Dragages-Nishimatsu Joint Venture

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel

Monthly EM&A Report

(version 2.0)

January 2009

Approved By

(Environmental Team Leader)

REMARKS:

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

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
CEDD	Civil Engineering & Development Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
TSP	Total Suspended Particulates
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

EXECUTIVE SUMMARY

Introduction

1. This is the 10th Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the "Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel" (the Project). This report documents the findings of EM&A Works conducted in January 2009.

2. The site activities undertaken in the reporting month included:

- Further establishment of project organization and staffing;
- Initial tunnel excavation, construction of intake cofferdam & River Channel and installation of temporary facilities at Eastern Portal;
- Arch tunnel excavation, shallow & deep excavation works, base slab construction and installation of temporary facilities at Western Portal;
- Ground Investigation (GI) works at Intake SM1;
- Approved in Principle (AIP) & Detailed Design Approval (DDA) submissions for temporary works at both portals;
- AIP & DDA submissions for temporary and permanent works for 32 nos. Intakes;
- AIP & DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays;
- Environmental impact monitoring; and
- TBM fabrication; delivery, inland transportation and assembly planning.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the updated EM&A Manual and 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

Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
Eastern Portal					
1-hr TSP	0	0	0	0	N/A
24-hr TSP	0	0	0	0	N/A
Noise	0	0	0	0	N/A
Western Portal					
1-hr TSP	0	0	0	0	N/A
24-hr TSP	0	0	0	0	N/A
Noise	0	0	0	0	N/A
Water	0	0	0	0	N/A

Eastern Portal

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 1-hour TSP monitoring was conducted as scheduled in the reporting month except the 24-hour TSP monitoring on 30 January 2009 at AQ1 was cancelled due to True Light Middle School of Hong Kong was closed. No Action/Limit Level exceedance was recorded.

Construction Noise

7. All construction noise monitoring was conducted as scheduled in the reporting month except the noise monitoring on 30 January 2009 at NC1 was cancelled due to True Light Middle School of Hong Kong was closed. No Action/Limit Level exceedance was recorded.

Western Portal

1-hour TSP Monitoring

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

24-hour TSP Monitoring

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

Construction Noise

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

Water Quality

11. All water quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

12. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, An Environmental Permit No. EP-272/2007 was issued on 26 April 2007 and Environmental Permit No. EP-272/2007/A was issue on 26 October 2007. Later, the further Environmental Permit (FEP-01/272/2007/A) was issued on 28 January 2008 to Dragages-Nishimatsu Joint Venture as the Permit Holder.

13. Registration of Chemical Waste Producer (License: 5213-148-D2393-02 for Eastern Portal and No. 5213-172-D2393-01 for Western Portal), Water Discharge License (License No.: EP860/W10/XY0175 for Area of Mount Butler Office, EP860/W10/XY0177 for Eastern Portal, EP820/W9/XT086 for Western Portal and EP680/W10/XY0183 for Intake W0) and Construction Noise Permit (License No.: GW-RS0035-09 for Eastern Portal and GW-RS0894-08 for Western Portal).

Key Information in the Reporting Month

14. 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	1	Water Quality at Western Portal	Muddy Water Discharged into Sea at Western Portal (Investigation report was submitted)	Under reviewed by IEC	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	2	Monthly EM&A Report (December 08) Baseline Noise Monitoring Report for Intakes (Part II)	Submitted to EPD on 15 January 2009 (EP condition 3.3) Submitted to EPD on 20 January 2009 (EP condition 3.2)	Verified by IEC	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---
Future Key Issues:					
Major site activities for the coming month include: • Tunnel excavation by blasting method, intake cofferdam and temporary cofferdam for River Channel at Eastern Portal; • Tunnel excavation by mechanical method, shallow and deep excavation and base slab construction at Western Portal; • Preliminary works, preparation works and temporary cofferdam at Intake W0; • Utilities trial pits and additional site investigation works at available intakes; • Casting of tunnel segments in China; • Test and disassembly in factory of West TBM; and • Assembly in factory of East TBM.					

1. INTRODUCTION

Background

1.1 Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel is a Designated Project (hereafter referred to as "the Project") under the Environmental Impact Assessment Ordinance (Cap. 449). A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, ecological, construction waste, landscape and visual, land use, cultural impacts, and identify possible mitigation measures associated with the works. An EIA Report was approved by the Environmental Protection Department (EPD) on 7 April 2006.

1.2 The project comprises the construction of a drainage tunnel deep into the ground in Mid-levels of the Northern Hong Kong Island from Tai Hang to Pokfulam to intercept and convey the stormwater from the upper catchment directly to the sea near Cyberport. The Drainage tunnel alignment starts from the Eastern Portal near Haw Par Mansion in Tai Hang and ends at the Western Portal located to the north of Cyberport running underneath the Pok Fu Lam, Tai Tam, Aberdeen and Lung Fu Shan Country Parks. The underground main drainage tunnel is 6.25m-7.25m in diameter and about 11km long. Two portals and a series of connecting adits and drop shafts are also been constructed. The general layout of the Project is shown in **Figure 1.1**.

1.3 An Environmental Permit (EP) No. EP-272/2007 was issued on 26 April 2007 for Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel to Drainage Services Department as the Permit Holder. Later, the further Environmental Permit (FEP-01/272/2007/A) was issued on 28 January 2008 to Dragages-Nishimatsu Joint Venture as the Permit Holder.

1.4 Cinotech Consultants Limited was commissioned by the Dragages-Nishimatsu Joint Venture (the Contractor) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. The Updated EM&A Manual was prepared by Cinotech to fulfill the requirements of the EP. The construction commencement of this Contract at Eastern Portal was on 17th April 2008 and 2nd May 2008 at Western Portal (land-based). The marine construction works was commenced on 30 May 2008. This is the 10th monthly EM&A report summarizing the EM&A works for the Project in January 2009 at Eastern and Western Portals.

Project Organizations

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

- Project Proponent – Drainage Services Department (DSD).
- The Supervising Officer or Supervising Officer's Representative (SO or SOR) – Ove Arup & Partners (ARUP).
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – Allied Environmental Consultants Limited (AEC).
- Contractor - Dragages-Nishimatsu Joint Venture (DNJV).

1.6 The responsibilities of respective parties are detailed in Sections 1.14 to 1.28 of the updated EM&A Manual of the Project.

1.7 The key contacts of the Project are shown in Table 1.1 and the organization chart of ET is shown in **Figure 2.1**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
DNJV	Permit Holder	Mr. ALTIER Daniel	Project Manager	2671 7333	2671 9300
		Mr. UETAKE H.	Deputy Project Manager		
ARUP	Supervising Officer	Mr. Ted Tang	CRE	6117 6639	2436 1012
		Mr. Jackson Wong	SRE	6117 6636	
		Mr. Alan Ng	RE	9668 8350	
		Mr. Bernard Cheng	RE	98614939	
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089	3107 1388
		Mr. Alex Ngai	Project Coordinator	2151 2076	
		Ms. Ivy Tam	Audit Team Leader	2151 2095	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
AEC	Independent Environmental Checker	Ms. Claudine Lee	Independent Environmental Checker	2815 7028	2815 5399
DNJV	Contractor	Mr. Ben Ho	Environmental Officer	2671 7333	2671 9300

Construction Programme

1.8 The site activities undertaken in the reporting month included:

- Further establishment of project organization and staffing;
- Initial tunnel excavation, construction of intake cofferdam & River Channel and installation of temporary facilities at Eastern Portal;
- Arch tunnel excavation, shallow & deep excavation works, base slab construction and installation of temporary facilities at Western Portal;
- Ground Investigation (GI) works at Intake SM1;
- Approved in Principle (AIP) & Detailed Design Approval (DDA) submissions for temporary works at both portals;

- AIP & DDA submissions for temporary and permanent works for 32 nos. Intakes;
- AIP & DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays;
- Environmental impact monitoring; and
- TBM fabrication; delivery, inland transportation and assembly planning.

Table 1.2 Construction programme showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Major Environmental Impact	Control Measures
Further establishment of project organization and staffing	Nil	Nil
Initial tunnel excavation, construction of intake cofferdam & River Channel and installation of temporary facilities at Eastern Portal	Noise, dust impact, water quality and waste generation	Provided water spraying during excavation works On-site waste sorting and implementation of trip ticket system Appropriate desilting/sedimentation devices provided on site for treatment before discharge
Arch tunnel excavation, shallow & deep excavation works, base slab construction and installation of temporary facilities at Western Portal	Noise, dust impact and waste generation	Provided water spraying during excavation works On-site waste sorting and implementation of trip ticket system
Ground Investigation (GI) works at Intake SM1	Noise, dust impact, water quality and waste generation	Provided water spraying on exposed surfaces On-site waste sorting Appropriate water recycling tank provided on site
Approved in Principle (AIP) & Detailed Design Approval (DDA) submissions for temporary works at both portals	Nil	Nil
AIP & DDA submissions for temporary and permanent works for 32 nos. Intakes	Nil	Nil
AIP & DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays	Nil	Nil
Environmental impact monitoring	Nil	Nil
TBM fabrication; delivery, inland transportation and assembly planning	Noise Impact and ground water	Double-shielded Tunnel Boring Machine to minimize seepage of groundwater

Summary of EM&A Requirements

1.9 The EM&A programme requires construction phase monitoring construction noise, air quality and water quality 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 5 of this report.

1.11 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality, water quality and noise levels and audit works for the Project in January 2009.

2. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

2.2 Three designated monitoring stations, AQ1, AQ2 and AQ3 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in **Figure 3.1a-b.**

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations
AQ1	True Light Middle School of Hong Kong
AQ2	Outside Aegean Terrace
AQ3	Outside The Site Office at Western Portal

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

Equipment	Model and Make	Quantity
Calibrator	G25A; S/N: 1536	1
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD3	1
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	2

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 month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.

- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

2.16 After sampling, the filter was removed and sent to the HOKLAS laboratory (Wellab Ltd.) for weighing. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

Eastern Portal (AQ1)

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

2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting month except the 24-hour TSP monitoring on 30 January 2009 was cancelled due to True Light Middle School of Hong Kong was closed. No Action/Limit Level exceedance was recorded.

Western Portal (AQ2)

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

Western Portal (AQ3)

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

2.23 Wind data was obtained from the Meteorological Observations for King's Park Automatic Weather Station for Eastern Portal and Wong Chuk Hang Automatic Weather Station for Western Portal. These wind data for the reporting period is summarized in **Appendix J.**

2.24 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.25 In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/WestDrainageTunnel/.

2.26 According to our field observations, the identified dust sources at the monitoring stations were mainly from the rock breaking inside the tunnel, excavation works, loading/unloading activities and the road traffic for Eastern and Western Portals.

Table 2.4 Summary Table of Air Quality Monitoring Results during the reporting month

Parameter	Date	Concentration (µg/m3)	Action Level, µg/m3	Limit Level, µg/m3
Eastern Portal				
1-hr TSP (AQ1)	2-Jan-09	201.6	345	500
	5-Jan-09	217.0		
	8-Jan-09	163.6		
	9-Jan-09	190.0		
	13-Jan-09	227.4		
	15-Jan-09	221.9		
	16-Jan-09	99.0		
	20-Jan-09	114.8		
	21-Jan-09	176.9		
	22-Jan-09	132.8		
	29-Jan-09	229.7		
	30-Jan-09	182.5		
24-hr TSP (AQ1)	2-Jan-09	145.9	201	260
	8-Jan-09	98.3		
	14-Jan-09	159.2		
	20-Jan-09	71.1		
	24-Jan-09	130.9		
Western Portal				
1-hr TSP (AQ2)	2-Jan-09	55.0	321	500
	5-Jan-09	50.3		
	8-Jan-09	56.5		
	9-Jan-09	43.6		
	13-Jan-09	46.4		
	15-Jan-09	56.0		
	16-Jan-09	51.4		
	20-Jan-09	43.1		
	21-Jan-09	48.8		
	22-Jan-09	66.0		
	29-Jan-09	42.8		
	30-Jan-09	46.8		
24-hr TSP (AQ3)	2-Jan-09	105.9	156	260
	8-Jan-09	141.7		
	14-Jan-09	144.9		
	20-Jan-09	105.9		
	24-Jan-09	64.0		
	30-Jan-09	100.9		

3. NOISE

Monitoring Requirements

3.1 Three noise monitoring stations, namely NC1, NC2 and NC3 were selected 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. **Figure 3.1a-b** shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations
NC1/NC1a	True Light Middle School of Hong Kong/Outside True Light Middle School of Hong Kong
NC2	The Legend
NC3	Outside Aegean Terrace

Monitoring Equipment

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

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	3
Calibrator	B&K 4231	2

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 D.**

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
NC1 NC2 NC3	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade
NC1a NC2 NC3	L_{eq}(5 min.) dB(A) L_{90}(5 min.) dB(A) L_{eq}(5 min.) dB(A)	1900 - 2300 hrs on all other days		
		0700 - 2300 hrs holidays & 2300 – 0700 hrs of next day		

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

3.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

3.8 Noise monitoring (0700-1900 hrs on normal weekdays, 1900-2300 hrs on all other days, 2300-0700 hrs of next day and 0700-1900 hrs on holidays) at the three designated locations (NC1/NC1a (for restricted hours), NC2 and NC3) was conducted as scheduled in the reporting month except the noise monitoring (0700-1900 hrs) on 30 January 2009 was cancelled due to True Light Middle School of Hong Kong was closed.

