	Demolish Existing Medium Screens	30	39	09-Oct-11	07-Nov-11	17-Nov-11	16-Dec-11
FNP12400	Excavate / Remove Existing Buried Structures	21	39	08-Nov-11	28-Nov-11	17-Dec-11	06-Jan-12
Site Investigation							
FNP12330	7nos. Pre-drill holes	42	62	05-Aug-11	15-Sep-11	06-Oct-11	16-Nov-11
FNP12410	3 nos. Pre-drill holes	18	42	08-Nov-11	25-Nov-11	20-Dec-11	06-Jan-12



Actual Work Critical Remaining Work

Remaining Work Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

DSD - HATSS2 Upgrading of PTW (DC/2009/23)

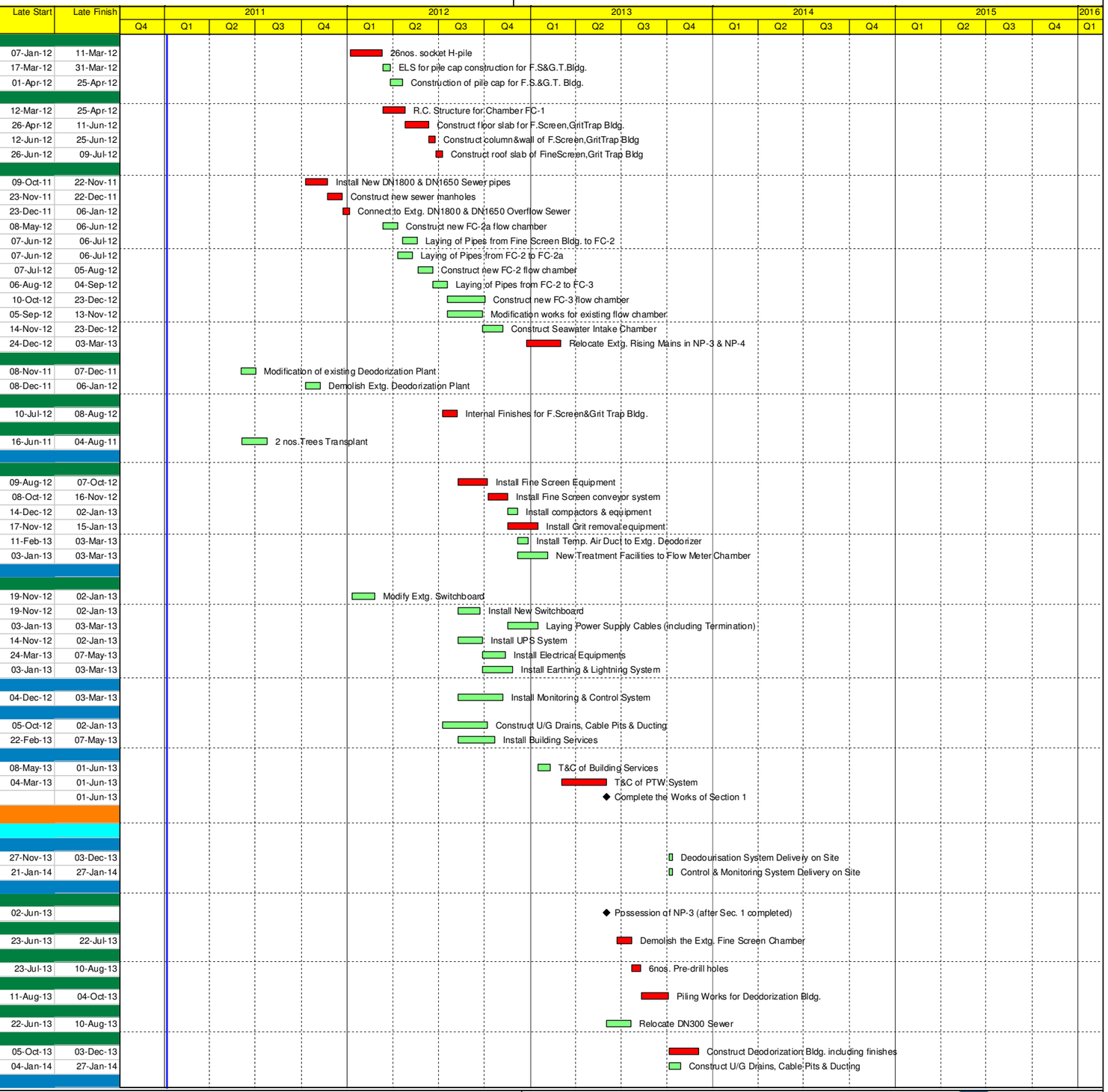
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
Foundation Works							
FNP12450	26nos. socket H-pile	65	0	07-Jan-12	11-Mar-12	07-Jan-12	11-Mar-12
FNP12480	ELS for pile cap construction for F.S&G.T.Bldg.	15	5	12-Mar-12	26-Mar-12	17-Mar-12	31-Mar-12
FNP12490	Construction of pile cap for F.S.&G.T. Bldg.	25	5	27-Mar-12	20-Apr-12	01-Apr-12	25-Apr-12
RC Structural Works							
FNP12550	R.C. Structure for Chamber FC-1	45	0	12-Mar-12	25-Apr-12	12-Mar-12	25-Apr-12
FNP12600	Construct floor slab for F.Screen,GritTrap Bldg.	47	0	26-Apr-12	11-Jun-12	26-Apr-12	11-Jun-12
FNP12610	Construct column&wall of F.Screen,GritTrap Bldg	14	0	12-Jun-12	25-Jun-12	12-Jun-12	25-Jun-12
FNP12620	Construct roof slab of FineScreen,Grit Trap Bldg	14	0	26-Jun-12	09-Jul-12	26-Jun-12	09-Jul-12
Drainage Works							
FNP12250	Install New DN1800 & DN1650 Sewer pipes	45	0	09-Oct-11	22-Nov-11	09-Oct-11	22-Nov-11
FNP12260	Construct new sewer manholes	30	0	23-Nov-11	22-Dec-11	23-Nov-11	22-Dec-11
FNP12265	Connect to Extg. DN1800 & DN1650 Overflow Sewer	15	0	23-Dec-11	06-Jan-12	23-Dec-11	06-Jan-12
FNP12750	Construct new FC-2a flow chamber	30	57	12-Mar-12	10-Apr-12	08-May-12	06-Jun-12
FNP12755	Laying of Pipes from Fine Screen Bldg. to FC-2	30	47	21-Apr-12	20-May-12	07-Jun-12	06-Jul-12
FNP12765	Laying of Pipes from FC-2 to FC-2a	30	57	11-Apr-12	10-May-12	07-Jun-12	06-Jul-12
FNP12770	Construct new FC-2 flow chamber	30	47	21-May-12	19-Jun-12	07-Jul-12	05-Aug-12
FNP12780	Laying of Pipes from FC-2 to FC-3	30	47	20-Jun-12	19-Jul-12	06-Aug-12	04-Sep-12
FNP12800	Construct new FC-3 flow chamber	75	82	20-Jul-12	02-Oct-12	10-Oct-12	23-Dec-12
FNP12850	Modification works for existing flow chamber	70	47	20-Jul-12	27-Sep-12	05-Sep-12	13-Nov-12
FNP12900	Construct Seawater Intake Chamber	40	47	28-Sep-12	06-Nov-12	14-Nov-12	23-Dec-12
FNP13150	Relocate Extg. Rising Mains in NP-3 & NP-4	70	0	24-Dec-12	03-Mar-13	24-Dec-12	03-Mar-13
Electrical and Mechanical Works							
FNP12290	Modification of existing Deodorization Plant	30	158	03-Jun-11	02-Jul-11	08-Nov-11	07-Dec-11
FNP12300	Demolish Extg. Deodorization Plant	30	60	09-Oct-11	07-Nov-11	08-Dec-11	06-Jan-12
Architectural Works							
FNP12700	Internal Finishes for F.Screen&Grit Trap Bldg.	30	0	10-Jul-12	08-Aug-12	10-Jul-12	08-Aug-12
Transplantion, landscape works							
FNP12100	2 nos.Trees Transplant	50	11	05-Jun-11	24-Jul-11	16-Jun-11	04-Aug-11
Mechanical Installation							
Electrical and Mechanical Works							
FNP13100	Install Fine Screen Equipment	60	0	09-Aug-12	07-Oct-12	09-Aug-12	07-Oct-12
FNP13110	Install Fine Screen conveyor system	40	0	08-Oct-12	16-Nov-12	08-Oct-12	16-Nov-12
FNP13120	Install compactors & equipment	20	27	17-Nov-12	06-Dec-12	14-Dec-12	02-Jan-13
FNP13130	Install Grit removal equipment	60	0	17-Nov-12	15-Jan-13	17-Nov-12	15-Jan-13
FNP13200	Install Temp. Air Duct to Extg. Deodorizer	21	66	07-Dec-12	27-Dec-12	11-Feb-13	03-Mar-13
FNP13250	New Treatment Facilities to Flow Meter Chamber	60	27	07-Dec-12	04-Feb-13	03-Jan-13	03-Mar-13
Electrical Installation							
Electrical and Mechanical Works							
FNP13500	Modify Extg. Switchboard	45	313	11-Jan-12	24-Feb-12	19-Nov-12	02-Jan-13
FNP13550	Install New Switchboard	45	102	09-Aug-12	22-Sep-12	19-Nov-12	02-Jan-13
FNP13600	Laying Power Supply Cables (including Termination)	60	47	17-Nov-12	15-Jan-13	03-Jan-13	03-Mar-13
FNP13650	Install UPS System	50	97	09-Aug-12	27-Sep-12	14-Nov-12	02-Jan-13
FNP13700	Install Electrical Equipments	45	177	28-Sep-12	11-Nov-12	24-Mar-13	07-May-13
FNP31800	Install Earthing & Lightning System	60	97	28-Sep-12	26-Nov-12	03-Jan-13	03-Mar-13
Control and Monitoring System							
FNP14100	Install Monitoring & Control System	90	117	09-Aug-12	06-Nov-12	04-Dec-12	03-Mar-13
Building Services Installation							
FNP12650	Construct U/G Drains, Cable Pits & Ducting	90	87	10-Jul-12	07-Oct-12	05-Oct-12	02-Jan-13
FNP14500	Install Building Services	75	197	09-Aug-12	22-Oct-12	22-Feb-13	07-May-13
Testing and Commissioning							
FNP15200	T&C of Building Services	25	112	16-Jan-13	09-Feb-13	08-May-13	01-Jun-13
FNP15300	T&C of PTW System	90	0	04-Mar-13	01-Jun-13	04-Mar-13	01-Jun-13
FNP15500	Complete the Works of Section 1	0	0		01-Jun-13		01-Jun-13
Works for Section 2							
North Point							
E&M Equipment / Material Delivery on Site							
FNP20010	Deodourisation System Delivery on Site	7	53	05-Oct-13	11-Oct-13	27-Nov-13	03-Dec-13
FNP20060	Control & Monitoring System Delivery on Site	7	108	05-Oct-13	11-Oct-13	21-Jan-14	27-Jan-14
Civil Works							
Site Clearance & Prep. Works							
FNP20100	Possession of NP-3 (after Sec. 1 completed)	0	0	02-Jun-13		02-Jun-13	
Demolition Works							
FNP20200	Demolish the Extg. Fine Screen Chamber	30	0	23-Jun-13	22-Jul-13	23-Jun-13	22-Jul-13
Site Investigation							
FNP20210	6nos. Pre-drill holes	19	0	23-Jul-13	10-Aug-13	23-Jul-13	10-Aug-13
Foundation Works							
FNP20250	Piling Works for Deodorization Bldg.	55	0	11-Aug-13	04-Oct-13	11-Aug-13	04-Oct-13
Drainage Works							
FNP20150	Relocate DN300 Sewer	50	20	02-Jun-13	21-Jul-13	22-Jun-13	10-Aug-13
RC Structural Works							
FNP20400	Construct Deodorization Bldg. including finishes	60	0	05-Oct-13	03-Dec-13	05-Oct-13	03-Dec-13
FNP20450	Construct U/G Drains, Cable Pits & Ducting	24	91	05-Oct-13	28-Oct-13	04-Jan-14	27-Jan-14
Mechanical Installation							