3.9 As noise monitoring for evening time inside the True Light Middle School of Hong Kong (NC1) throughout the construction period will cause disturbance to them. Thus, the noise monitoring for evening time will be conducted at outside the school (NC1a) at the nearest of the staff accommodation. As no baseline noise monitoring has been conducted at NC1a and the major noise source was the traffic noise along Tai Hang Road. The noise monitoring results will be adjusted with the reference baseline noise level at NC1 (1900-2300 on all other days and 0700 - 2300 hrs holidays & 2300 – 0700 hrs of next day) and will be used as reference only.

Eastern Portal (NC1 & NC2) - 0700-1900 hrs on normal weekdays

3.10 No Action/Limit Level exceedance was recorded.

Eastern Portal (NC1a & NC2) - 1900-2300 hrs on all other days and 0700-2300 hrs on holidays

3.11 No Action/Limit Level exceedance was recorded.

Eastern Portal (NC1a & NC2) - 2300-0700 hrs of next day

3.12 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) - 0700-1900 hrs on normal weekdays

3.13 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) - 1900-2300 hrs on all other days and 0700-2300 hrs on holidays

3.14 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) – 2300-0700 hrs of next day

3.15 No Action/Limit Level exceedance was recorded.

3.16 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = Measured CNL), in order to facilitate the interpretation of the noise exceedance. The baseline noise level and the

Noise Limit Level at each designated noise monitoring station are presented at Table 3.4.

3.17 Noise monitoring results and graphical presentations are shown in **Appendix G**. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/WestDrainageTunnel/.

3.18 The major noise source identified at the designated noise monitoring stations was the traffic noise, rock breaking inside the tunnel, loading/unloading activities and excavation works for Eastern Portal and Western Portal.

Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Station	Baseline Noise Level, dB (A)	Noise Limit Level, dB (A)
NC1 – True Light Middle School of Hong Kong	70.2 (at 0700 – 1900 hrs on normal weekdays)	70* (at 0700 – 1900 hrs on normal weekdays)
NC1a – Outside True Light Middle School of Hong Kong (the nearest of staff accommodation)	65.8 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days) 60.7 (at 2300 – 0700 hrs of next day) **(reference)**	65 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days) 50 (at 2300 – 0700 hrs of next day)
NC2 – The Legend	64.8 (at 0700 – 1900 hrs on normal weekdays) 59.1 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days) 53.9 (at 2300 – 0700 hrs of next day)	75 (at 0700 – 1900 hrs on normal weekdays) 65 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days) 50 (at 2300 – 0700 hrs of next day)
NC3 – Outside Aegean Terrace	57.7 (at 0700 – 1900 hrs on normal weekdays) 53.8 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days) 52.0 (at 2300 – 0700 hrs of next day)	

(*) reduce to 65 dB(A) during school examination periods.

Table 3.5 Summary Table of Noise Monitoring Results during the Reporting Month

Parameter	Date	Construction Noise Level : Leq(30min) dB (A)	Action Level	Limit Level,
Eastern Portal				
NC1	2-Jan-09	66.5, Measured ≦ Baseline	When one documented complaint is received	70*dB(A)
	9-Jan-09	66.1, Measured ≦ Baseline		
	16-Jan-09	67.2, Measured ≦ Baseline		
	22-Jan-09	69.3, Measured ≦ Baseline		
NC2	2-Jan-09	61.0		75dB(A)
	9-Jan-09	62.2		
	16-Jan-09	61.0		
	22-Jan-09	65.5		
	30-Jan-09	63.9		
Western Portal				
NC3	2-Jan-09	55.6	When one documented complaint is received	75dB(A)
	9-Jan-09	57.9		
	16-Jan-09	58.8		
	22-Jan-09	58.4		
	30-Jan-09	55.4		
(Restricted Hours - 07:00 - 23:00 hrs holidays & 19:00 - 23:00 hrs on all other days)				
Parameter	**Date**	**Construction Noise Level : Leq(5min) dB (A)**	**Action Level**	**Limit Level,**
Eastern Portal				
NC1a (Reference)	2-Jan-09	64.0	When one documented complaint is received	65dB(A)
	9-Jan-09	61.6		
	11-Jan-09	60.7, Measured ≦ Baseline		
	16-Jan-09	64.2		
	22-Jan-09	64.0		
	30-Jan-09	64.7		
NC2	2-Jan-09	62.3		
	9-Jan-09	61.2		
	11-Jan-09	64.4		
	16-Jan-09	61.1		
	22-Jan-09	61.4		
	30-Jan-09	57.5, Measured ≦ Baseline		
Western Portal				
NC3	2-Jan-09	51.7	When one documented complaint is received	65dB(A)
	4-Jan-09	46.9		
	9-Jan-09	51.7		
	11-Jan-09	56.1		
	16-Jan-09	50.0		
	18-Jan-09	57.0		
	22-Jan-09	49.6		
	25-Jan-09	55.8		
	30-Jan-09	49.1, Measured ≦ Baseline		

(Restricted Hours – 23:00 – 07:00 hrs of next day)				
Eastern Portal				
NC1a (Reference)	16-Jan-09	44.4	When one documented complaint is received	50dB(A)
	22-Jan-09	59.6, Measured ≦ Baseline		
	30-Jan-09	60.3, Measured ≦ Baseline		
NC2	16-Jan-09	45.6		
	22-Jan-09	37.6		
	30-Jan-09	53.4, Measured ≦ Baseline		
Western Portal				
NC3	9-Jan-09	48.8	When one documented complaint is received	50dB(A)
	17-Jan-09	45.1		
	23-Jan-09	43.7		
	31-Jan-09	49.7, Measured ≦ Baseline		

(*) reduce to 65 dB(A) during school examination periods.

4. WATER QUALITY

Monitoring Requirements

4.1 Dissolved oxygen (DO concentration in mg/L and DO saturation in percentage), Turbidity (Tby in NTU), Suspended Solid (SS in mg/L), pH, salinity and both water and ambient temperature monitoring were conducted to monitor the water quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

4.2 Locations of designated Water Quality Monitoring Stations are shown in **Figure 4.1a-b** and described in Table 4.1. Samples shall be taken at all designated Monitoring and Control Stations.

Table 4.1 Locations for Water Quality Monitoring

Monitoring Stations	Coordinates	
	Northing	Easting
Control Stations		
CE (Ebb)	814956	830026
CF (Flood)	812420	831778
Impact Stations		
I1	813654	831088
I2	813582	831105
Intake A	813044	831603
Intake B	814583	830606

Monitoring Equipment

4.3 Table 4.2 summarizes the equipment used in the water quality monitoring program. All the monitoring equipment complied with the specifications stipulated in the Updated EM&A Manual. Copies of the calibration certificates of the equipment are shown in **Appendix B**.

Table 4.2 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI 6820	2
Monitoring Position Equipment	“Magellan” Handheld GPS Model GPS-320	1

Monitoring Parameters, Frequency and Duration

4.4 Table 4.3 summarizes the monitoring parameters, monitoring period and frequencies of water quality monitoring.

Table 4.3 Frequency and Parameters of Water Quality Monitoring

Station	Parameters	Frequency	No. of depth sampled	Depth	No. of samples events
CE	• Temperature (℃) • pH (pH unit) • turbidity (NTU) • water depth (m) • salinity (mg/L) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	3 times per week during the course of the marine works	3	• 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If the water depth is less than 6m, omit mid-depth sampling.	2 per monitoring day (1 for mid-ebb and 1 for mid-flood)
CF			2		
I1			3		
I2			3		
Intake A			3		
Intake B			3		

Monitoring Methodology, Calibration Details and QA/QC Procedures

Instrumentation

4.5 A multi-parameter meter (Model YSI 6820 C-M) was used to measure DO, DO saturation, turbidity, salinity and temperature.

Operating/Analytical Procedures

4.6 At each measurement, two consecutive measurements of DO concentration, DO saturation, salinity, turbidity and temperature were taken. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

4.7 For SS measurement, duplicate water samples for SS were taken and analysed at each

monitoring station at each sample depth. The sample bottles were then packed in cool-boxes (without being frozen), and delivered to a HOKLAS accredited laboratory for analysis of suspended solids concentrations within 24 hours.

Maintenance and Calibration

4.8 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe of YSI 6820-C-M. The probe was then calibrated with a solution of known NTU.

4.9 QA/QC procedures as attached in **Appendix C** are available for the SS analyzed in the HOKLAS-accredited laboratory, WELLAB Ltd.

Results and Observations

4.10 All water quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. The monitoring data and graphical presentations of the monitoring results are shown in **Appendix H**.

4.11 In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/WestDrainageTunnel/.

4.12 During the water quality monitoring, the areas of inspection included the general environmental conditions in the vicinity of the site, pollution control and mitigation measures within the site; and also review on the environmental conditions outside the site area that are likely to be affected, directly or indirectly, by site activities. The findings have been recorded in our Field Record Sheets.

4.13 No Action/Limit Level exceedance was recorded.

4.14 The summary of exceedance record in reporting month is shown in **Appendix I**.

Underground water level

4.15 Ground water levels were measured once per month during the construction phase in order to ensure the water levels at those intakes near to the natural stream courses and thus on the surrounding habitats will not be significantly affected.

4.16 Locations of designated ground water level (borehole with piezometer) monitoring station UC1 at Eastern Portal has been changed to ADH48 which was verified by IEC on 5th June 2008. Ground water level monitoring location is shown in **Figure 4.2** and the Monitoring data are shown in Table 4.4.

Table 4.4 Ground Water Level Monitoring Data at Location ADH48

Date	Water Level (from ground)/m
5 January 2009	9.61
22 January 2009	9.98

5. ENVIRONMENTAL AUDIT

Site Audits

5.1 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. The summaries of site audits are attached in **Appendix K.**

5.2 Site audits were conducted on 7th, 14th, 22nd and 29th January 2009. IEC site inspections were conducted on 14th January 2009. No non-compliance was observed during the site audits.

Review of Environmental Monitoring Procedures

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

Air Quality Monitoring

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

Noise Monitoring

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

Water Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- The monitoring team recorded the weather condition on the monitoring day.

Status of Environmental Licensing and Permitting

5.4 All permits/licenses obtained for the Project are summarized in Table 5.1.

Status of Waste Management

5.5 The waste management of the Project has to follow the requirements and procedures stated in the Waste Management Plan which was prepared by the Contractor.

5.6 During this reporting period, a total 7 nos. of dump trucks of waste were delivered to SENT landfill and 1782 nos. of C&D waste was delivered to Public Fill Reception Facilities (Chai Wan Baring Point). Both the trip ticket system and chit accounting system for disposal of waste were operating smoothly to date. No overloading case was recorded during this reporting period. No disposal of inert C&D material to public sorting facilities and no dump truck without cover were reported from CEDD. In respect of the dump truck cover, DNJV keeps on take record photos and inspection to ensure that all dump trucks have fully covered the skip before leaving the site.

5.7 The amount of wastes generated by the activities of the Project during the reporting month is shown in **Appendix P**.

Table 5.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
FEP-01/272/2007/A	28/1/08	N/A	Construction of a 6.25m-7.25m in diameter and about 11 km long underground main drainage tunnel, 2 portals and a series of connecting adits and drop shafts.	Valid
Effluent Discharge License				
EP860/W10/XY0175	23/06/08	30/06/13	Industrial discharge (Area of Mount Butler Office)	Valid
EP860/W10/XY0177	23/06/08	30/06/13	Industrial discharge (Eastern Portal Site)	Valid
EP820/W9/XT086	22/07/08	31/07/13	Industrial discharge (Western Portal Site)	Valid
EP680/W10/XY0183	19/11/08	30/11/13	Industrial discharge (Intake W0, Stubbs Road, Wan Chai, HK)	Valid
Registration of Chemical Waste Producer				
5213-148-D2393-02	---	N/A	Chemical waste types: Spent oil	Valid
5213-172-D2393-01	---	N/A	Chemical waste types: Spent oil	Valid
Construction Noise Permit (CNP)				
GW-RS0035-09	19/01/09	18/07/09	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Hong Kong West Drainage Tunnel (Eastern Portal) (DSD Contract No. DC/2007/10), Tai Hang Road, Causeway Bay, Hong Kong.	Valid
GW-RS0894-08	19/12/08	18/03/09	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Hong Kong West Drainage Tunnel (Western Portal), Cyberport Road, Cyberport, Hong Kong (DSD Contract No. Dc/2007/10).	Valid

Implementation Status of Environmental Mitigation Measures

5.8 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 5.2.