Actual Work | Critical Remaining Work | Remaining Work | Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

DSD - HATSS2 Upgrading of PTW (DC/2009/23)

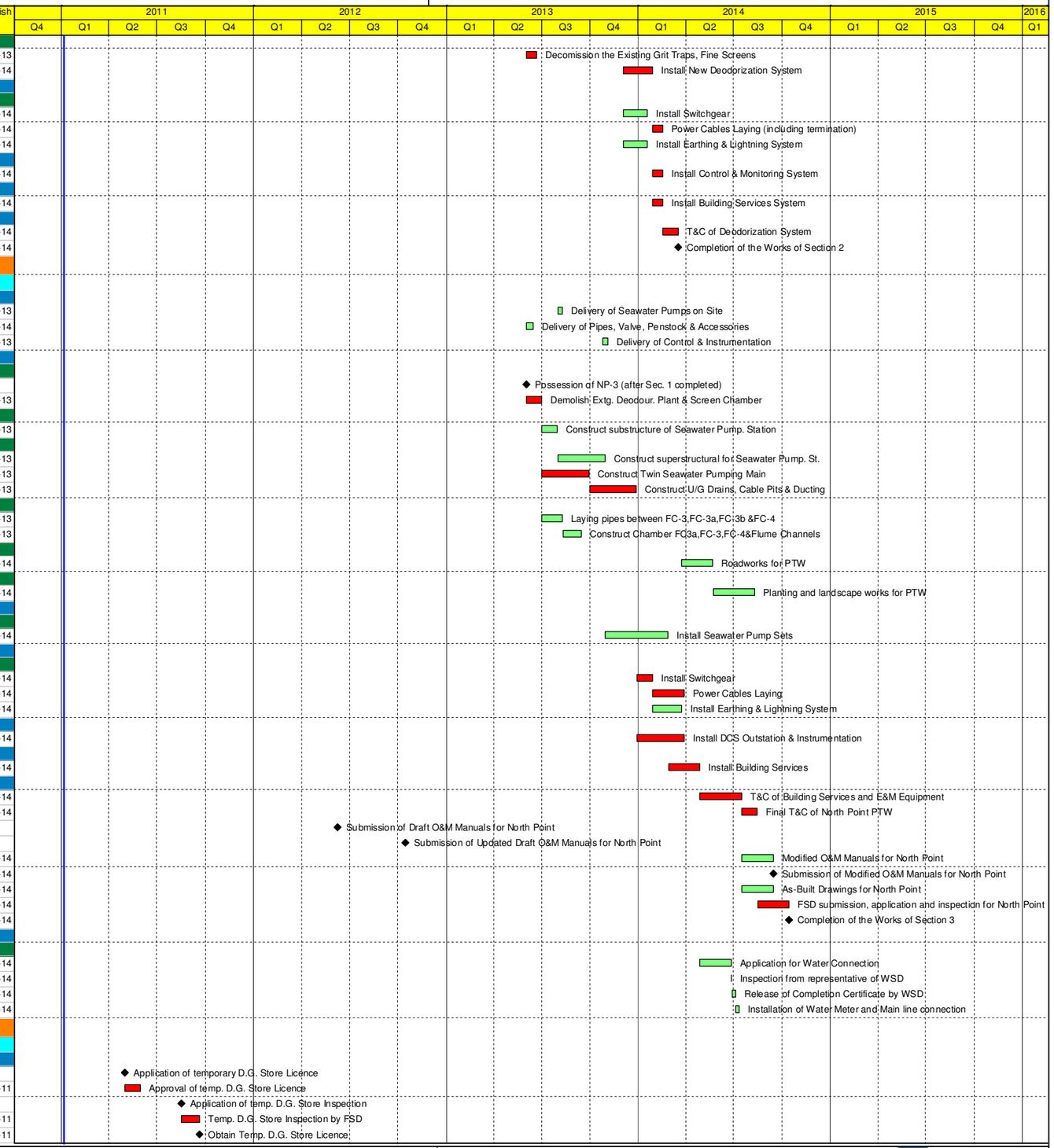
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
	Electrical and Mechanical Works						
FNP21100	Decomission the Existing Grit Traps, Fine Screens	21	0	02-Jun-13	22-Jun-13	02-Jun-13	22-Jun-13
FNP21150	Install New Deodorization System	55	0	04-Dec-13	27-Jan-14	04-Dec-13	27-Jan-14
	Electrical Installation						
	Electrical and Mechanical Works						
FNP21200	Install Switchgear	45	10	04-Dec-13	17-Jan-14	14-Dec-13	27-Jan-14
FNP21400	Power Cables Laying (including termination)	20	0	28-Jan-14	16-Feb-14	28-Jan-14	16-Feb-14
FNP21500	Install Earthing & Lightning System	45	10	04-Dec-13	17-Jan-14	14-Dec-13	27-Jan-14
	Control and Monitoring System						
FNP23500	Install Control & Monitoring System	20	0	28-Jan-14	16-Feb-14	28-Jan-14	16-Feb-14
	Building Services Installation						
FNP24500	Install Building Services System	20	0	28-Jan-14	16-Feb-14	28-Jan-14	16-Feb-14
	Testing and Commissioning						
FNP25000	T&C of Deodorization System	30	0	17-Feb-14	18-Mar-14	17-Feb-14	18-Mar-14
FNP25500	Completion of the Works of Section 2	0	0		18-Mar-14		18-Mar-14
	Works for Section 3						
	North Point						
	E&M Equipment / Material Delivery on Site						
FNP31100	Delivery of Seawater Pumps on Site	10	140	01-Aug-13	10-Aug-13	19-Dec-13	28-Dec-13
FNP31150	Delivery of Pipes, Valve, Penstock & Accessories	14	206	02-Jun-13	15-Jun-13	25-Dec-13	07-Jan-14
FNP31250	Delivery of Control & Instrumentation	10	55	25-Oct-13	03-Nov-13	19-Dec-13	28-Dec-13
	Civil Works						
	Site Clearance & Prep. Works						
FNP32050	Possession of NP-3 (after Sec. 1 completed)	0	0	02-Jun-13		02-Jun-13	
FNP33100	Demolish Extg. Deodour. Plant & Screen Chamber	30	0	02-Jun-13	01-Jul-13	02-Jun-13	01-Jul-13
	Foundation Works						
FNP32150	Construct substructure of Seawater Pump. Station	30	60	02-Jul-13	31-Jul-13	31-Aug-13	29-Sep-13
	RC Structural Works						
FNP32160	Construct superstructural for Seawater Pump. St.	90	60	01-Aug-13	29-Oct-13	30-Sep-13	28-Dec-13
FNP32200	Construct Twin Seawater Pumping Main	90	0	02-Jul-13	29-Sep-13	02-Jul-13	29-Sep-13
FNP32350	Construct U/G Drains, Cable Pits & Ducting	90	0	30-Sep-13	28-Dec-13	30-Sep-13	28-Dec-13
	Drainage Works						
FNP32300	Laying pipes between FC-3,FC-3a,FC-3b &FC-4	40	105	02-Jul-13	10-Aug-13	15-Oct-13	23-Nov-13
FNP32310	Construct Chamber FC3a,FC-3,FC-4&Flume Channels	35	105	11-Aug-13	14-Sep-13	24-Nov-13	28-Dec-13
	Road Works						
FNP32320	Roadworks for PTW	60	65	24-Mar-14	22-May-14	28-May-14	26-Jul-14
	Transplantion, landscape works						
FNP32330	Planting and landscape works for PTW	80	65	23-May-14	10-Aug-14	27-Jul-14	14-Oct-14
	Mechanical Installation						
	Electrical and Mechanical Works						
FNP33150	Install Seawater Pump Sets	120	60	30-Oct-13	26-Feb-14	29-Dec-13	27-Apr-14
	Electrical Installation						
	Electrical and Mechanical Works						
FNP34150	Install Switchgear	30	0	29-Dec-13	27-Jan-14	29-Dec-13	27-Jan-14
FNP34250	Power Cables Laying	60	0	28-Jan-14	28-Mar-14	28-Jan-14	28-Mar-14
FNP34300	Install Earthing & Lightning System	55	35	28-Jan-14	23-Mar-14	04-Mar-14	27-Apr-14
	Control and Monitoring System						
FNP35100	Install DCS Outstation & Instrumentation	90	0	29-Dec-13	28-Mar-14	29-Dec-13	28-Mar-14
	Building Services Installation						
FNP36100	Install Building Services	60	0	27-Feb-14	27-Apr-14	27-Feb-14	27-Apr-14
	Testing and Commissioning						
FNP37100	T&C of Building Services and E&M Equipment	80	0	28-Apr-14	16-Jul-14	28-Apr-14	16-Jul-14
FNP37110	Final T&C of North Point PTW	30	0	17-Jul-14	15-Aug-14	17-Jul-14	15-Aug-14
FNP37115	Submission of Draft O&M Manuals for North Point	0	0	09-Jun-12*		08-Jun-12	
FNP37116	Submission of Updated Draft O&M Manuals for North Point	0	0	16-Oct-12*		15-Oct-12	
FNP37120	Modified O&M Manuals for North Point	60	30	17-Jul-14	14-Sep-14	16-Aug-14	14-Oct-14
FNP37125	Submission of Modified O&M Manuals for North Point	0	30		14-Sep-14		14-Oct-14
FNP37130	As-Built Drawings for North Point	60	30	17-Jul-14	14-Sep-14	16-Aug-14	14-Oct-14
FNP37140	FSD submission, application and inspection for North Point	60	0	16-Aug-14	14-Oct-14	16-Aug-14	14-Oct-14
FNP37150	Completion of the Works of Section 3	0	0		14-Oct-14		14-Oct-14
	Water Supply from WSD for North Point PTW						
	Key Dates						
FNP40000	Application for Water Connection	60	5	28-Apr-14	26-Jun-14	03-May-14	01-Jul-14
FNP40010	Inspection from representative of WSD	1	5	27-Jun-14	27-Jun-14	02-Jul-14	02-Jul-14
FNP40020	Release of Completion Certificate by WSD	7	5	28-Jun-14	04-Jul-14	03-Jul-14	09-Jul-14
FNP40030	Installation of Water Meter and Main line connection	7	5	05-Jul-14	11-Jul-14	10-Jul-14	16-Jul-14
	Works for Section 4						
	Wan Chai East						
	Statutory Submission / Approval / Inspection						
FWC00270	Application of temporary D.G. Store Licence	0	0	02-May-11		02-May-11	
FWC00320	Approval of temp. D.G. Store Licence	30	0	02-May-11	31-May-11	02-May-11	31-May-11
FWC00370	Application of temp. D.G. Store Inspection	0	0	17-Aug-11		17-Aug-11	
FWC00420	Temp. D.G. Store Inspection by FSD	35	0	17-Aug-11	20-Sep-11	17-Aug-11	20-Sep-11
FWC00470	Obtain Temp. D.G. Store Licence	0	0		20-Sep-11		20-Sep-11



Actual Work Critical Remaining Work

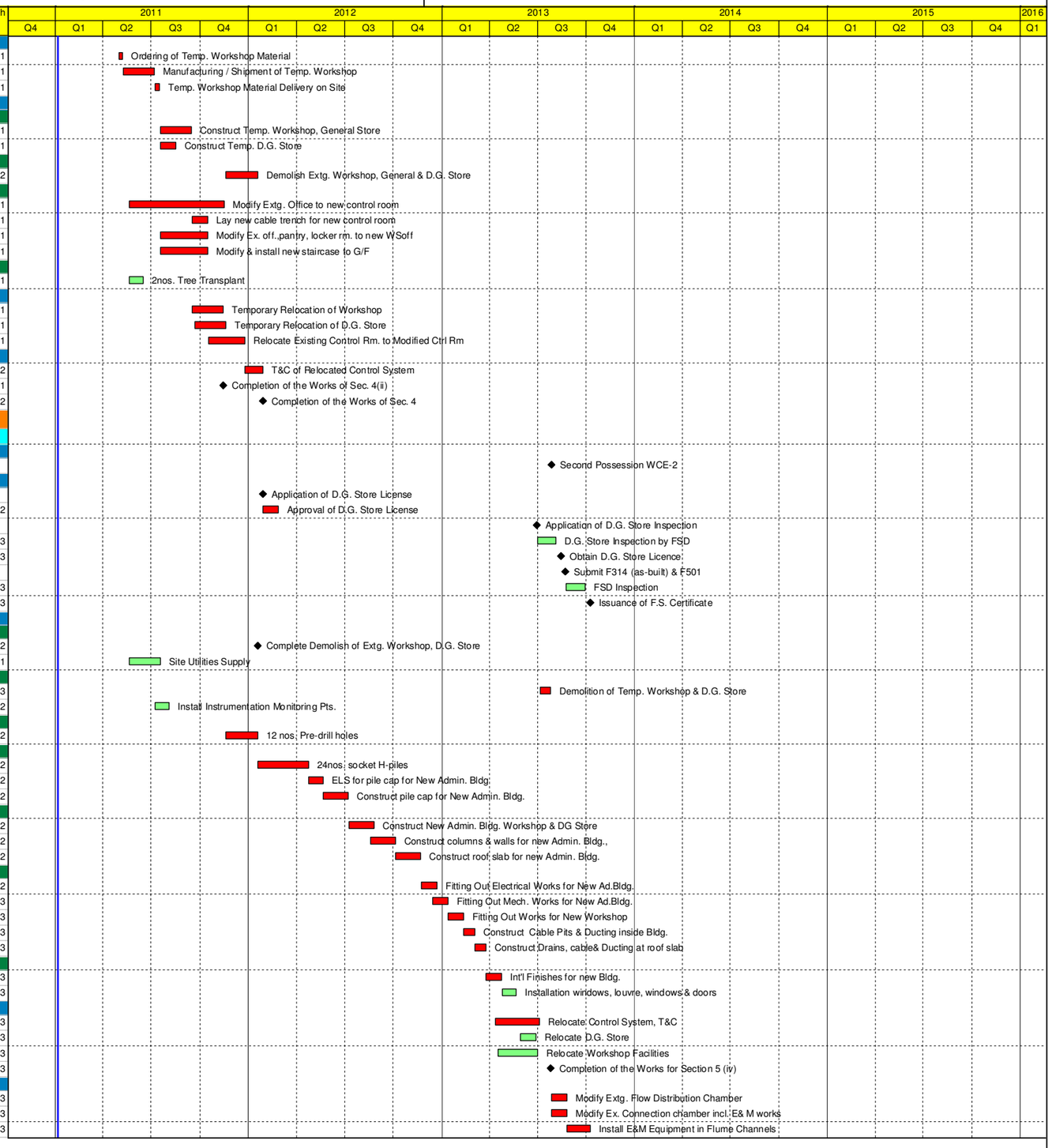
Remaining Work Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
	Civil Works Material Delivery on Site						
FWC00500	Ordering of Temp. Workshop Material	7	0	02-May-11	08-May-11	02-May-11	08-May-11
FWC00550	Manufacturing / Shipment of Temp. Workshop	60	0	09-May-11	07-Jul-11	09-May-11	07-Jul-11
FWC00600	Temp. Workshop Material Delivery on Site	10	0	08-Jul-11	17-Jul-11	08-Jul-11	17-Jul-11
	Civil Works						
	Site Clearance & Prep. Works						
FWC01100	Construct Temp. Workshop, General Store	60	0	18-Jul-11	15-Sep-11	18-Jul-11	15-Sep-11
FWC01150	Construct Temp. D.G. Store	30	0	18-Jul-11	16-Aug-11	18-Jul-11	16-Aug-11
	Demolition Works						
FWC01450	Demolish Extg. Workshop, General & D.G. Store	60	0	20-Nov-11	18-Jan-12	20-Nov-11	18-Jan-12
	Building Service Works						
FWC01200	Modify Extg. Office to new control room	180	0	20-May-11	15-Nov-11	20-May-11	15-Nov-11
FWC01205	Lay new cable trench for new control room	30	0	17-Sep-11	16-Oct-11	17-Sep-11	16-Oct-11
FWC01210	Modify Ex. off.,pantry, locker rm. to new WSoff	90	0	19-Jul-11	16-Oct-11	19-Jul-11	16-Oct-11
FWC01220	Modify & install new staircase to G/F	90	0	19-Jul-11	16-Oct-11	19-Jul-11	16-Oct-11
	Transplantion, landscape works						
FWC01050	2nos. Tree Transplant	28	31	20-May-11	16-Jun-11	20-Jun-11	17-Jul-11
	E&M Installation						
FWC01500	Temporary Relocation of Workshop	60	0	16-Sep-11	14-Nov-11	16-Sep-11	14-Nov-11
FWC01550	Temporary Relocation of D.G. Store	60	0	21-Sep-11	19-Nov-11	21-Sep-11	19-Nov-11
FWC01600	Relocate Existing Control Rm. to Modified Ctrl Rm	70	0	17-Oct-11	25-Dec-11	17-Oct-11	25-Dec-11
	Testing and Commissioning						
FWC01650	T&C of Relocated Control System	34	0	26-Dec-11	28-Jan-12	26-Dec-11	28-Jan-12
FWC01700	Completion of the Works of Sec. 4(ii)	0	0		14-Nov-11		14-Nov-11
FWC01800	Completion of the Works of Sec. 4	0	0		28-Jan-12		28-Jan-12
	Works for Section 5						
	Wan Chai East						
	Possession / Vacation of Portions						
FWC01860	Second Possession WCE-2	0	0	27-Jul-13		27-Jul-13	
	Statutory Submission / Approval / Inspection						
FWC02300	Application of D.G. Store License	0	0	29-Jan-12		29-Jan-12	
FWC02350	Approval of D.G. Store License	30	0	29-Jan-12	27-Feb-12	29-Jan-12	27-Feb-12
FWC02400	Application of D.G. Store Inspection	0	101	29-Jun-13		08-Oct-13	
FWC02450	D.G. Store Inspection by FSD	35	101	01-Jul-13	04-Aug-13	10-Oct-13	13-Nov-13
FWC02500	Obtain D.G. Store Licence	0	101		14-Aug-13		23-Nov-13
FWC02600	Submit F314 (as-built) & F501	0	46	23-Aug-13		08-Oct-13	
FWC02650	FSD Inspection	35	46	25-Aug-13	28-Sep-13	10-Oct-13	13-Nov-13
FWC02700	Issuance of F.S. Certificate	0	46		08-Oct-13		23-Nov-13
	Civil Works						
	Site Clearance & Prep. Works						
FWC10100	Complete Demolish of Extg. Workshop, D.G. Store	0	0		18-Jan-12		18-Jan-12
FWC10120	Site Utilities Supply	60	124	20-May-11	18-Jul-11	21-Sep-11	19-Nov-11
	Demolition Works						
FWC10400	Demolition of Temp. Workshop & D.G. Store	21	0	06-Jul-13	26-Jul-13	06-Jul-13	26-Jul-13
FWC10410	Install Instrumentation Monitoring Pts.	28	167	08-Jul-11	04-Aug-11	22-Dec-11	18-Jan-12
	Site Investigation						
FWC10110	12 nos. Pre-drill holes	60	0	20-Nov-11	18-Jan-12	20-Nov-11	18-Jan-12
	Foundation Works						
FWC10150	24nos. socket H-piles	96	0	19-Jan-12	23-Apr-12	19-Jan-12	23-Apr-12
FWC10160	ELS for pile cap for New Admin. Bldg	28	0	24-Apr-12	21-May-12	24-Apr-12	21-May-12
FWC10170	Construct pile cap for New Admin. Bldg.	48	0	22-May-12	08-Jul-12	22-May-12	08-Jul-12
	RC / Structural Works						
FWC10200	Construct New Admin. Bldg. Workshop & DG Store	48	0	09-Jul-12	25-Aug-12	09-Jul-12	25-Aug-12
FWC10210	Construct columns & walls for new Admin. Bldg.,	48	0	19-Aug-12	05-Oct-12	19-Aug-12	05-Oct-12
FWC10220	Construct roof slab for new Admin. Bldg.	48	0	06-Oct-12	22-Nov-12	06-Oct-12	22-Nov-12
	Building Service Works						
FWC10300	Fitting Out Electrical Works for New Ad.Bldg.	30	0	23-Nov-12	22-Dec-12	23-Nov-12	22-Dec-12
FWC10320	Fitting Out Mech. Works for New Ad.Bldg.	30	0	14-Dec-12	12-Jan-13	14-Dec-12	12-Jan-13
FWC10330	Fitting Out Works for New Workshop	30	0	13-Jan-13	11-Feb-13	13-Jan-13	11-Feb-13
FWC10350	Construct Cable Pits & Ducting inside Bldg.	21	0	12-Feb-13	04-Mar-13	12-Feb-13	04-Mar-13
FWC10360	Construct Drains, cable& Ducting at roof slab	21	0	05-Mar-13	25-Mar-13	05-Mar-13	25-Mar-13
	Architectural Works						
FWC10250	Int'l Finishes for new Bldg.	30	0	26-Mar-13	24-Apr-13	26-Mar-13	24-Apr-13
FWC10260	Installation windows, louvre, windows & doors	28	7	25-Apr-13	22-May-13	02-May-13	29-May-13
	E&M Installation						
FWC21150	Relocate Control System, T&C	85	0	12-Apr-13	05-Jul-13	12-Apr-13	05-Jul-13
FWC21200	Relocate D.G. Store	30	7	30-May-13	28-Jun-13	06-Jun-13	05-Jul-13
FWC21300	Relocate Workshop Facilities	75	4	18-Apr-13	01-Jul-13	22-Apr-13	05-Jul-13
FWC21350	Completion of the Works for Section 5 (iv)	0	0		26-Jul-13		26-Jul-13
	Electrical Installation						
FWC10450	Modify Extg. Flow Distribution Chamber	30	0	27-Jul-13	25-Aug-13	27-Jul-13	25-Aug-13
FWC10460	Modify Ex. Connection chamber incl. E& M works	30	0	27-Jul-13	25-Aug-13	27-Jul-13	25-Aug-13
FWC10500	Install E&M Equipment in Flume Channels	45	0	26-Aug-13	09-Oct-13	26-Aug-13	09-Oct-13