Table 5.2 Observations and Recommendations of Site Inspections

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	07/01/2009	Standing water with oil was observed at the drip tray at Western Portal. The Contractor was reminded to clear them properly.	The item was not rectified during the follow-up audit session.
	07/01/2009	Silty water was observed discharging at the existing stream at Eastern Portal. The Contractor rectified the item immediately. However, The Contractor was reminded that all wastewater should be treated before discharging out and the wastewater treatment unit should be checked regularly to ensure these facilities can function properly at all time.	Rectification/improvement was observed during the follow-up audit session.
	07/01/2009	Muddy water and sediment was observed accumulate at the paved area at Eastern Portal. The Contractor was reminded to provide sand bag bund to surround the open channels to direct the silty runoff for treatment before discharging out.	The item was not rectified during the follow-up audit session.
	14/01/2009	Standing water at the pit area was observed at Eastern Portal. The Contractor was reminded to pump it out and treated before discharging.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Milky water was observed at the U-Channel at Eastern Portal. The Contractor was reminded to provide mitigation measures to prevent any wastewater from discharging out.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Standing water was observed at the drip tray at Western Portal. The Contractor was reminded to dry it out.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	General refuse with standing water was observed at nullah at Western Portal. The Contractor was reminded to clear the waste and spray with larvicide to prevent mosquito breed.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	Mud and sediment were observed accumulate near the U-Channel at Eastern Portal. The Contractor was reminded to clear them and erect sand bag bund for protecting the open channel to prevent any silt from getting to the channel and discharging out.	Rectification/improvement was observed during the follow-up audit session.
Air Quality	07/01/2009	Opened cement bags were observed at Western Portal. The Contractor was reminded to cover it with tarpaulin to control dust emission.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Cement bags (>20 bags) were observed without cover at Western Portal. The Contractor was reminded to cover them with tarpaulin to prevent dust emission.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Dry unpaved area was observed at Western Portal. The Contractor was reminded to provide water-spray to prevent dust generation.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	Cement bags (>20 bags) were observed	Rectification/improvement

Parameters	Date	Observations and Recommendations	Follow-up
		without cover at Eastern Portal. The Contractor was reminded to cover them with tarpaulin to prevent dust emission. Cement bags were then covered with tarpaulin immediately.	was observed during the follow-up audit session.
	29/01/2009	Dry unpaved area was observed at Western Portal. The Contractor was reminded to provide water spray regularly to prevent dust emission.	Rectification/improvement was observed during the follow-up audit session.
Waste / Chemical Management	07/01/2009	Oil drums were observed standing on the bare ground at Western Portal. The Contractor was reminded to provide drip tray or store it properly.	Rectification/improvement was observed during the follow-up audit session.
	07/01/2009	Standing water with oil was observed at the drip tray at Western Portal. The Contractor was reminded to clear them properly.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Oil leakage was observed at underneath of plant equipment at Eastern Portal. The Contractor was reminded to clear the oil stains and well-maintained the plants to prevent further oil leakage.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	General refuse with standing water was observed at nullah at Western Portal. The Contractor was reminded to clear the waste and spray with larvicide to prevent mosquito breed.	Rectification/improvement was observed during the follow-up audit session.
	14/01/2009	Chemical oil drum was observed without chemical label at Western Portal. The Contractor was reminded to provide appropriate label and attach at the oil drum.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	Generator was observed to be placed outside the site and without drip tray at Intake W0. The Contractor was reminded to provide it with drip tray to prevent oil leakage. Generator was then placed within the site immediately.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	C&D waste were observed accumulate in the material skip at Eastern Portal. The Contractor was reminded to clear the waste regularly.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	Chemical oil drums were observed without chemical label and not stored properly at Eastern Portal. The Contractor was reminded to attach it with appropriate labels and stored properly.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	C&D waste was observed not stored properly at Intake W0. The Contractor was reminded to provide material skip for temporary storage of C&D waste before disposing them.	The item was not rectified during the follow-up audit session.
	29/01/2009	Empty chemical containers were observed accumulate at Western Portal. The Contractor was reminded to clear them regularly.	Rectification/improvement was observed during the follow-up audit session.
	29/01/2009	Material skip was still observed not provided at Intake W0. The Contractor was reminded	Rectification/improvement was observed during the

Parameters	Date	Observations and Recommendations	Follow-up
		to provide it as soon as possible.	follow-up audit session.
Ecology	07/01/2009	Silty water was observed discharging at the existing stream at Eastern Portal. The Contractor rectified the item immediately. However, The Contractor was reminded that all wastewater should be treated before discharging out and the wastewater treatment unit should be checked regularly to ensure these facilities can function properly at all time.	Rectification/improvement was observed during the follow-up audit session.
Marine Ecology	22/01/2009	Silty water was observed within the silt curtain at Western Portal. The Contractor was reminded to provide mitigation measures and well-maintained the silt curtain to prevent any silty water from getting out.	The item was not rectified during the follow-up audit session.
Reminders	07/01/2009	The Contractor was reminded of the followings: - Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream.	*Follow-up action was needed for the item.
	07/01/2009	The Contractor was reminded of the followings: - Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals and Intake sites.	*Follow-up action was needed for the item.
	14/01/2009	The Contractor was reminded of the followings: - Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream.	*Follow-up action was needed for the item.
	14/01/2009	The Contractor was reminded of the followings: - Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals and Intake sites.	*Follow-up action was needed for the item.
	22/01/2009	The Contractor was reminded of the followings: - Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream and causing sitly water discharging out.	Rectification/improvement was observed during the follow-up audit session.
	22/01/2009	The Contractor was reminded of the followings: - Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals especially the Intake sites.	*Follow-up action was needed for the item.
	29/01/2009	The Contractor was reminded of the followings: - Silt curtain should be fully enclosed the work area to prevent any silty water from discharging out.	Rectification/improvement was observed during the follow-up audit session.
	29/01/2009	The Contractor was reminded of the followings:	*Follow-up action was needed for the item.

Parameters	Date	Observations and Recommendations	Follow-up
		- Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals especially the Intake sites.	

Note: (*) The Environmental deficiencies have been rectified by the Contractor. However, the item was reoccurred during the follow-up site audit due to construction activities/rainstorm. The Contractor was reminded to rectify the deficiencies more frequently.

5.9 The monthly IEC audit was carried out on 14th January 2009, the observations were recorded and they are presented as follows:

5.10 Follow-up and rectification works in response to IEC observations on 29 December 2008 were satisfied.

14th January 2009

Eastern Portal

- New wastewater treatment plant was observed. However, chemical drums other than those for treatment system were also place in the same compartment. Prompt removal is necessary.
- Vegetation waste at slope side was observed. Proper temporary storage area should be provided.
- It is observed that there was an opening at manhole which allowed the mixing of surface runoff from outside and treated effluent. No mixing should be allowed. The arrangement of drainage should be reviewed.
- Water ponding at piling area above nullah was observed. Prompt cleaning up is needed.

Western Portal

- Stagnant water was observed at several areas. E.g. slope, drip tray. I-beam and cable trench. Prompt cleaning up is needed.
- The haul road and exposed slope were dry. More frequent watering is necessary.
- No chemical label was provided for an oil drum located near the eastern side of the site.
- Chemical spillage was found near the oil drum as mentioned in item above.
- Cement bags were not covered next to the grouting machine. Dust control measures should be provided promptly.

Non-compliance Recorded during Site Inspections

5.11 No non-compliance was recorded in the reporting month.

Summary of Mitigation Measures Implemented

5.12 The Contractor has implemented the mitigation measures as recommended in the EIA and the updated EM&A Manual in the reporting period except those mitigation measures not applicable at this stage. Status of the implementation of mitigation measures is presented in Table 1.2 and **Appendix L**.

5.13 According to the updated EM&A Manual and EP condition, mitigation measures such as noise enclosure and use of quiet PME are required to be implemented.

5.14 The actual implementation status of major mitigation measures required under the EP is as follows:

- Installation of silt curtain during the course of marine works.
- Design of noise enclosure at Eastern Portal.
- Submitted the Alternative Plant Inventory (EP condition 2.8(c)).

5.15 An updated summary of the EMIS is provided in **Appendix L**.

Implementation Status of Event Action Plans

5.16 The Event Action Plans for air quality and noise are presented in **Appendix M.**

Eastern Portal

1-hr TSP Monitoring

5.17 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

5.18 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

5.19 No Action/Limit Level exceedance was recorded in the reporting month.

Western Portal

1-hr TSP Monitoring

5.20 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

5.21 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

5.22 No Action/Limit Level exceedance was recorded for construction noise.

Water Quality

5.23 No Action/Limit Level exceedance was recorded for water quality.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

5.24 One environmental complaint was received in the reporting month. For the details, please refer to the following table: -

Complaint No.	Date	Complaint Details
COM-2009-01-021	21 January 2009	Muddy water was observed from discharging into the sea at Western Portal Site.

5.25 No warning, summon and notification of successful prosecution was received in the reporting month.

5.26 There were a total of 11 environmental complaints, no warning, summons and successful prosecution received since the commencement of the Project. The Complaint Log is attached in **Appendix N**.

6. FUTURE KEY ISSUES

Key Issues for the Coming Month

6.1 Key environmental issues at both Eastern and Western Portals in the coming month include:

Both Eastern and Western Portal

- Noise from operation of the equipment, especially for rock-breaking activities and machinery on-site;
- Dust generation from stockpiles of dusty materials, excavation works and rock breaking activities;
- Runoff from exposed slope;
- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks;
- Review and implementation of temporary drainage system for the surface runoff;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Watering for rock breaking activity, soil nailing and on haul road;
- Accumulation of general and construction waste on site.

Only at Western Portal

- Contamination of marine water.

6.2 The tentative program of major site activities and the impact prediction and control measures for the coming two month, i.e. February 2009 to March 2009 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
- Main tunnel excavation, intake shaft, river channel and access road construction at Eastern Portal. - Invert slab of TBM rectangular transitional tunnel construction, spoil	Air impact (dust)	a) Frequent watering of haul road and unpaved/exposed areas; b) Frequent watering or covering stockpiles with tarpaulin or similar means; and c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	d) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; e) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; f) Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and g) Provision of measures to prevent discharge into the stream.

Construction Works	Major Impact Prediction	Control Measures
basin excavation and fabrication of the TBM at Western Portal. - Preparation work & cofferdam construction at Intake W0.	Noise Impact	h) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; i) Controlling the number of plants use on site; j) Regular maintenance of machines; and k) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

6.3 The tentative environmental monitoring schedules for the next month are shown in **Appendix D.**

Construction Program for the Next Month

6.4 The tentative construction program for the Project is provided in **Appendix O**.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

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

1-hr TSP Monitoring

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

24-hr TSP Monitoring

7.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month except the 24-hour TSP monitoring on 30 January 2009 was cancelled due to True Light Middle School of Hong Kong was closed. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

7.4 All construction noise monitoring was conducted as scheduled in the reporting month except the noise monitoring (0700-1900 hrs) on 30 January 2009 was cancelled due to True Light Middle School of Hong Kong was closed. No Action/Limit Level exceedance was recorded.

Water Quality

7.5 All water quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Complaint and Prosecution

7.6 One environmental complaints and no environmental prosecution were received in the reporting month.

Recommendations

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

Air Quality Impact

- To prohibit any open burning on site.
- To regularly maintain the machinery and vehicles on site.
- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.
- To provide hoarding

Noise Impact

- To inspect the noise sources inside the site.
- 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.

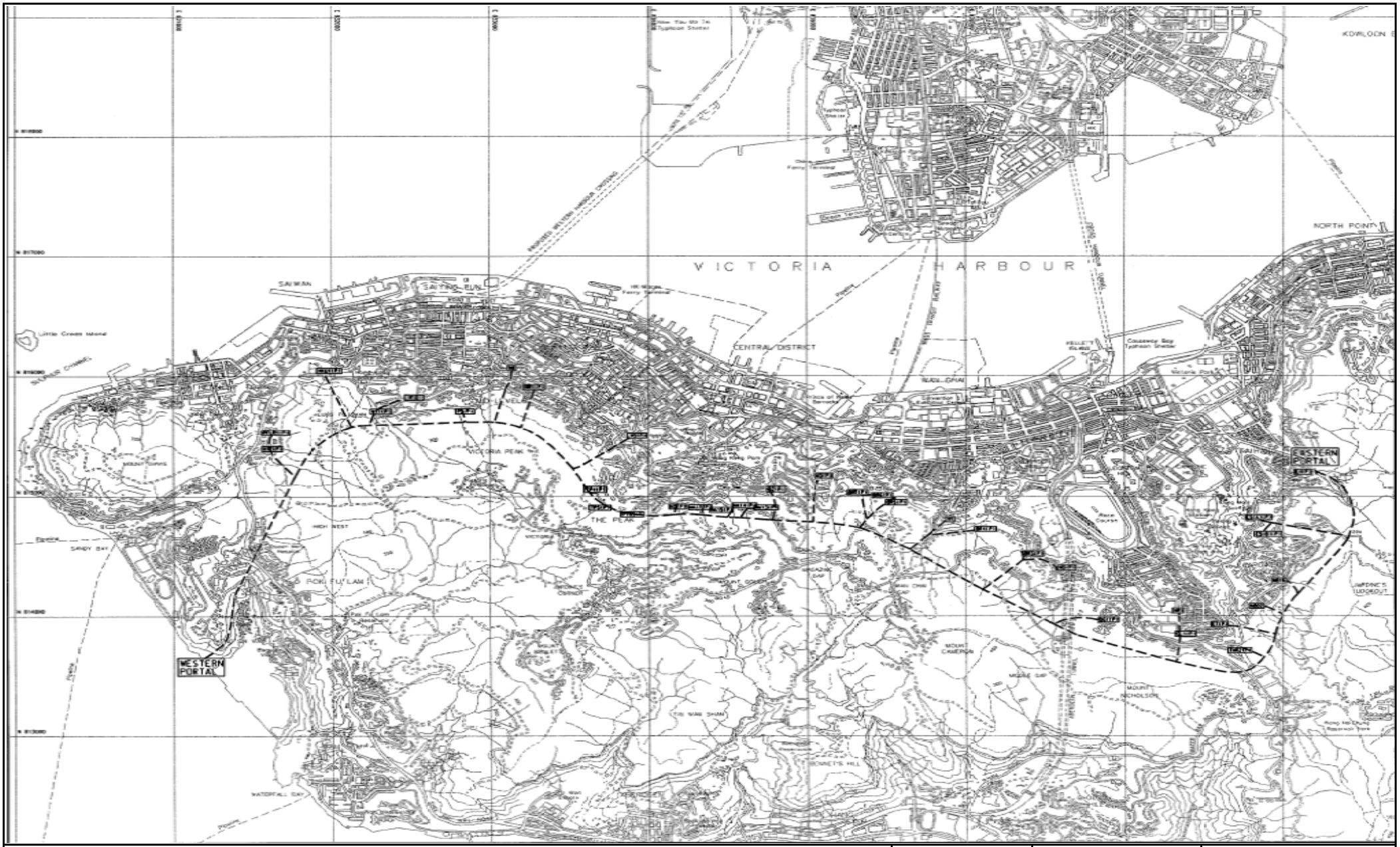
Water Impact

- To prevent any surface runoff discharge into any stream course.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To avoid accumulation of stagnant and ponding water on site.