DSD - HATSS2 Upgrading of PTW (DC/2009/23)

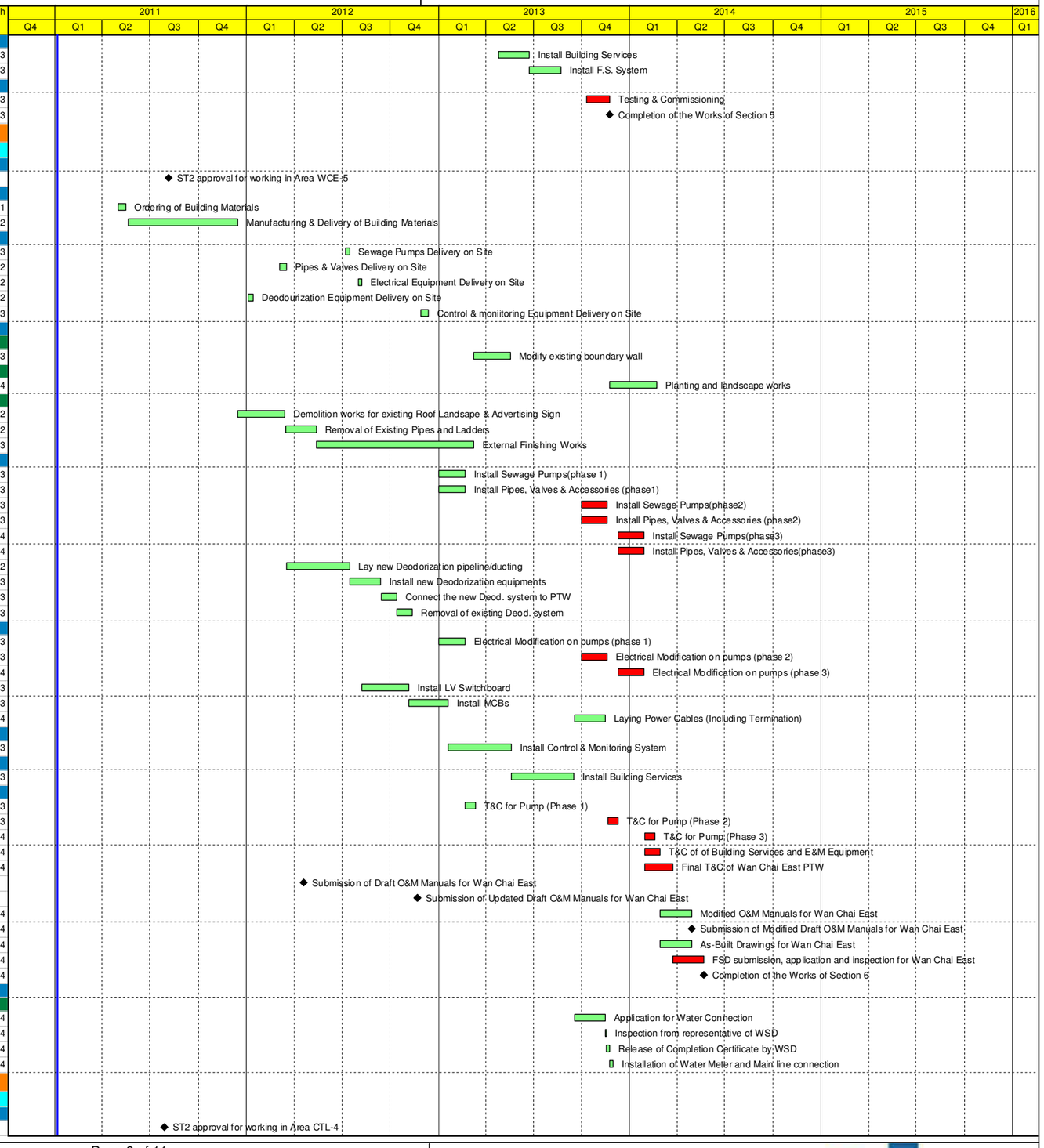
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
	Building Service Installation						
FWC23250	Install Building Services	60	46	25-Apr-13	23-Jun-13	10-Jun-13	08-Aug-13
FWC23300	Install F.S. System	60	46	24-Jun-13	22-Aug-13	09-Aug-13	07-Oct-13
	Testing and Commissioning						
FWC23350	Testing & Commissioning	45	0	10-Oct-13	23-Nov-13	10-Oct-13	23-Nov-13
FWC23400	Completion of the Works of Section 5	0	0		23-Nov-13		23-Nov-13
	Works for Section 6						
	Wan Chai East						
	Possession / Vacation of Portions						
FWC30110	ST2 approval for working in Area WCE-5	0	338	05-Aug-11		08-Jul-12	
	Civil Works Material Delivery on Site						
FWC32100	Ordering of Building Materials	14	209	02-May-11	15-May-11	27-Nov-11	10-Dec-11
FWC32150	Manufacturing & Delivery of Building Materials	210	205	20-May-11	15-Dec-11	11-Dec-11	07-Jul-12
	E&M Equipment / Material Delivery on Site						
FWC33100	Sewage Pumps Delivery on Site	10	371	07-Jul-12	16-Jul-12	13-Jul-13	22-Jul-13
FWC33150	Pipes & Valves Delivery on Site	14	127	04-Mar-12	17-Mar-12	09-Jul-12	22-Jul-12
FWC33200	Electrical Equipment Delivery on Site	7	59	01-Aug-12	07-Aug-12	29-Sep-12	05-Oct-12
FWC33250	Deodourization Equipment Delivery on Site	10	191	04-Jan-12	13-Jan-12	13-Jul-12	22-Jul-12
FWC33300	Control & moniitoring Equipment Delivery on Site	14	97	29-Nov-12	12-Dec-12	06-Mar-13	19-Mar-13
	Civil Works						
	RC Structural Works						
FWC33310	Modify existing boundary wall	70	219	10-Mar-13	18-May-13	15-Oct-13	23-Dec-13
	Transplantion, landscape works						
FWC33320	Planting and landscape works	90	30	24-Nov-13	21-Feb-14	24-Dec-13	23-Mar-14
	Modification of Existing Fine Screen Grit Trap / Pumping Station Building						
FWC35100	Demolition works for existing Roof Landsape & Advertising Sign	90	205	16-Dec-11	14-Mar-12	08-Jul-12	05-Oct-12
FWC35110	Removal of Existing Pipes and Ladders	60	219	15-Mar-12	13-May-12	20-Oct-12	18-Dec-12
FWC35120	External Finishing Works	300	219	14-May-12	09-Mar-13	19-Dec-12	14-Oct-13
	Mechanical Installation						
FWC50100	Install Sewage Pumps(phase 1)	50	202	02-Jan-13*	20-Feb-13	23-Jul-13	10-Sep-13
FWC50105	Install Pipes, Valves & Accessories (phase1)	50	202	02-Jan-13	20-Feb-13	23-Jul-13	10-Sep-13
FWC50110	Install Sewage Pumps(phase2)	50	0	01-Oct-13*	19-Nov-13	01-Oct-13	19-Nov-13
FWC50115	Install Pipes, Valves & Accessories (phase2)	50	0	01-Oct-13	19-Nov-13	01-Oct-13	19-Nov-13
FWC50120	Install Sewage Pumps(phase3)	50	0	10-Dec-13	28-Jan-14	10-Dec-13	28-Jan-14
FWC50125	Install Pipes, Valves & Accessories(phase3)	50	0	10-Dec-13	28-Jan-14	10-Dec-13	28-Jan-14
FWC50200	Lay new Deodorization pipeline/ducting	120	127	18-Mar-12	15-Jul-12	23-Jul-12	19-Nov-12
FWC50210	Install new Deodorization equipments	60	127	16-Jul-12	13-Sep-12	20-Nov-12	18-Jan-13
FWC50220	Connect the new Deod. system to PTW	30	127	14-Sep-12	13-Oct-12	19-Jan-13	17-Feb-13
FWC50230	Removal of existing Deod. system	30	127	14-Oct-12	12-Nov-12	18-Feb-13	19-Mar-13
	Electrical Installation						
FWC50106	Electrical Modification on pumps (phase 1)	50	202	02-Jan-13	20-Feb-13	23-Jul-13	10-Sep-13
FWC50116	Electrical Modification on pumps (phase 2)	50	0	01-Oct-13	19-Nov-13	01-Oct-13	19-Nov-13
FWC50126	Electrical Modification on pumps (phase 3)	50	0	10-Dec-13	28-Jan-14	10-Dec-13	28-Jan-14
FWC51100	Install LV Switchboard	90	59	08-Aug-12	05-Nov-12	06-Oct-12	03-Jan-13
FWC51200	Install MCBs	75	59	06-Nov-12	19-Jan-13	04-Jan-13	19-Mar-13
FWC51500	Laying Power Cables (Including Termination)	60	74	17-Sep-13	15-Nov-13	30-Nov-13	28-Jan-14
	Control and Monitoring System						
FWC52100	Install Control & Monitoring System	120	59	20-Jan-13	19-May-13	20-Mar-13	17-Jul-13
	Building Services Installation						
FWC53100	Install Building Services	120	59	20-May-13	16-Sep-13	18-Jul-13	14-Nov-13
	Testing and Commissioning						
FWC55000	T&C for Pump (Phase 1)	20	202	21-Feb-13	12-Mar-13	11-Sep-13	30-Sep-13
FWC55010	T&C for Pump (Phase 2)	20	0	20-Nov-13	09-Dec-13	20-Nov-13	09-Dec-13
FWC55020	T&C for Pump (Phase 3)	20	0	29-Jan-14	17-Feb-14	29-Jan-14	17-Feb-14
FWC55100	T&C of of Building Services and E&M Equipment	30	0	29-Jan-14	27-Feb-14	29-Jan-14	27-Feb-14
FWC55110	Final T&C of Wan Chai East PTW	54	0	29-Jan-14	23-Mar-14	29-Jan-14	23-Mar-14
FWC55115	Submission of Draft O&M Manuals for Wan Chai East	0	0	19-Apr-12*		18-Apr-12	
FWC55116	Submission of Updated Draft O&M Manuals for Wan Chai East	0	0	21-Nov-12*		21-Nov-12	
FWC55120	Modified O&M Manuals for Wan Chai East	60	24	28-Feb-14	28-Apr-14	24-Mar-14	22-May-14
FWC55125	Submission of Modified Draft O&M Manuals for Wan Chai East	0	24		28-Apr-14		22-May-14
FWC55130	As-Built Drawings for Wan Chai East	60	24	28-Feb-14	28-Apr-14	24-Mar-14	22-May-14
FWC55140	FSD submission, application and inspection for Wan Chai East	60	0	24-Mar-14	22-May-14	24-Mar-14	22-May-14
FWC55150	Completion of the Works of Section 6	0	0		22-May-14		22-May-14
	Water Supply from WSD for Wan Chai East PTW						
	Key Dates						
FWC60000	Application for Water Connection	60	59	17-Sep-13	15-Nov-13	15-Nov-13	13-Jan-14
FWC60010	Inspection from representative of WSD	1	59	16-Nov-13	16-Nov-13	14-Jan-14	14-Jan-14
FWC60020	Release of Completion Certificate by WSD	7	59	17-Nov-13	23-Nov-13	15-Jan-14	21-Jan-14
FWC60030	Installation of Water Meter and Main line connection	7	59	24-Nov-13	30-Nov-13	22-Jan-14	28-Jan-14
	Works for Section 7						
	Central						
	Possession / Vacation of Portions						
FCT00250	ST2 approval for working in Area CTL-4	0	431	29-Jul-11		02-Oct-12	



Actual Work — Critical Remaining Work

Remaining Work — Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

DSD - HATSS2 Upgrading of PTW (DC/2009/23)