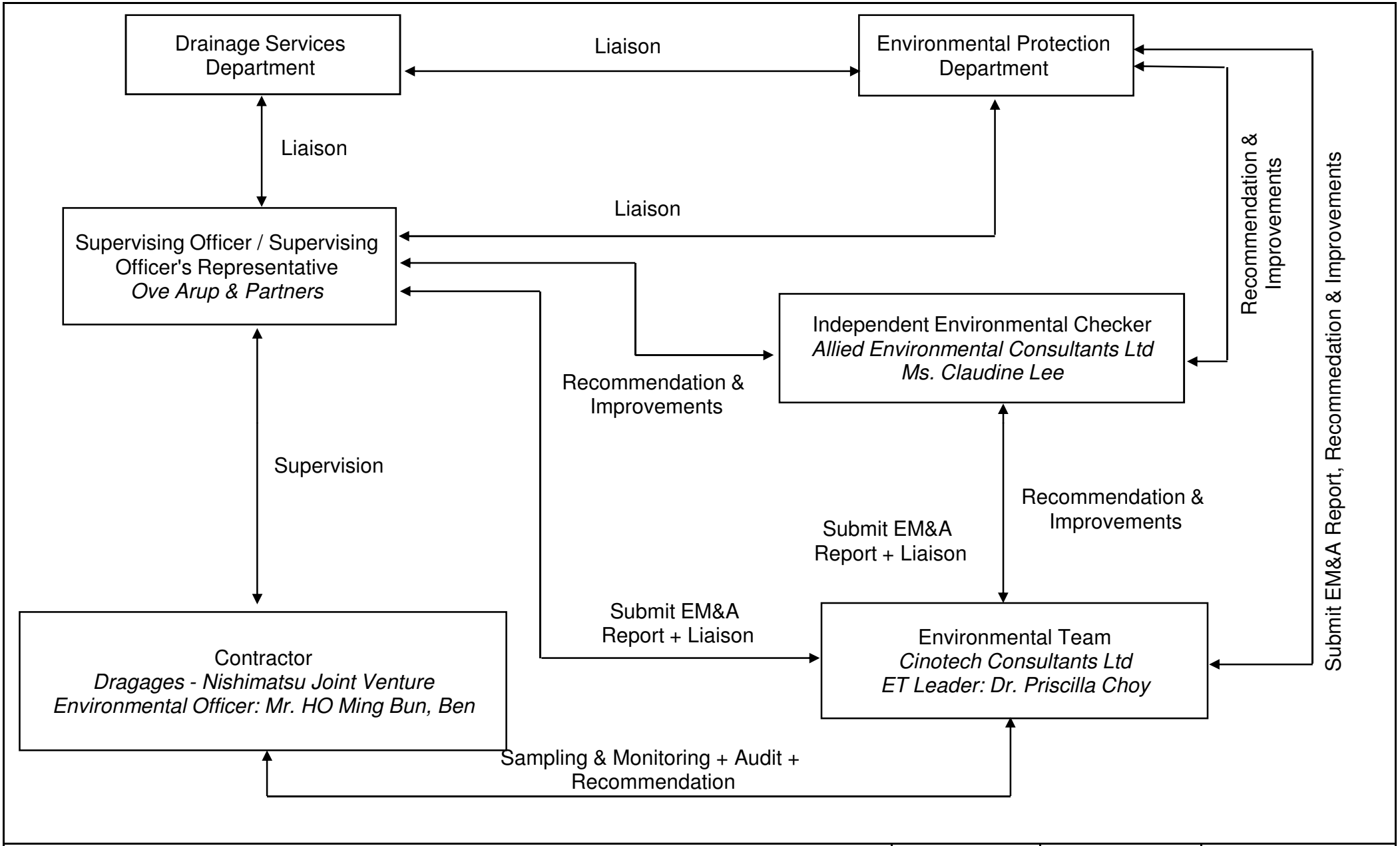
Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum on site.

FIGURES



Title			
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Site Layout Plan	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Apr-08	Figure: 1.1	



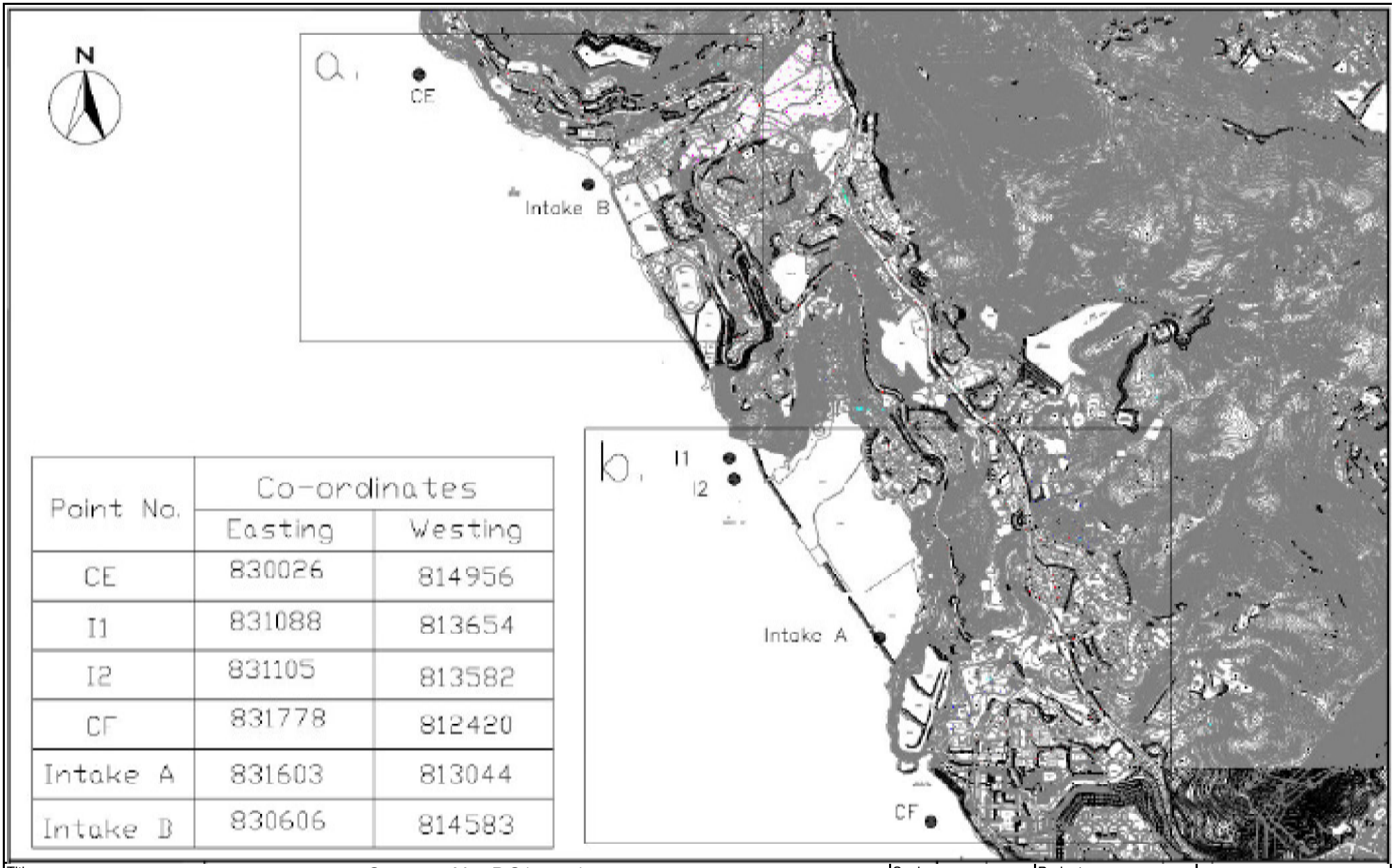
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Organization Chart	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Apr-08	Figure: 2.1	

Title	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel (Eastern Portal) Locations of Air Quality and Noise Monitoring Station	Scale: N.T.S Date: Nov-08	Project No.: MA8001 Figure: 3.1a

CINOTECH

Title	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel (Western Portal) Locations of Air Quality and Noise Monitoring Station	Scale: N.T.S Date: Jun-08	Project No.: MA8001 Figure: 3.1b

CINOTECH



Point No.	Co-ordinates	
	Easting	Westing
CE	830026	814956
I1	831088	813654
I2	831105	813582
CF	831778	812420
Intake A	831603	813044
Intake B	830606	814583

Title

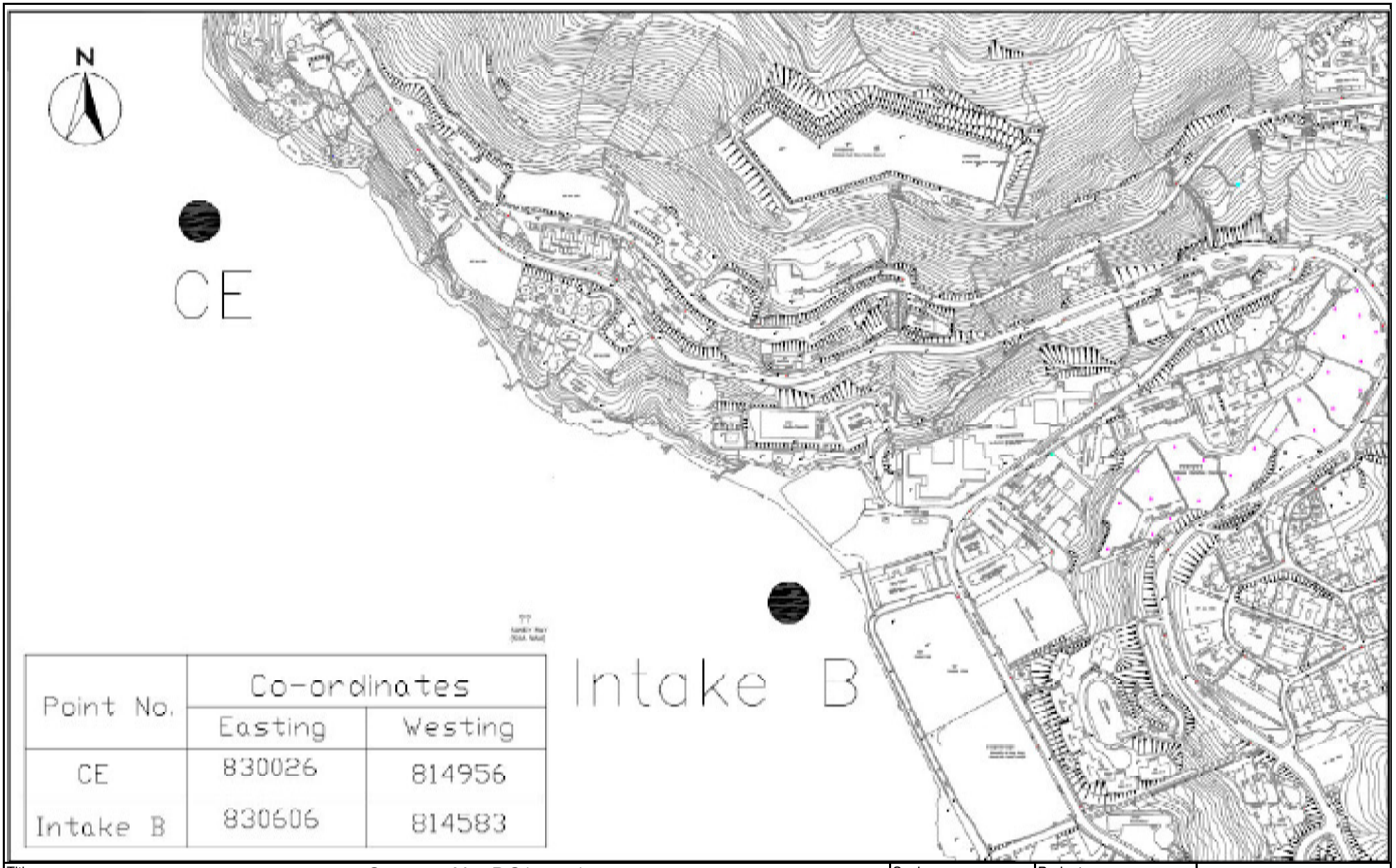
Contract No. DC/2007/10

Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

Scale	N.T.S	Project No.	MA8001
Date	Jun-08	Figure	4.1

CINOTECH



Point No.	Co-ordinates	
	Easting	Westing
CE	830026	814956
Intake B	830606	814583

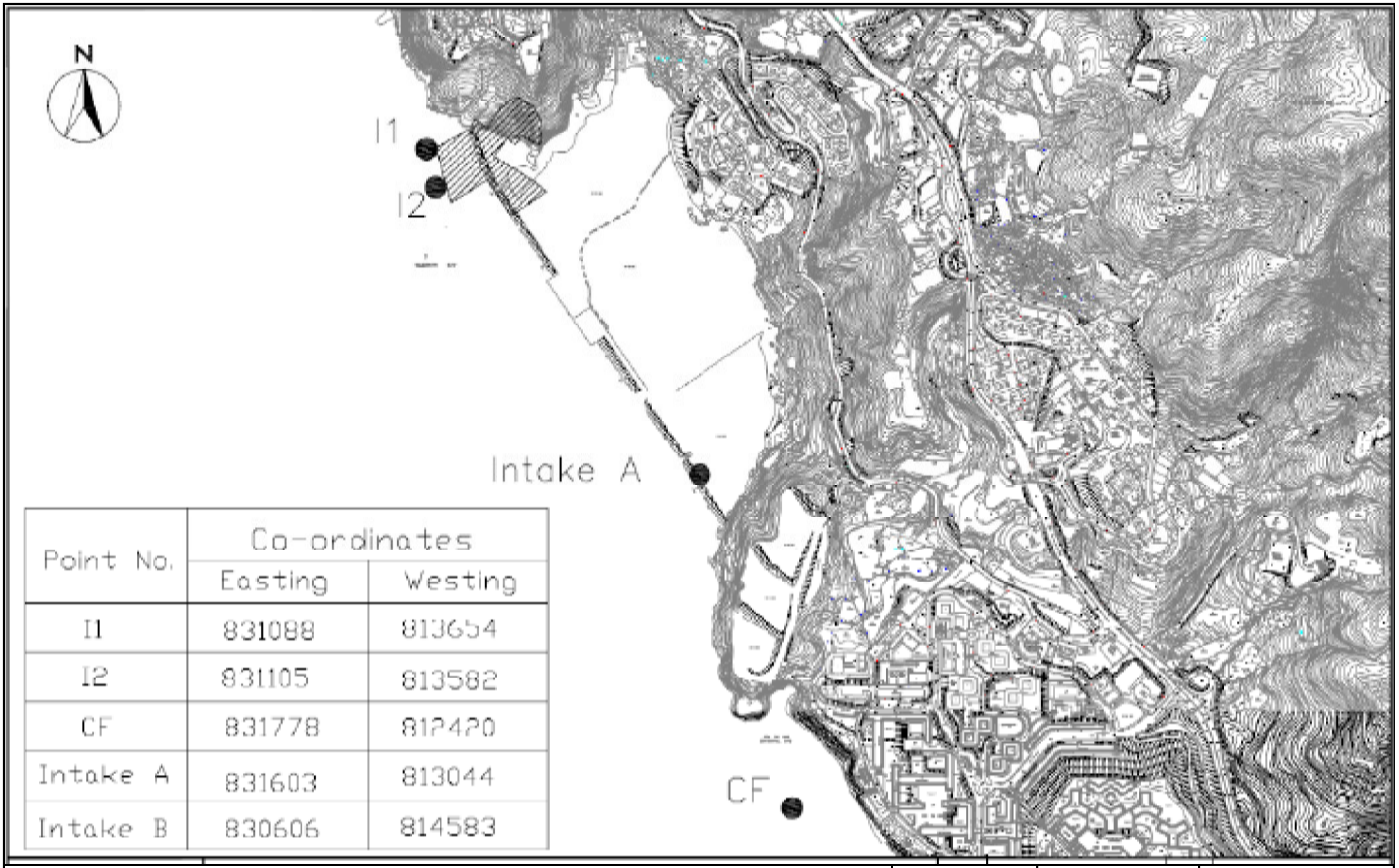
Title

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

Scale	N.T.S	Project No.	MA8001
Date	Jun-08	Figure	4.1a

CINOTECH



Point No.	Co-ordinates	
	Easting	Westing
I1	831088	813654
I2	831105	813582
CF	831778	812420
Intake A	831603	813044
Intake B	830606	814583

Title

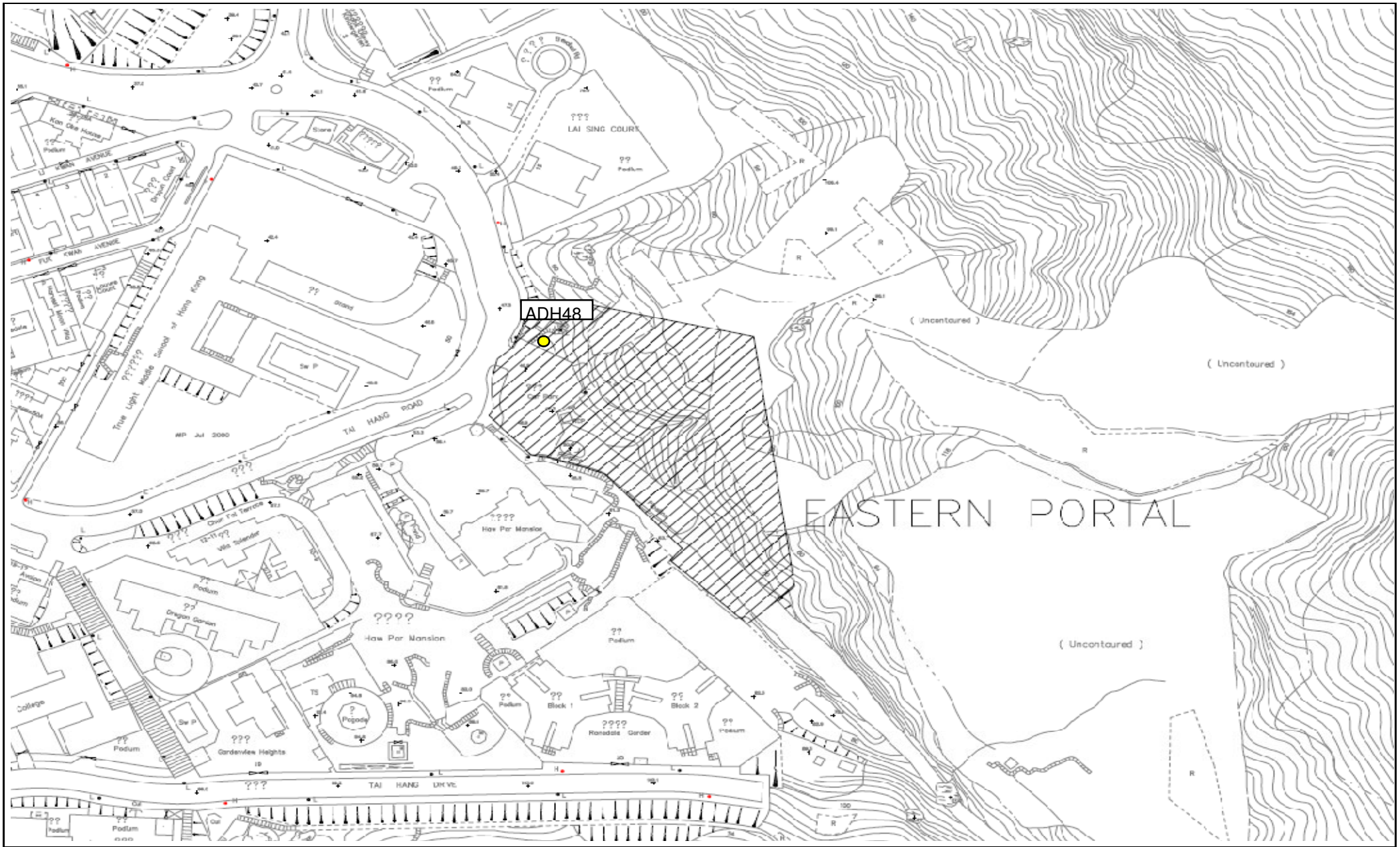
Contract No. DC/2007/10

Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

Scale	N.T.S	Project No.	MA8001
Date	Jun-08	Figure	4.1b

CINOTECH



Title	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel (Eastern Portal) Location of ground water level Monitoring Station	Scale: N.T.S Date: Jun-08	Project No.: MA8001 Figure: 4.2

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels

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

Location	Action Level, μg/m^3	Limit Level, μg/m^3
AQ1	345	500
AQ2	321	

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, μg/m^3	Limit Level, μg/m^3
AQ1	201	260
AQ3	156	

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		60/65/70** dB(A)
2300-0700 hrs of next day		45/50/55** dB(A)

(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.
(**) to be selected based on Area Sensitivity Rating.

Table A-4 Action and Limit Levels for Water Quality

Parameter		Action	Limit
DO, mg/L	Surface and Middle	6.3	6.2
	Bottom	6.0	5.8
SS, mg/L		15.7 or 120% of upstream control station's SS at the same tide of the same day	16.4 or 130% of SS readings at the upstream control station at the same tide of same day and specific sensitive receiver water quality requirements
Turbidity, NTU		10.2 or 120% of upstream control station's turbidity at the same tide of the same day	11.1 or 130% of turbidity at the upstream control station at the same tide of same day

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8001/44/0006

Station: AQ1 - True Light Middle School of Hong Kong Operator: WK

Date: 11-Dec-08 Next Due Date: 10-Feb-09

Equipment No.: A-01-44 Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	292.3	Pressure, Pa (mmHg)	767

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	10-Mar-08	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Mar-09	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.1	3.53	60.68	8.6	2.97
2	10.7	3.32	57.02	7.2	2.72
3	7.4	2.76	47.30	5.0	2.27
4	5.1	2.29	39.15	3.3	1.84
5	3.2	1.81	30.87	1.9	1.40

By Linear Regression of Y on X

Slope , mw = 0.0518 **Intercept, bw =** -0.1952

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.02**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 11/12/08

Checked by: KK Signature: Date: 11 Dec 2008

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8001/18/0005

Station: AQ3 - Outside Site Office (Western Portal) Operator: WK

Date: 11-Dec-08 Next Due Date: 10-Feb-09

Equipment No.: A-01-18 Serial No. 0723

Ambient Condition			
Temperature, Ta (K)	292.3	Pressure, Pa (mmHg)	767

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc	0.0575	Intercept, bc	0.0395
Last Calibration Date:	10-Mar-08	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Mar-09	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.8	3.48	59.91	8.3	2.92
2	9.6	3.14	53.97	6.7	2.63
3	7.4	2.76	47.30	4.9	2.25
4	5.1	2.29	39.15	3.4	1.87
5	3.0	1.76	29.87	1.9	1.40

By Linear Regression of Y on X

Slope , mw = 0.0507 **Intercept, bw =** -0.1218

Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.12**

Remarks:

Conducted by: W.K. Tang Signature: Kwai Date: 11/12/08

Checked by: WK Signature: Date: 11 Dec 2008

TISCH ENVIROMENTAL, INC.
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WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 10, 2008 Rootsmeter S/N 9833640 Ta (K) - 295
Operator Tisch Orifice I.D. - 0999 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	1.3890	3.2	2.00
2	NA	NA	1.00	0.9850	6.3	4.00
3	NA	NA	1.00	0.8810	7.8	5.00
4	NA	NA	1.00	0.8410	8.6	5.50
5	NA	NA	1.00	0.6950	12.5	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9917	0.7139	1.4113		0.9957	0.7168	0.8874
0.9876	1.0026	1.9959		0.9916	1.0067	1.2549
0.9854	1.1185	2.2315		0.9894	1.1231	1.4030
0.9844	1.1706	2.3405		0.9884	1.1753	1.4715
0.9792	1.4090	2.8227		0.9832	1.4147	1.7747
Qstd slope (m) =		2.03154		Qa slope (m) =		1.27212
intercept (b) =		-0.03970		intercept (b) =		-0.02496
coefficient (r) =		0.99999		coefficient (r) =		0.99999
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}

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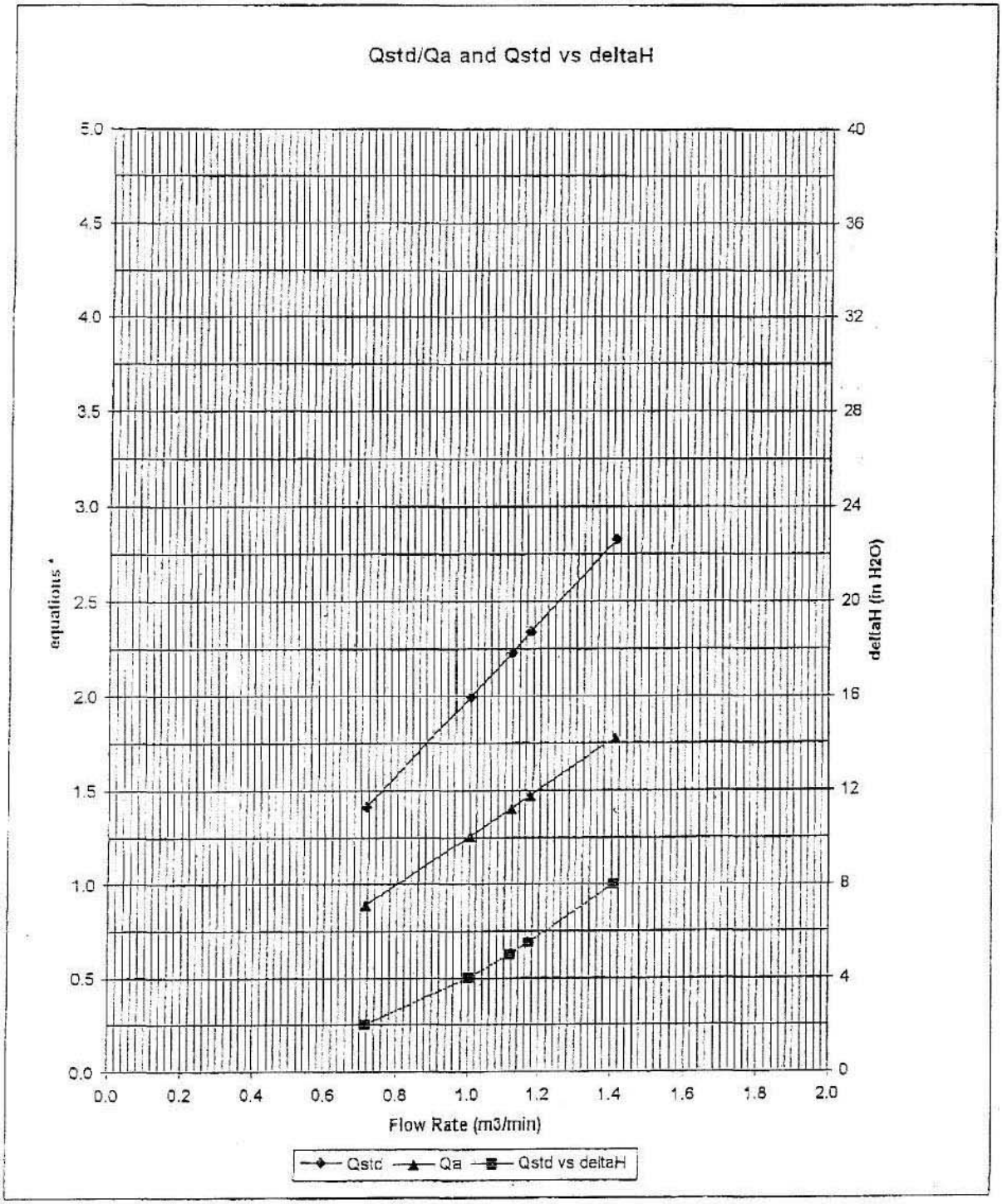
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series: $\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$