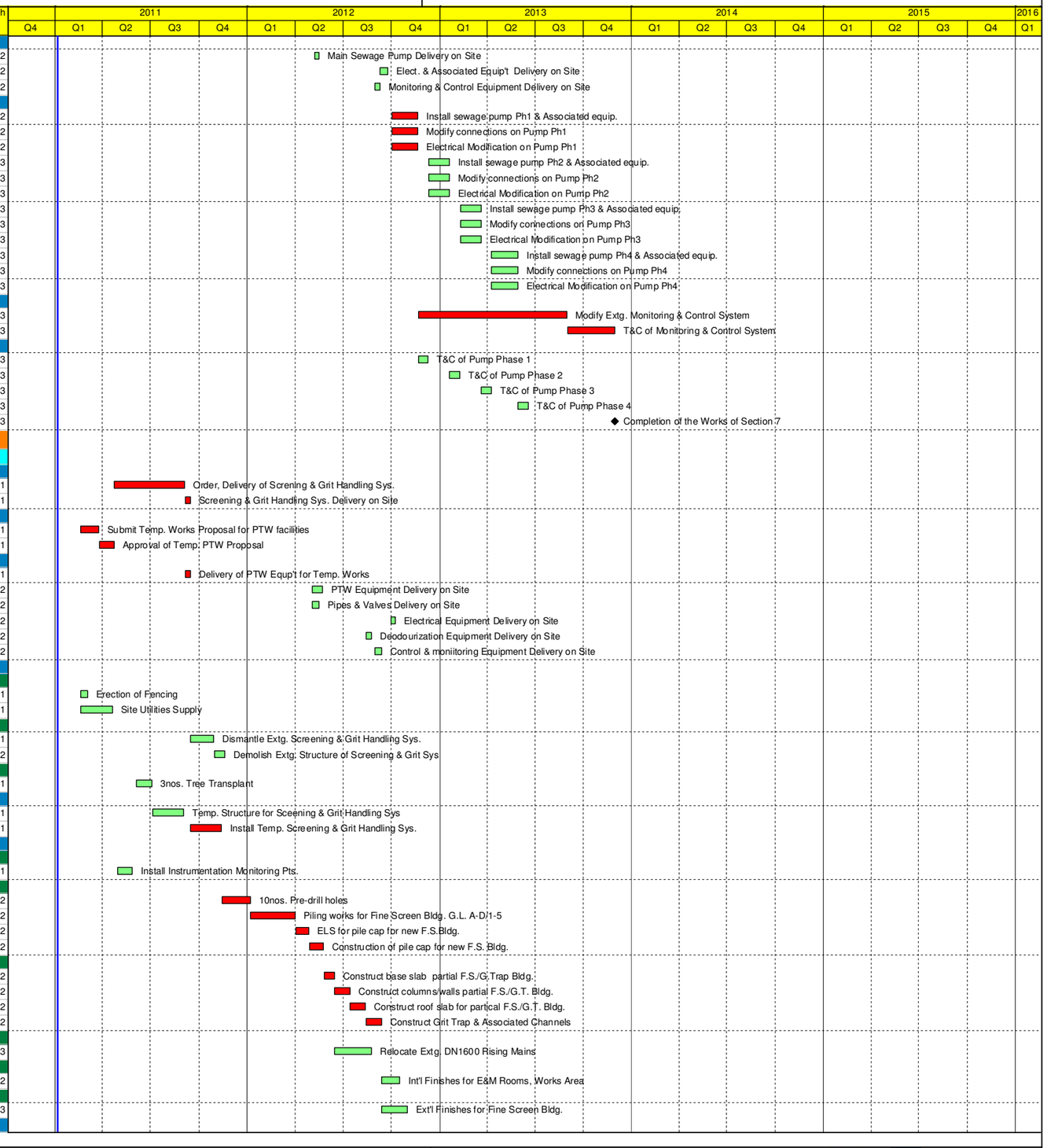
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
E&M Equipment / Material Delivery on Site-1							
FCT01100	Main Sewage Pump Delivery on Site	10	137	08-May-12	17-May-12	22-Sep-12	01-Oct-12
FCT01150	Elect. & Associated Equip't Delivery on Site	14	58	10-Sep-12	23-Sep-12	07-Nov-12	20-Nov-12
FCT01200	Monitoring & Control Equipment Delivery on Site	10	72	31-Aug-12	09-Sep-12	11-Nov-12	20-Nov-12
E&M Installation							
FCT03200	Install sewage pump Ph1 & Associated equip.	50	0	02-Oct-12*	20-Nov-12	02-Oct-12	20-Nov-12
FCT03210	Modify connections on Pump Ph1	50	0	02-Oct-12	20-Nov-12	02-Oct-12	20-Nov-12
FCT03211	Electrical Modification on Pump Ph1	50	0	02-Oct-12	20-Nov-12	02-Oct-12	20-Nov-12
FCT03230	Install sewage pump Ph2 & Associated equip.	40	164	11-Dec-12	19-Jan-13	24-May-13	02-Jul-13
FCT03235	Modify connections on Pump Ph2	40	164	11-Dec-12	19-Jan-13	24-May-13	02-Jul-13
FCT03236	Electrical Modification on Pump Ph2	40	164	11-Dec-12	19-Jan-13	24-May-13	02-Jul-13
FCT03240	Install sewage pump Ph3 & Associated equip.	40	164	09-Feb-13	20-Mar-13	23-Jul-13	31-Aug-13
FCT03241	Modify connections on Pump Ph3	40	164	09-Feb-13	20-Mar-13	23-Jul-13	31-Aug-13
FCT03242	Electrical Modification on Pump Ph3	40	164	09-Feb-13	20-Mar-13	23-Jul-13	31-Aug-13
FCT03245	Install sewage pump Ph4 & Associated equip.	50	164	10-Apr-13	29-May-13	21-Sep-13	09-Nov-13
FCT03250	Modify connections on Pump Ph4	50	164	10-Apr-13	29-May-13	21-Sep-13	09-Nov-13
FCT03251	Electrical Modification on Pump Ph4	50	164	10-Apr-13	29-May-13	21-Sep-13	09-Nov-13
Control and Monitoring System							
FCT04350	Modify Extg. Monitoring & Control System	284	0	21-Nov-12	31-Aug-13	21-Nov-12	31-Aug-13
FCT04400	T&C of Monitoring & Control System	90	0	01-Sep-13	29-Nov-13	01-Sep-13	29-Nov-13
Testing and Commissioning							
FCT05100	T&C of Pump Phase 1	20	164	21-Nov-12	10-Dec-12	04-May-13	23-May-13
FCT05110	T&C of Pump Phase 2	20	164	20-Jan-13	08-Feb-13	03-Jul-13	22-Jul-13
FCT05120	T&C of Pump Phase 3	20	164	21-Mar-13	09-Apr-13	01-Sep-13	20-Sep-13
FCT05130	T&C of Pump Phase 4	20	164	30-May-13	18-Jun-13	10-Nov-13	29-Nov-13
FCT05150	Completion of the Works of Section 7	0	0		29-Nov-13		29-Nov-13
Works for Section 8							
Central							
Order / Manufacturing / Shipment / Delivery							
FCT07400	Order, Delivery of Screning & Grit Handling Sys.	135	0	23-Apr-11	04-Sep-11	23-Apr-11	04-Sep-11
FCT07450	Screening & Grit Handling Sys. Delivery on Site	10	0	05-Sep-11	14-Sep-11	05-Sep-11	14-Sep-11
Statutory Submission / Approval / Inspection							
FCT07300	Submit Temp. Works Proposal for PTW facilities	35	0	19-Feb-11	25-Mar-11	19-Feb-11	25-Mar-11
FCT07350	Approval of Temp. PTW Proposal	28	0	26-Mar-11	22-Apr-11	26-Mar-11	22-Apr-11
E&M Equipment / Material Delivery on Site							
FCT06300	Delivery of PTW Equp't for Temp. Works	10	0	05-Sep-11	14-Sep-11	05-Sep-11	14-Sep-11
FCT06350	PTW Equipment Delivery on Site	21	112	03-May-12	23-May-12	23-Aug-12	12-Sep-12
FCT06400	Pipes & Valves Delivery on Site	14	119	03-May-12	16-May-12	30-Aug-12	12-Sep-12
FCT06450	Electrical Equipment Delivery on Site	10	13	30-Sep-12	09-Oct-12	13-Oct-12	22-Oct-12
FCT06500	Deodourization Equipment Delivery on Site	10	20	14-Aug-12	23-Aug-12	03-Sep-12	12-Sep-12
FCT06550	Control & moniitoring Equipment Delivery on Site	14	39	31-Aug-12	13-Sep-12	09-Oct-12	22-Oct-12
CTL-1 & CTL-2 Demolition / Modification Works							
Site Clearance & Prep. Works							
FCT07200	Erection of Fencing	14	75	19-Feb-11	04-Mar-11	05-May-11	18-May-11
FCT07210	Site Utilities Supply	60	75	19-Feb-11	19-Apr-11	05-May-11	03-Jul-11
Demolition Works							
FCT07550	Dismantle Extg. Screening & Grit Handling Sys.	45	15	15-Sep-11	29-Oct-11	30-Sep-11	13-Nov-11
FCT07650	Demolish Extg. Structure of Screening & Grit Sys	21	49	30-Oct-11	19-Nov-11	18-Dec-11	07-Jan-12
Transplantion, landscape works							
FCT07250	3nos. Tree Transplant	30	42	05-Jun-11	04-Jul-11	17-Jul-11	15-Aug-11
Temp. Works for Screening & Grit Handling							
FCT07700	Temp. Structure for Sceening & Grit Handling Sys	60	42	05-Jul-11	02-Sep-11	16-Aug-11	14-Oct-11
FCT07800	Install Temp. Screening & Grit Handling Sys.	60	0	15-Sep-11	13-Nov-11	15-Sep-11	13-Nov-11
Civil Works							
Geotechnical / Structural Monitoring							
FCT07810	Install Instrumentation Monitoring Pts.	28	50	30-Apr-11	27-May-11	19-Jun-11	16-Jul-11
Foundation Works							
FCT08050	10nos. Pre-drill holes	55	0	14-Nov-11	07-Jan-12	14-Nov-11	07-Jan-12
FCT08100	Piling works for Fine Screen Bldg. G.L. A-D/1-5	85	0	08-Jan-12	01-Apr-12	08-Jan-12	01-Apr-12
FCT08150	ELS for pile cap for new F.S.Bldg.	26	0	02-Apr-12	27-Apr-12	02-Apr-12	27-Apr-12
FCT08160	Construction of pile cap for new F.S. Bldg.	28	0	28-Apr-12	25-May-12	28-Apr-12	25-May-12
RC Structural Works							
FCT08250	Construct base slab partial F.S./G.Trap Bldg.	20	0	26-May-12	14-Jun-12	26-May-12	14-Jun-12
FCT08260	Construct columns/walls partial F.S./G.T. Bldg.	30	0	15-Jun-12	14-Jul-12	15-Jun-12	14-Jul-12
FCT08270	Construct roof slab for partical F.S./G.T. Bldg.	30	0	15-Jul-12	13-Aug-12	15-Jul-12	13-Aug-12
FCT08300	Construct Grit Trap & Associated Channels	30	0	14-Aug-12	12-Sep-12	14-Aug-12	12-Sep-12
Drainage Works							
FCT08350	Relocate Extg. DN1600 Rising Mains	70	160	15-Jun-12	23-Aug-12	22-Nov-12	30-Jan-13
Building Service Works							
FCT09300	Int'l Finishes for E&M Rooms, Works Area	35	5	13-Sep-12	17-Oct-12	18-Sep-12	22-Oct-12
Architectural Works							
FCT09350	Ext'l Finishes for Fine Screen Bldg.	50	140	13-Sep-12	01-Nov-12	31-Jan-13	21-Mar-13
Mechanical Installation							