Qa series: $\sqrt{(\Delta H\ (Ta\ /\ Pa))}$

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Testing and Research

Unit C, 1/F., Goldlion Holdings Center,
13-15 Yuen Shun Circuit, Shatin, NT, HK.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. Henry Leung**

Test Report No.:	C/07/80502
Date of Issue:	2008-05-03
Date Received:	2008-05-02
Date Tested:	2008-05-02
Date Completed:	2008-05-03
Next Due Date:	2009-05-02
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: RS232 Integral Vane Digital Anemometer
Manufacturer	: AZ Instrument
Model No.	: 451104
Serial No.	: 9020746
Equipment No.	: A-03-01

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 65%
Pressure	: 101.3 kPa

Methodology:

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

Results:

	Reference Set Point	Instrument Readings
Measuring Air Velocity, m/s	2.00	2.00
Temperature, °C	21.0	21.0

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

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing and Research

Rms 816, 1516 & 1701, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
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E-mail: wellab@wellab.com.hk

TEST REPORT

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

Test Report No.:	C/081220/1B
Date of Issue:	2008-12-20
Date Received:	2008-12-19
Date Tested:	2008-12-20
Date Completed:	2008-12-20
Next Due Date:	2009-02-19

ATTN: **Mr. Henry Leung**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 281835
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 666 CPM
Equipment No.	: A-02-02

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62%

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0032

****

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

PATRICK TSE
Laboratory Manager

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Testing and Research 力

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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ATTN: **Mr. Henry Leung**

Test Report No.:	C/081118/1
Date of Issue:	2008-11-18
Date Received:	2008-11-17
Date Tested:	2008-11-18
Date Completed:	2008-11-18
Next Due Date:	2009-01-17
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 59%

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0037

****

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For and On Behalf of **WELLAB Ltd.**

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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ATTN: **Mr. Henry Leung**

Test Report No.:	C/090117/1
Date of Issue:	2009-01-17
Date Received:	2009-01-16
Date Tested:	2009-01-17
Date Completed:	2009-01-17
Next Due Date:	2009-03-16
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 59%

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0035

****

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For and On Behalf of **WELLAB Ltd.**

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/80903-1
Date of Issue:	2008-09-03
Date Received:	2008-09-02
Date Tested:	2008-09-02
Date Completed:	2008-09-03
Next Due Date:	2009-09-02

ATTN: **Mr. Henry Leung**

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359311
Microphone No.	: 2346382
Equipment No.	: N-01-03

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 61%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse

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TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.: Date of Issue: Date Received: Date Tested: Date Completed: Next Due Date:	C/N/80903-2 2008-09-03 2008-09-02 2008-09-02 2008-09-03 2009-09-02
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2359303
Equipment No.	: N-01-04

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 61%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/81013/1
Date of Issue:	2008-10-15
Date Received:	2008-10-13
Date Tested:	2008-10-13
Date Completed:	2008-10-14
Next Due Date:	2009-10-14
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Integrating Sound Level Meter
Manufacturer	: Brüel & Kjær
Model No.	: B&K 2238
Serial No.	: 2394976
Microphone No.	: 2407349
Equipment No.	: N-01-05

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/81115/1
Date of Issue:	2008-11-15
Date Received:	2008-11-14
Date Tested:	2008-11-14
Date Completed:	2008-11-15
Next Due Date:	2009-11-14
Page:	1 of 1

ATTN: **Mr. Henry Leung**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2326353
Project No.	: C13
Equipment No.	: N-02-01

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 59%
Pressure	: 1015.2 hPa

Methodology:

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

Results:

Sound Pressure Level	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/80903-3
Date of Issue:	2008-09-03
Date Received:	2008-09-02
Date Tested:	2008-09-02
Date Completed:	2008-09-03
Next Due Date:	2009-09-02

ATTN: **Mr. Henry Leung**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 61%

Methodology:

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

Results:

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

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

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

TEST REPORT

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

ATTN: **Mr. Henry Leung**

Test Report No.:	C/W/81105-1
Date of Issue:	2008-11-06
Date Received:	2008-11-05
Date Tested:	2008-11-05
Date Completed:	2008-11-06
Next Due Date:	2009-02-05
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6820-C-M
Serial No.	: 02D0126AA
Equipment No.	: W.03.01
Project No.	: C013

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 63%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, S/N: 05A1209
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, S/N: 04A0145
1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 05A1610AJ
1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, S/N: 01J
1. Calibration check with standard pH buffer

Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual
2. In-house method with reference to APHA and ISO standards

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

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力
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E-mail: wellab@wellab.com.hk

TEST REPORT

Test Report No.:	C/W/81105-1
Date of Issue:	2008-11-06
Date Received:	2008-11-05
Date Tested:	2008-11-05
Date Completed:	2008-11-06
Next Due Date:	2009-02-05
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1421	1420	2	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 0.2

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	0.00 ± 0.05
100	100	0	100 ± 5

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_n , pH unit	0.00	Less than 0.02

6. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	1.00 ± 0.05

**********END OF REPORT**********

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TEST REPORT

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

Test Report No.:	C/W/81105-2
Date of Issue:	2008-11-06
Date Received:	2008-11-05
Date Tested:	2008-11-05
Date Completed:	2008-11-06
Next Due Date:	2009-02-05
Page:	1 of 2

ATTN: **Mr. Henry Leung**

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6820-C-M
Serial No.	: 02D0293AA
Equipment No.	: W.03.02
Project No.	: C013

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 63%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, S/N: 02C0886
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, S/N: 0261137
1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 05F2030AQ
1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, S/N: 02A
1. Calibration check with standard pH buffer

Depth Meter
1. Calibration check at 1m water level depth

Methodologies:

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual
2. In-house method with reference to APHA and ISO standards

PREPARED AND CHECKED BY:
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Patrick Tse

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TEST REPORT

Test Report No.:	C/W/81105-2
Date of Issue:	2008-11-06
Date Received:	2008-11-05
Date Tested:	2008-11-05
Date Completed:	2008-11-06
Next Due Date:	2009-02-05
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.1	30.0	0.1	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.0	9.0	0.0	± 0.2
Half-saturated	5.8	5.8	0.0	± 0.2
Zero	0.0	0.0	0.0	± 0.2

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	0.00 ± 0.05
100	100	0	100 ± 5

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_n , pH unit	0.01	Less than 0.02

6. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	1.00 ± 0.05

**********END OF REPORT**********

APPENDIX C
QUALITY CONTROL REPORTS FOR SS LABORATORY ANALYSIS

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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07847
Date of Issue:	2009/01/05
Date Received:	2009/01/02
Date Tested:	2009/01/02
Date Completed:	2009/01/05
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/02
Number of Sample: 58
Custody No.: MA8001/90102

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	19	20	8	92

**********END OF REPORT**********

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

PATRICK TSE
Laboratory Manager

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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07858
Date of Issue:	2009/01/06
Date Received:	2009/01/05
Date Tested:	2009/01/05
Date Completed:	2009/01/06
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/05
Number of Sample: 58
Custody No.: MA8001/90105

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2be	9	10	15	89

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07874
Date of Issue:	2009/01/08
Date Received:	2009/01/07
Date Tested:	2009/01/07
Date Completed:	2009/01/08
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/07
Number of Sample: 58
Custody No.: MA8001/90107

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	6	7	6	90

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07887
Date of Issue:	2009/01/12
Date Received:	2009/01/09
Date Tested:	2009/01/09
Date Completed:	2009/01/12
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/09
Number of Sample: 58
Custody No.: MA8001/90109

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	8	7	17	91

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07896
Date of Issue:	2009/01/13
Date Received:	2009/01/12
Date Tested:	2009/01/12
Date Completed:	2009/01/13
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/12
Number of Sample: 58
Custody No.: MA8001/90112

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	12	13	13	92

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07904
Date of Issue:	2009/01/16
Date Received:	2009/01/15
Date Tested:	2009/01/15
Date Completed:	2009/01/16
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/14
Number of Sample: 58
Custody No.: MA8001/90114

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	13	13	3	92

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07917
Date of Issue:	2009/01/19
Date Received:	2009/01/16
Date Tested:	2009/01/16
Date Completed:	2009/01/19
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/16
Number of Sample: 58
Custody No.: MA8001/90116

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	12	14	13	94

**********END OF REPORT**********

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07926
Date of Issue:	2009/01/20
Date Received:	2009/01/19
Date Tested:	2009/01/19
Date Completed:	2009/01/20
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/19
Number of Sample: 58
Custody No.: MA8001/90119

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	4	5	14	111

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07935
Date of Issue:	2009/01/22
Date Received:	2009/01/21
Date Tested:	2009/01/21
Date Completed:	2009/01/22
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/21
Number of Sample: 28
Custody No.: MA8001/90121

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I1mf	<2.5	<2.5	N/A	108

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07945
Date of Issue:	2009/01/29
Date Received:	2009/01/23
Date Tested:	2009/01/23
Date Completed:	2009/01/29
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/23
Number of Sample: 28
Custody No.: MA8001/90123

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A mf	3	3	19	97

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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Laboratory Manager

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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07952
Date of Issue:	2009/01/30
Date Received:	2009/01/29
Date Tested:	2009/01/29
Date Completed:	2009/01/30
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/29
Number of Sample: 58
Custody No.: MA8001/90129

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	15	15	4	99

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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PATRICK TSE
Laboratory Manager

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TEST REPORT
QC REPORT

APPLICANT: Cinotech Consultants Limited
Rm1710, Technology Park,
18 On Lai Street,
Shatin, N.T.

Laboratory No.:	07960
Date of Issue:	2009/02/02
Date Received:	2009/01/31
Date Tested:	2009/01/31
Date Completed:	2009/02/02
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2009/01/31
Number of Sample: 58
Custody No.: MA8001/90131

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake A se	10	9	11	90

**********END OF REPORT**********

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

Patrick Tse

PATRICK TSE
Laboratory Manager

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Impact Air and Noise Monitoring Schedule for January 2009 (Eastern Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	29-Dec	30-Dec	31-Dec	**1-Jan**	2-Jan	3-Jan
					1 hr TSP Noise Day Time (07:00-19:00) & *Evening Time (19:00-23:00) 24 hrs TSP	
4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan	10-Jan
	1 hr TSP			1 hr TSP 24 hrs TSP	1 hr TSP Noise Day Time (07:00-19:00) & *Evening Time (19:00-23:00)	
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
Noise Daytime (07:00-19:00)		1 hr TSP	24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)	
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
		1 hr TSP 24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)		24 hrs TSP
25-Jan	**26-Jan**	**27-Jan**	**28-Jan**	29-Jan	30-Jan	31-Jan
				1 hr TSP	1 hr TSP Noise #Daytime (07:00-19:00), *Evening time (19:00-23:00) & Night-time (23:00-07:00) #24 hrs TSP	

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
No 24-hrs TSP and Noise Monitoring was conducted at True Light Middle School of Hong Kong (AQ1 and NC1)

Air Quality Monitoring Station

AQ1 - True Light Middle School of HK

Noise Monitoring Station

NC1 - True Light Middle School of HK
NC2 - The Legend
*NC1a - Outside True Light Middle School of HK

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Impact Air and Noise Monitoring Schedule for January 2009 (Western Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	29-Dec	30-Dec	31-Dec	**1-Jan**	2-Jan	3-Jan
					1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00) 24 hrs TSP	
4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan	10-Jan
Noise Daytime (07:00-19:00)	1 hr TSP			1 hr TSP 24 hrs TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
Noise Daytime (07:00-19:00)		1 hr TSP	24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
Noise Daytime (07:00-19:00)		1 hr TSP 24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)		24 hrs TSP
25-Jan	**26-Jan**	**27-Jan**	**28-Jan**	29-Jan	30-Jan	31-Jan
Noise Daytime (07:00-19:00)				1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00) 24 hrs TSP	

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AQ2 - Outside Aegean Terrace (1 hour TSP)
AQ3 - Outside Site Office at Western Portal (24 hours TSP)

Noise Monitoring Station

NC3 - Outside Aegean Terrace

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Impact Water Quality Monitoring Schedule for January 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	29-Dec	30-Dec	31-Dec	**1-Jan**	2-Jan	3-Jan
					Mid-Flood 10:35 Mid-Ebb 16:13	
4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan	10-Jan
	Mid-Flood 12:25 Mid-Ebb 17:00		Mid-Ebb 08:06 Mid-Flood 13:40		Mid-Ebb 10:41 Mid-Flood 15:23	
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
	Mid-Flood 08:04 Mid-Ebb 13:18		Mid-Flood 09:19 Mid-Ebb 14:47		Mid-Flood 10:19 Mid-Ebb 16:08	
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
	Mid-Flood 12:06 Mid-Ebb 17:00		Mid-Flood 09:47 Mid-Ebb N/A		Mid-Flood 11:00 Mid-Ebb N/A	
25-Jan	**26-Jan**	**27-Jan**	**28-Jan**	29-Jan	30-Jan	31-Jan
				Mid-Flood 08:35 Mid-Ebb 14:18		Mid-Flood 09:23 Mid-Ebb 15:22

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
NA indicated favourable tide occurs during non-working hours

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Tentative Impact Air and Noise Monitoring Schedule for February 2009 (Eastern Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb	7-Feb
		1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)	24 hrs TSP	1 hr TSP	
8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb
Noise *Daytime (07:00-19:00)		1 hr TSP	24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)	
15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb	21-Feb
Noise *Daytime (07:00-19:00)		1 hr TSP 24 hrs TSP	1 hr TSP		1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)	
22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb	28-Feb
Noise *Daytime (07:00-19:00)	24 hrs TSP	1 hr TSP	1 hr TSP		1 hr TSP Noise Daytime (07:00-19:00) , *Evening time (19:00-23:00) & Night-time (23:00-07:00)	24 hrs TSP

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AQ1 - True Light Middle School of HK

Noise Monitoring Station

NC1 - True Light Middle School of HK
NC2 - The Legend
*NC1a - Outside True Light Middle School of HK

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Tentative Impact Air and Noise Monitoring Schedule for February 2009 (Western Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb	7-Feb
Noise Daytime (07:00-19:00)		1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	24 hrs TSP	1 hr TSP	
8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb
Noise Daytime (07:00-19:00)		1 hr TSP	24 hrs TSP	1 hr TSP	1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	
15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb	21-Feb
Noise Daytime (07:00-19:00)		1 hr TSP 24 hrs TSP	1 hr TSP		1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	
22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb	28-Feb
Noise Daytime (07:00-19:00)	24 hrs TSP	1 hr TSP	1 hr TSP		1 hr TSP Noise Daytime (07:00-19:00) , Evening time (19:00-23:00) & Night-time (23:00-07:00)	24 hrs TSP

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AQ2 - Outside Aegean Terrace (1 hour TSP)
AQ3 - Outside Site Office at Western Portal (24 hours TSP)

Noise Monitoring Station

NC3 - Outside Aegean Terrace

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Tentative Impact Water Quality Monitoring Schedule for February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb	7-Feb
	Mid-Flood 10:14 Mid-Ebb 16:54		Mid-Ebb 08:15 Mid-Flood 12:15		Mid-Flood 10:04 Mid-Ebb N/A	
8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb
	Mid-Flood 08:00 Mid-Ebb 13:15		Mid-Flood 08:28 Mid-Ebb 14:31		Mid-Flood 09:17 Mid-Ebb 15:40	
15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb	21-Feb
	Mid-Flood 10:28 Mid-Ebb 17:15		Mid-Flood 08:00 Mid-Ebb N/A		Mid-Flood 10:13 Mid-Ebb N/A	
22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb	28-Feb
	Mid-Flood 08:00 Mid-Ebb 13:00		Mid-Flood 08:00 Mid-Ebb 13:45		Mid-Flood 08:10 Mid-Ebb 14:38	

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
NA indicated favourable tide occurs during non-working hours

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

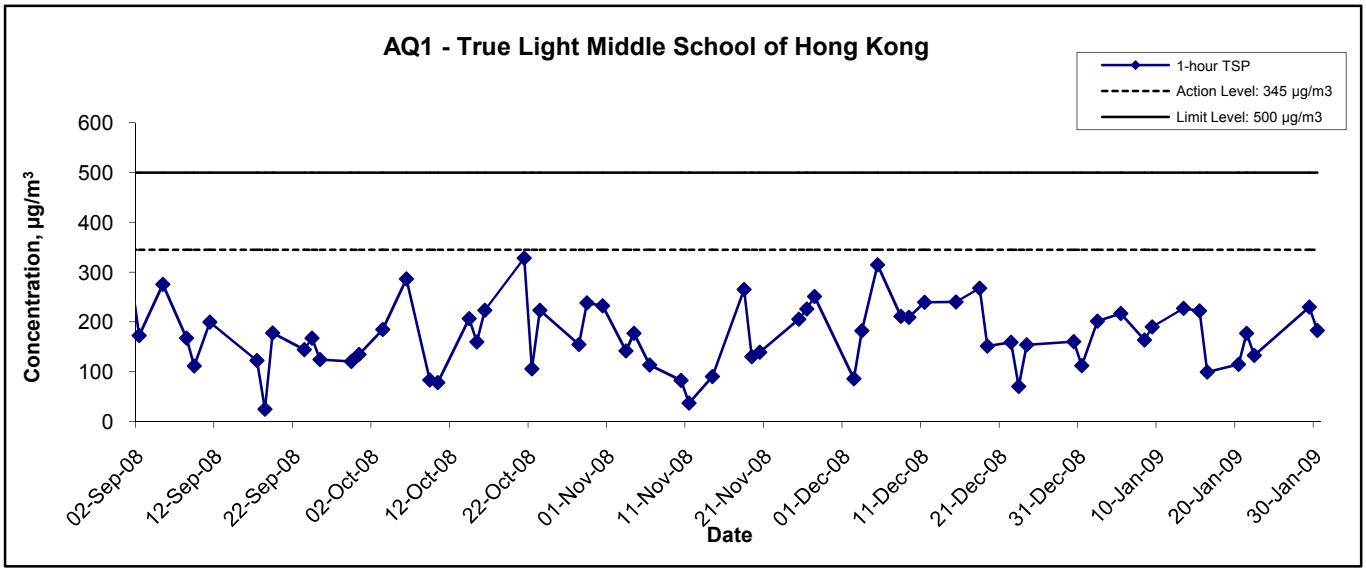
Station AQ1 (True Light Middle School of Hong Kong)

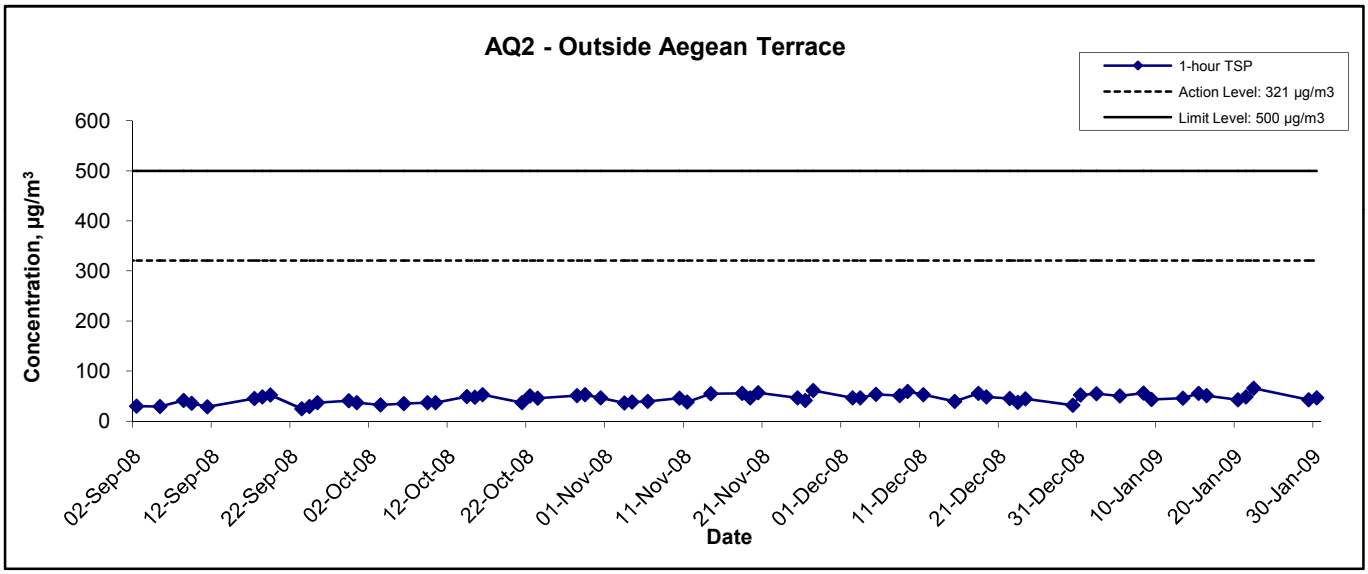
Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
2-Jan-09	09:00	Sunny	289.3	770.8	2.8747	2.8895	0.0148	2443.3	2444.3	1.0	1.22	1.22	1.22	73.4	201.6
5-Jan-09	15:00	Sunny	292.9	766.9	2.8603	2.8761	0.0158	2468.3	2469.3	1.0	1.21	1.21	1.21	72.8	217.0
8-Jan-09	09:00	Sunny	285.1	772.6	2.7887	2.8008	0.0121	2469.3	2470.3	1.0	1.23	1.23	1.23	74.0	163.6
9-Jan-09	17:00	Sunny	286.8	770.5	2.7944	2.8084	0.0140	2494.3	2495.3	1.0	1.23	1.23	1.23	73.7	190.0
13-Jan-09	09:00	Sunny	283.9	777.3	2.8474	2.8643	0.0169	2495.3	2496.3	1.0	1.24	1.24	1.24	74.3	227.4
15-Jan-09	15:00	Sunny	289.3	772.1	2.8065	2.8228	0.0163	2520.3	2521.3	1.0	1.22	1.22	1.22	73.5	221.9
16-Jan-09	09:00	Sunny	285.1	767.5	2.8403	2.8476	0.0073	2521.3	2522.3	1.0	1.23	1.23	1.23	73.8	99.0
20-Jan-09	09:00	Sunny	289.9	767.0	2.8117	2.8201	0.0084	2522.3	2523.3	1.0	1.22	1.22	1.22	73.2	114.8
21-Jan-09	14:30	Sunny	295.9	764.1	2.8473	2.8601	0.0128	2547.3	2548.3	1.0	1.21	1.21	1.21	72.4	176.9
22-Jan-09	09:00	Sunny	290.2	764.8	2.8256	2.8353	0.0097	2548.3	2549.3	1.0	1.22	1.22	1.22	73.0	132.8
29-Jan-09	13:00	Sunny	293.1	764.2	2.8537	2.8704	0.0167	2573.3	2574.3	1.0	1.21	1.21	1.21	72.7	229.7
30-Jan-09	09:00	Sunny	287.7	766.6	2.8263	2.8397	0.0134	2574.3	2575.3	1.0	1.22	1.22	1.22	73.4	182.5
														Min	99.0
														Max	229.7
														Average	179.8

Appendix E - 1-hour TSP Monitoring Results

Station AQ2 (Outside Aegean Terrace)			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
2-Jan-09	16:00	Sunny	55.0
5-Jan-09	17:00	Sunny	50.3
8-Jan-09	15:00	Sunny	56.5
9-Jan-09	13:00	Sunny	43.6
13-Jan-09	16:00	Sunny	46.4
15-Jan-09	16:20	Sunny	56.0
16-Jan-09	14:25	Sunny	51.4
20-Jan-09	15:00	Sunny	43.1
21-Jan-09	16:05	Sunny	48.8
22-Jan-09	14:15	Sunny	66.0
29-Jan-09	14:35	Sunny	42.8
30-Jan-09	16:00	Sunny	46.8
		Average	50.6
		Maximum	66.0
		Minimum	42.8

1-hr TSP Concentration Levels





Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: E	CINOTECH

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

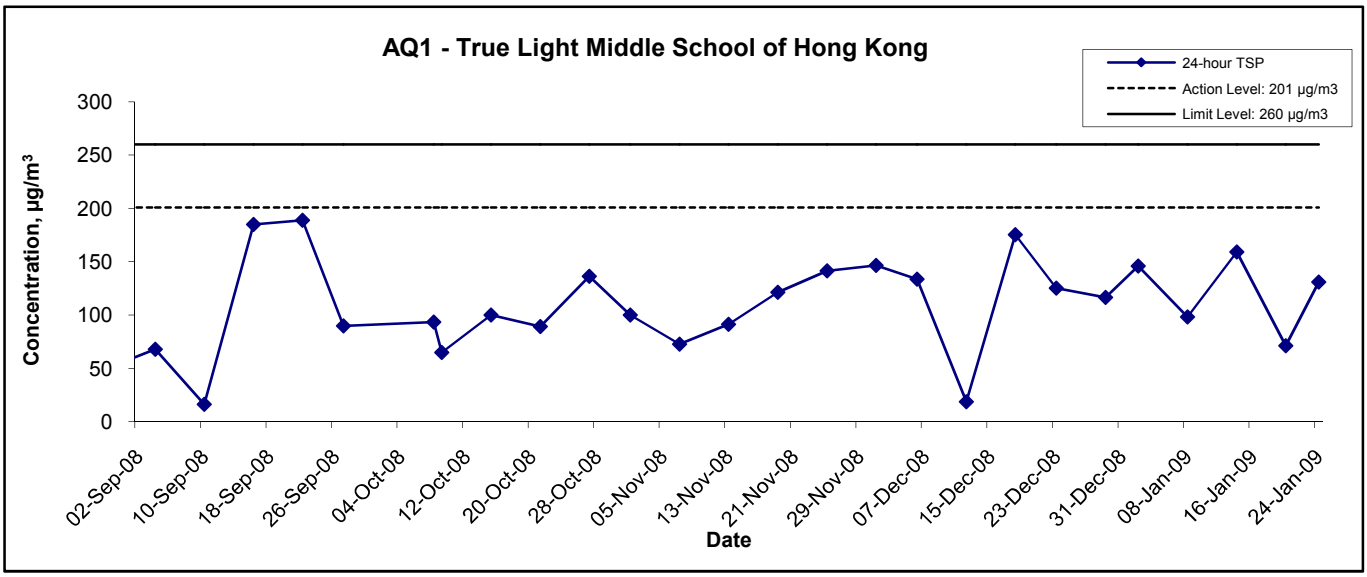
Station AQ1 - True Light Middle School of Hong Kong