Actual Work Critical Remaining Work

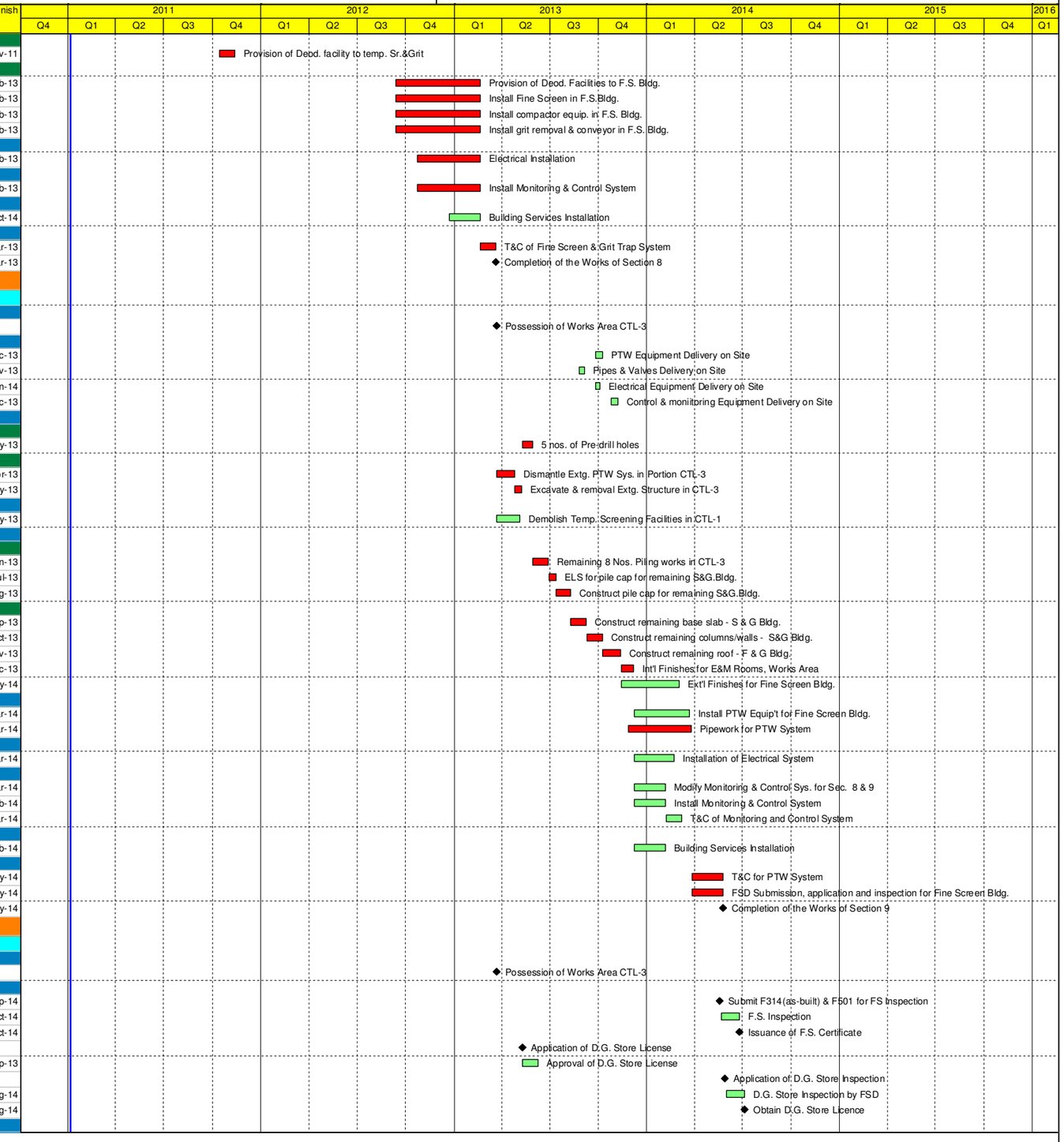
Remaining Work Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
	Electrical and Mechanical Works						
FCT10050	Provision of Deod. facility to temp. Sr.&Grit	30	0	15-Oct-11	13-Nov-11	15-Oct-11	13-Nov-11
	Other Works						
FCT07850	Provision of Deod. Facilities to F.S. Bldg.	160	0	13-Sep-12	19-Feb-13	13-Sep-12	19-Feb-13
FCT10100	Install Fine Screen in F.S.Bldg.	160	0	13-Sep-12	19-Feb-13	13-Sep-12	19-Feb-13
FCT10110	Install compactor equip. in F.S. Bldg.	160	0	13-Sep-12	19-Feb-13	13-Sep-12	19-Feb-13
FCT10120	Install grit removal & conveyor in F.S. Bldg.	160	0	13-Sep-12	19-Feb-13	13-Sep-12	19-Feb-13
	Electrical Installation						
FCT11110	Electrical Installation	120	0	23-Oct-12	19-Feb-13	23-Oct-12	19-Feb-13
	Control and Monitoring System						
FCT12100	Install Monitoring & Control System	120	0	23-Oct-12	19-Feb-13	23-Oct-12	19-Feb-13
	Building Service Installation						
FCT13100	Building Services Installation	60	617	22-Dec-12	19-Feb-13	31-Aug-14	29-Oct-14
	Testing and Commissioning						
FCT14100	T&C of Fine Screen & Grit Trap System	30	0	20-Feb-13	21-Mar-13	20-Feb-13	21-Mar-13
FCT14150	Completion of the Works of Section 8	0	0		21-Mar-13		21-Mar-13
	Works for Section 9						
	Central						
	Possession / Vacation of Portions						
FCT16150	Possession of Works Area CTL-3	0	0	22-Mar-13		22-Mar-13	
	E&M Equipment / Material Delivery on Site						
FCT19100	PTW Equipment Delivery on Site	14	64	25-Sep-13	08-Oct-13	28-Nov-13	11-Dec-13
FCT19150	Pipes & Valves Delivery on Site	10	83	26-Aug-13	04-Sep-13	17-Nov-13	26-Nov-13
FCT19200	Electrical Equipment Delivery on Site	10	98	25-Sep-13	04-Oct-13	01-Jan-14	10-Jan-14
FCT19250	Control & monitoring Equipment Delivery on Site	14	49	25-Oct-13	07-Nov-13	13-Dec-13	26-Dec-13
	CTL-3 Demolition / Modification Works						
	Site Investigation						
FCT20460	5 nos. of Pre-drill holes	20	0	10-May-13	29-May-13	10-May-13	29-May-13
	Other Works						
FCT20400	Dismantle Extg. PTW Sys. in Portion CTL-3	35	0	22-Mar-13	25-Apr-13	22-Mar-13	25-Apr-13
FCT20450	Excavate & removal Extg. Structure in CTL-3	14	0	26-Apr-13	09-May-13	26-Apr-13	09-May-13
	Temp. Works for Screening & Grit Handling						
FCT21300	Demolish Temp. Screening Facilities in CTL-1	45	24	22-Mar-13	05-May-13	15-Apr-13	29-May-13
	Civil Works						
	Foundation Works						
FCT21500	Remaining 8 Nos. Piling works in CTL-3	30	0	30-May-13	28-Jun-13	30-May-13	28-Jun-13
FCT21700	ELS for pile cap for remaining S&G.Bldg.	14	0	29-Jun-13	12-Jul-13	29-Jun-13	12-Jul-13
FCT21710	Construct pile cap for remaining S&G.Bldg.	28	0	13-Jul-13	09-Aug-13	13-Jul-13	09-Aug-13
	Other Works						
FCT21800	Construct remaining base slab - S & G Bldg.	30	0	10-Aug-13	08-Sep-13	10-Aug-13	08-Sep-13
FCT21810	Construct remaining columns/walls - S&G Bldg.	30	0	09-Sep-13	08-Oct-13	09-Sep-13	08-Oct-13
FCT21820	Construct remaining roof - F & G Bldg.	35	0	09-Oct-13	12-Nov-13	09-Oct-13	12-Nov-13
FCT30100	Int'l Finishes for E&M Rooms, Works Area	25	0	13-Nov-13	07-Dec-13	13-Nov-13	07-Dec-13
FCT30500	Ext'l Finishes for Fine Screen Bldg.	110	84	13-Nov-13	02-Mar-14	05-Feb-14	25-May-14
	Mechanical Installation						
FCT32100	Install PTW Equip't for Fine Screen Bldg.	105	4	08-Dec-13	22-Mar-14	12-Dec-13	26-Mar-14
FCT32200	Pipework for PTW System	120	0	27-Nov-13	26-Mar-14	27-Nov-13	26-Mar-14
	Electrical Installation						
FCT33100	Installation of Electrical System	75	34	08-Dec-13	20-Feb-14	11-Jan-14	26-Mar-14
	Control and Monitoring System						
FCT34100	Modify Monitoring & Control Sys. for Sec. 8 & 9	60	49	08-Dec-13	05-Feb-14	26-Jan-14	26-Mar-14
FCT34200	Install Monitoring & Control System	60	19	08-Dec-13	05-Feb-14	27-Dec-13	24-Feb-14
FCT34300	T&C of Monitoring and Control System	30	19	06-Feb-14	07-Mar-14	25-Feb-14	26-Mar-14
	Building Services Installation						
FCT35100	Building Services Installation	60	19	08-Dec-13	05-Feb-14	27-Dec-13	24-Feb-14
	Testing and Commissioning						
FCT36100	T&C for PTW System	60	0	27-Mar-14	25-May-14	27-Mar-14	25-May-14
FCT36110	FSD Submission, application and inspection for Fine Screen Bldg.	60	0	27-Mar-14	25-May-14	27-Mar-14	25-May-14
FCT36200	Completion of the Works of Section 9	0	0		25-May-14		25-May-14
	Works for Section 10						
	Central						
	Possession / Vacation of Portions						
FCT40200	Possession of Works Area CTL-3	0	0	22-Mar-13		22-Mar-13	
	Statutory Submission / Approval / Inspections						
FCT40550	Submit F314(as-built) & F501 for FS Inspection	0	127		18-May-14		22-Sep-14
FCT40600	F.S. Inspection	35	127	21-May-14	24-Jun-14	25-Sep-14	29-Oct-14
FCT40650	Issuance of F.S. Certificate	0	127		24-Jun-14		29-Oct-14
FCT40700	Application of D.G. Store License	0	109	10-May-13		27-Aug-13	
FCT40710	Approval of D.G. Store License	30	109	10-May-13	08-Jun-13	27-Aug-13	25-Sep-13
FCT40800	Application of D.G. Store Inspection	0	32	29-May-14		30-Jun-14	
FCT40850	D.G. Store Inspection by FSD	35	32	31-May-14	04-Jul-14	02-Jul-14	05-Aug-14
FCT40900	Obtain D.G. Store Licence	0	32		04-Jul-14		05-Aug-14
	E&M Equipment / Material Delivery on Site						



DSD - HATSS2 Upgrading of PTW (DC/2009/23)

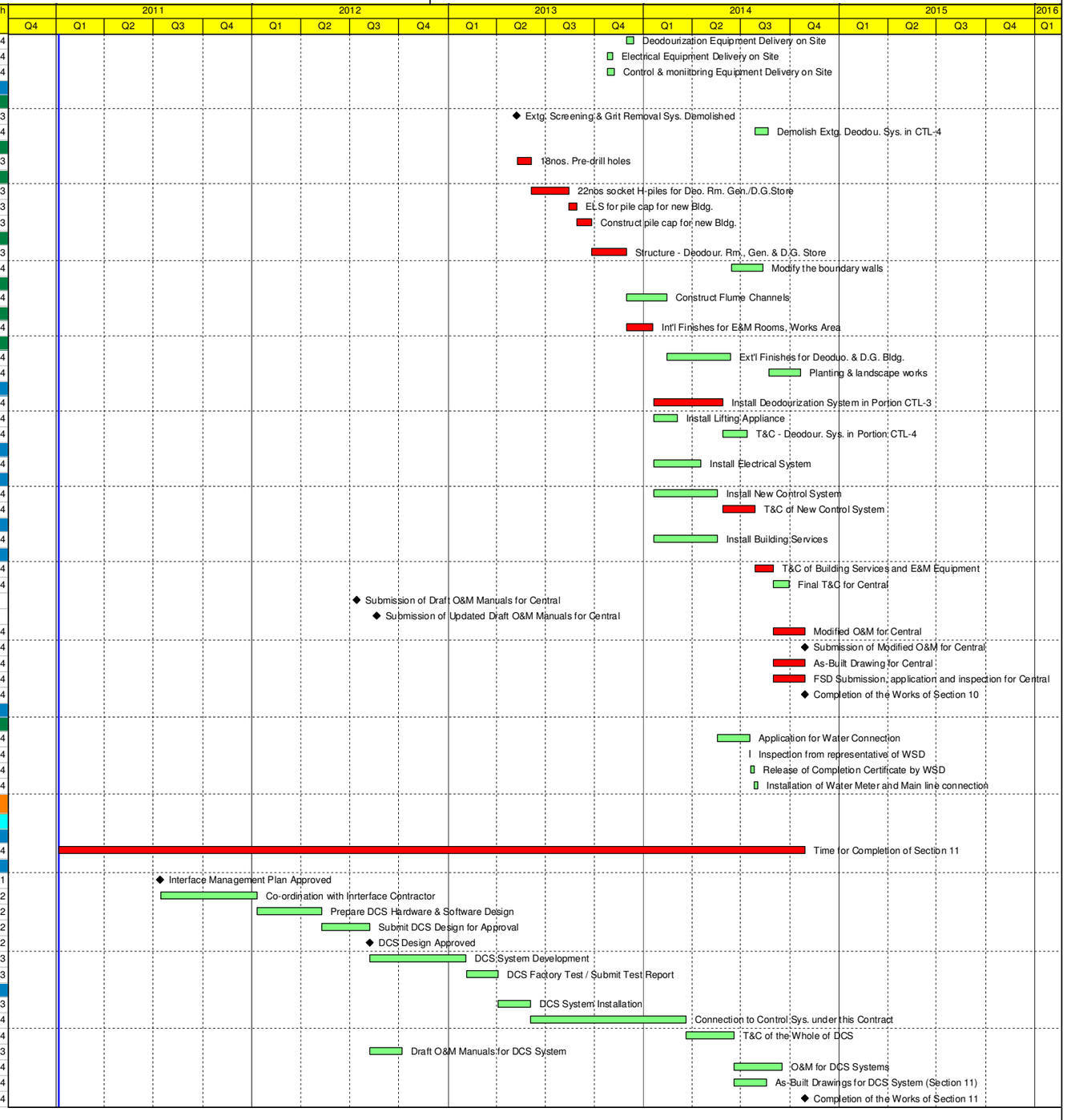
LEADER - JEC JV

Clause 16 Programme for DC/2009/23 -Rev2

Start Date : 30-Dec-10; Finish Date : 29-Oct-14

Data Date : 06-Jan-11; Run Date : 07-May-11

Activity ID	Activity Name	Original Duration	Total Float	Early Start	Early Finish	Late Start	Late Finish
FCT41100	Deodourization Equipment Delivery on Site	14	36	30-Nov-13	13-Dec-13	05-Jan-14	18-Jan-14
FCT41200	Electrical Equipment Delivery on Site	10	140	25-Oct-13	03-Nov-13	14-Mar-14	23-Mar-14
FCT41300	Control & monitoring Equipment Delivery on Site	14	82	25-Oct-13	07-Nov-13	15-Jan-14	28-Jan-14
Civil Works							
Demolition Works							
FCT42100	Extg. Screening & Grit Removal Sys. Demolished	0	0		09-May-13		09-May-13
FCT43550	Demolish Extg. Deodou. Sys. in CTL-4	25	9	28-Jul-14	21-Aug-14	06-Aug-14	30-Aug-14
Site Investigation							
FCT42110	18nos. Pre-drill holes	27	0	10-May-13	05-Jun-13	10-May-13	05-Jun-13
Foundation Works							
FCT42200	22nos socket H-piles for Deo. Rm. Gen./D.G.Store	70	0	06-Jun-13	14-Aug-13	06-Jun-13	14-Aug-13
FCT42300	ELS for pile cap for new Bldg.	14	0	15-Aug-13	28-Aug-13	15-Aug-13	28-Aug-13
FCT42310	Construct pile cap for new Bldg.	28	0	29-Aug-13	25-Sep-13	29-Aug-13	25-Sep-13
RC Structural Works							
FCT42400	Structure - Deodour. Rm., Gen. & D.G. Store	65	0	26-Sep-13	29-Nov-13	26-Sep-13	29-Nov-13
FCT42710	Modify the boundary walls	60	19	13-Jun-14	11-Aug-14	02-Jul-14	30-Aug-14
Drainage Works							
FCT42500	Construct Flume Channels	75	19	30-Nov-13	12-Feb-14	19-Dec-13	03-Mar-14
Building Service Works							
FCT42600	Int'l Finishes for E&M Rooms, Works Area	50	0	30-Nov-13	18-Jan-14	30-Nov-13	18-Jan-14
Architectural Works							
FCT42700	Ext'l Finishes for Deoduo. & D.G. Bldg.	120	19	13-Feb-14	12-Jun-14	04-Mar-14	01-Jul-14
FCT42720	Planting & landscape works	60	9	22-Aug-14	20-Oct-14	31-Aug-14	29-Oct-14
Mechanical Installation							
FCT43100	Install Deodourization System in Portion CTL-3	130	0	19-Jan-14	28-May-14	19-Jan-14	28-May-14
FCT43200	Install Lifting Appliance	45	145	19-Jan-14	04-Mar-14	13-Jun-14	27-Jul-14
FCT43500	T&C - Deodour. Sys. in Portion CTL-4	45	24	29-May-14	12-Jul-14	22-Jun-14	05-Aug-14
Electrical Installation							
FCT44100	Install Electrical System	90	64	19-Jan-14	18-Apr-14	24-Mar-14	21-Jun-14
Control and Monitoring System							
FCT45100	Install New Control System	120	10	19-Jan-14	18-May-14	29-Jan-14	28-May-14
FCT45150	T&C of New Control System	60	0	29-May-14	27-Jul-14	29-May-14	27-Jul-14
Building Services Installation							
FCT46100	Install Building Services	120	59	19-Jan-14	18-May-14	19-Mar-14	16-Jul-14
Testing and Commissioning							
FCT47100	T&C of Building Services and E&M Equipment	34	0	28-Jul-14	30-Aug-14	28-Jul-14	30-Aug-14
FCT47110	Final T&C for Central	30	30	31-Aug-14	29-Sep-14	30-Sep-14	29-Oct-14
FCT47115	Submission of Draft O&M Manuals for Central	0	0	15-Jul-12*		14-Jul-12	
FCT47116	Submission of Updated Draft O&M Manuals for Central	0	0	21-Aug-12*		21-Aug-12	
FCT47120	Modified O&M for Central	60	0	31-Aug-14	29-Oct-14	31-Aug-14	29-Oct-14
FCT47125	Submission of Modified O&M for Central	0	0		29-Oct-14		29-Oct-14
FCT47130	As-Built Drawing for Central	60	0	31-Aug-14	29-Oct-14	31-Aug-14	29-Oct-14
FCT47140	FSD Submission, application and inspection for Central	60	0	31-Aug-14	29-Oct-14	31-Aug-14	29-Oct-14
FCT47150	Completion of the Works of Section 10	0	0		29-Oct-14		29-Oct-14
Water supply from WSD for Central PTW							
Key Dates							
FCT50000	Application for Water Connection	60	59	19-May-14	17-Jul-14	17-Jul-14	14-Sep-14
FCT50010	Inspection from representative of WSD	1	59	18-Jul-14	18-Jul-14	15-Sep-14	15-Sep-14
FCT50020	Release of Completion Certificate by WSD	7	59	19-Jul-14	25-Jul-14	16-Sep-14	22-Sep-14
FCT50030	Installation of Water Meter and Main line connection	7	59	26-Jul-14	01-Aug-14	23-Sep-14	29-Sep-14
Works for Section 11							
SCISTW							
Time for Completion							
FCT50100	Time for Completion of Section 11	1393	0	06-Jan-11	29-Oct-14	06-Jan-11	29-Oct-14
DCS Design Development							
FCT51000	Interface Management Plan Approved	0	43		14-Jul-11		26-Aug-11
FCT51100	Co-ordination with Inrterface Contractor	180	43	15-Jul-11	10-Jan-12	27-Aug-11	22-Feb-12
FCT52000	Prepare DCS Hardware & Software Design	120	43	11-Jan-12	09-May-12	23-Feb-12	21-Jun-12
FCT52050	Submit DCS Design for Approval	90	43	10-May-12	07-Aug-12	22-Jun-12	19-Sep-12
FCT52150	DCS Design Approved	0	43		07-Aug-12		19-Sep-12
FCT52200	DCS System Development	180	43	08-Aug-12	03-Feb-13	20-Sep-12	18-Mar-13
FCT52250	DCS Factory Test / Submit Test Report	60	43	04-Feb-13	04-Apr-13	19-Mar-13	17-May-13
DCS Installation							
FCT53300	DCS System Installation	60	43	05-Apr-13	03-Jun-13	18-May-13	16-Jul-13
FCT53350	Connection to Control Sys. under this Contract	290	43	04-Jun-13	20-Mar-14	17-Jul-13	02-May-14
FCT53400	T&C of the Whole of DCS	90	43	21-Mar-14	18-Jun-14	03-May-14	31-Jul-14
FCT53405	Draft O&M Manuals for DCS System	60	223	08-Aug-12	06-Oct-12	19-Mar-13	17-May-13
FCT53410	O&M for DCS Systems	90	43	19-Jun-14	16-Sep-14	01-Aug-14	29-Oct-14
FCT53420	As-Built Drawings for DCS System (Section 11)	60	73	19-Jun-14	17-Aug-14	31-Aug-14	29-Oct-14
FCT53450	Completion of the Works of Section 11	0	0		29-Oct-14*		29-Oct-14



Actual Work Critical Remaining Work

Remaining Work Milestone

TASK filter: Clause 16 Programme.

ARUP

LEADER JEC