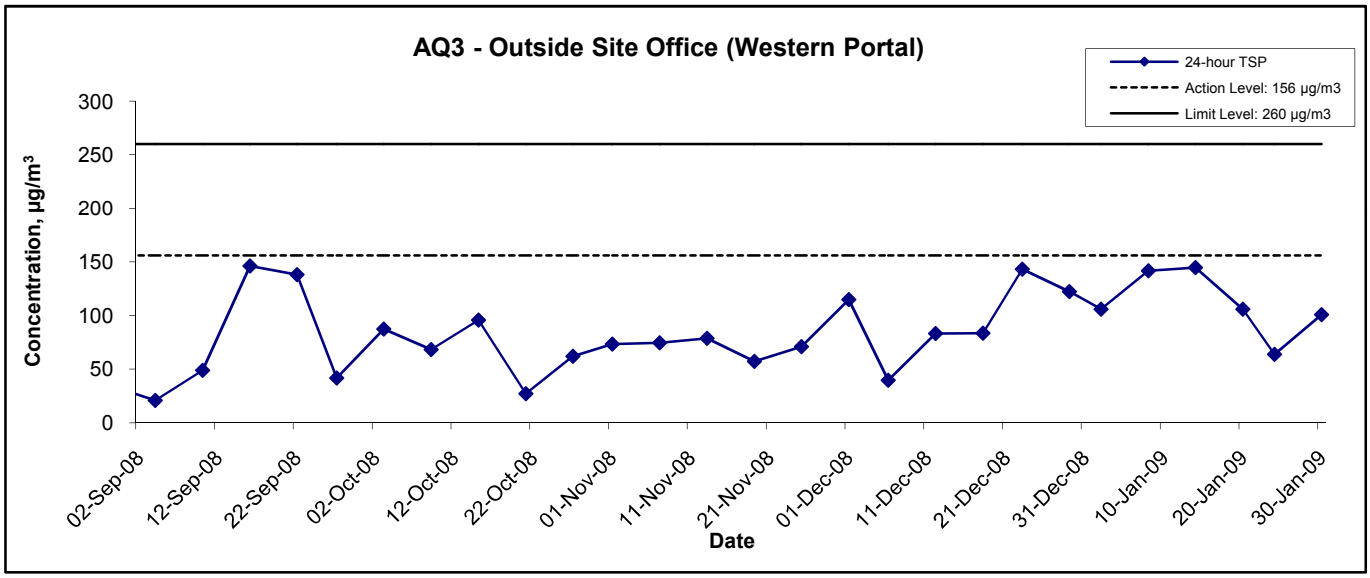
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-09	Sunny	293.6	766.5	2.7755	3.0301	0.2546	2444.3	2468.3	24.0	1.21	1.21	1.21	1745.5	145.9
8-Jan-09	Sunny	290.6	768.9	2.8504	3.0231	0.1727	2470.3	2494.3	24.0	1.22	1.22	1.22	1756.4	98.3
14-Jan-09	Sunny	282.1	776.5	2.8532	3.1378	0.2846	2496.3	2520.3	24.0	1.24	1.24	1.24	1788.2	159.2
20-Jan-09	Sunny	293.0	764.6	2.8326	2.9567	0.1241	2523.3	2547.3	24.0	1.21	1.21	1.21	1745.2	71.1
24-Jan-09	Sunny	282.5	773.4	2.8477	3.0812	0.2335	2549.3	2573.3	24.0	1.24	1.24	1.24	1783.8	130.9
													Min	71.1
													Max	159.2
													Average	121.1

Station AQ3 - Outside Site Office (Western Portal)

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-09	Sunny	289.3	770.8	2.8362	3.0227	0.1865	6587.2	6611.2	24.0	1.22	1.22	1.22	1761.4	105.9
8-Jan-09	Sunny	285.1	772.7	2.8123	3.0639	0.2516	6611.2	6635.2	24.0	1.23	1.23	1.23	1775.7	141.7
14-Jan-09	Sunny	282.1	776.5	2.8242	3.0834	0.2592	6635.2	6659.2	24.0	1.24	1.24	1.24	1788.7	144.9
20-Jan-09	Sunny	289.9	767.0	2.8183	3.0043	0.1860	6659.2	6683.2	24.0	1.22	1.22	1.22	1755.6	105.9
24-Jan-09	Sunny	282.5	773.4	2.8513	2.9655	0.1142	6683.2	6707.2	24.0	1.24	1.24	1.24	1784.2	64.0
30-Jan-09	Sunny	287.7	766.6	2.8512	3.0289	0.1777	6707.2	6731.2	24.0	1.22	1.22	1.22	1761.4	100.9
													Min	64.0
													Max	144.9
													Average	110.6

24-hr TSP Concentration Levels





Title: Graphical Presentation of 24-hour TSP Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: F

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APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix G - Noise Monitoring Results

Location NC1 - True Light Middle School of Hong Kong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Jan-09	14:00	Sunny	66.5	68.0	65.5	70.2	66.5, Measured ≦ Baseline
9-Jan-09	17:00	Sunny	66.1	68.5	65.0		66.1, Measured ≦ Baseline
16-Jan-09	13:00	Sunny	67.2	68.5	65.0		67.2, Measured ≦ Baseline
22-Jan-09	16:05	Sunny	69.3	71.0	67.5		69.3, Measured ≦ Baseline

Location NC2 - The Legend							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Jan-09	14:45	Sunny	66.3	67.5	64.5	64.8	61.0
9-Jan-09	16:10	Sunny	66.7	68.5	64.0		62.2
16-Jan-09	13:40	Sunny	66.3	67.5	64.5		61.0
22-Jan-09	16:50	Sunny	68.2	69.5	65.5		65.5
30-Jan-09	16:30	Cloudy	67.4	69.0	64.5		63.9

Location NC3 - Outside Aegean Terrace							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Jan-09	16:00	Sunny	59.8	61.0	57.5	57.7	55.6
9-Jan-09	13:00	Sunny	60.8	62.0	57.5		57.9
16-Jan-09	14:30	Sunny	61.3	62.5	59.0		58.8
22-Jan-09	14:15	Sunny	61.1	62.5	59.0		58.4
30-Jan-09	15:00	Sunny	59.7	60.5	58.0		55.4

Appendix G - Noise Monitoring Results

(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days)

Location NC1a - Outside True Light Middle School of Hong Kong								
Date	Time	Weather	dB (A) (5-min)				(Reference) Baseline Level	(Reference) Construction Noise Level, L_{eq}
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	
2-Jan-09	19:25	Cloudy	67.8	69.0	65.5	68.0	65.8	64.0
	19:30		68.1	69.0	65.5			
	19:35		68.0	69.0	65.0			
9-Jan-09	19:25	Cloudy	66.9	68.5	65.5	67.2		61.6
	19:30		67.3	68.5	65.0			
	19:35		67.3	68.5	65.0			
11-Jan-09	13:00	Sunny	60.8	63.5	56.5	60.7		60.7, Measured ≦ Baseline
	13:05		61.0	63.5	56.5			
	13:10		60.4	63.0	56.0			
16-Jan-09	19:00	Cloudy	67.8	69.0	65.0	68.1		64.2
	19:05		68.3	69.5	65.5			
	19:10		68.2	69.0	65.0			
22-Jan-09	19:00	Cloudy	68.2	69.5	66.0	68.0		64.0
	19:05		67.9	69.5	66.5			
	19:10		67.9	69.0	66.0			
30-Jan-09	22:10	Fine	67.0	70.5	51.0	68.3		64.7
	22:15		69.9	73.5	52.0			
	22:20		67.3	71.5	51.0			

(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days)

Location NC2 - The Legend								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
2-Jan-09	19:00	Cloudy	64.1	65.5	63.0	64.0	59.1	62.3
	19:05		63.8	65.0	62.5			
	19:15		64.0	65.0	62.5			
9-Jan-09	19:00	Cloudy	63.1	64.5	60.5	63.3		61.2
	19:05		63.6	64.5	61.0			
	19:10		63.2	64.0	60.5			
11-Jan-09	13:40	Sunny	65.1	67.5	62.5	65.5		64.4
	13:45		65.5	68.0	63.0			
	13:50		65.9	68.0	63.0			
16-Jan-09	19:30	Cloudy	63.3	64.0	61.0	63.2		61.1
	19:35		63.3	64.5	61.0			
	19:40		63.1	64.0	60.5			
22-Jan-09	19:30	Cloudy	63.6	64.5	61.0	63.4		61.4
	19:35		63.3	64.5	60.5			
	19:40		63.4	64.5	60.5			
30-Jan-09	22:40	Fine	57.7	60.0	53.0	57.5		57.5, Measured ≦ Baseline
	22:45		57.7	60.0	54.0			
	22:50		57.0	60.0	53.5			

(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days)

Location NC3 - Outside Aegean Terrace								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
2-Jan-09	20:15	Cloudy	56.2	57.0	55.5	55.9	53.8	51.7
	20:20		55.7	56.5	55.0			
	20:25		55.9	56.5	55.0			
4-Jan-09	09:50	Fine	54.4	60.5	48.5	54.6		46.9
	09:55		54.7	61.0	48.0			
	10:00		54.8	61.0	48.0			
9-Jan-09	20:10	Cloudy	56.2	57.0	55.0	55.9		51.7
	20:15		55.7	56.5	54.5			
	20:20		55.9	56.5	54.5			
11-Jan-09	11:15	Sunny	58.0	60.5	52.5	58.1		56.1
	11:20		58.5	61.0	52.5			
	11:25		57.8	60.0	52.0			
16-Jan-09	20:15	Cloudy	55.2	56.0	53.5	55.3		50.0
	20:20		55.5	56.5	53.5			
	20:25		55.3	56.0	54.0			
18-Jan-09	11:00	Sunny	58.9	61.0	53.0	58.7		57.0
	11:05		58.4	61.0	52.5			
	11:10		58.8	61.0	53.0			
22-Jan-09	20:15	Cloudy	55.1	56.0	54.0	55.2		49.6
	20:20		55.3	56.5	54.0			
	20:25		55.3	56.5	54.0			
25-Jan-09	13:00	Sunny	57.5	59.5	52.5	57.9		55.8
	13:05		57.9	59.5	52.5			
	13:10		58.3	60.0	52.5			
30-Jan-09	21:30	Fine	49.7	50.5	47.5	49.1		49.1, Measured ≦ Baseline
	21:35		49.5	52.0	44.5			
	21:40		47.7	50.5	44.0			

(Restricted Hours - 23:00 to 07:00 on all days)

Location NC1a - Outside True Light Middle School of Hong Kong								
Date	Time	Weather	dB (A) (5-min)				(Reference) Baseline Level	(Reference) Construction Noise Level, L_{eq}
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	
16-Jan-09	23:40	Sunny	61.2	64.5	54.0	60.8	60.7	44.4
	23:45		60.6	64.0	54.0			
	23:50		60.5	64.0	54.0			
22-Jan-09	23:35	Fine	59.3	63.0	51.5	59.6		59.6, Measured ≦ Baseline
	23:40		59.5	63.0	52.0			
	23:45		59.9	63.0	52.5			
30-Jan-09	23:35	Fine	60.2	68.5	50.0	60.3		60.3, Measured ≦ Baseline
	23:40		60.8	68.5	50.0			
	23:45		60.0	68.0	49.5			

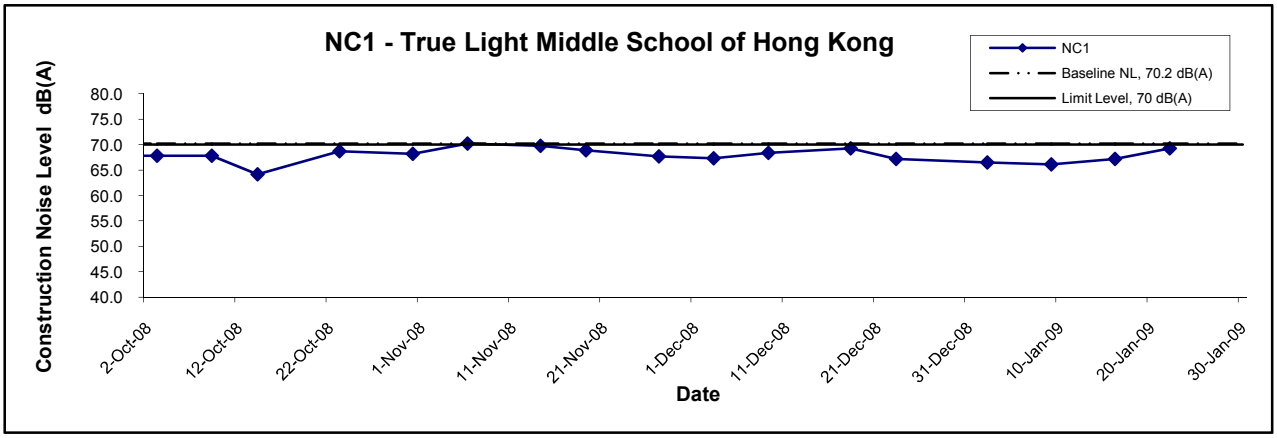
(Restricted Hours - 23:00 to 07:00 on all days)

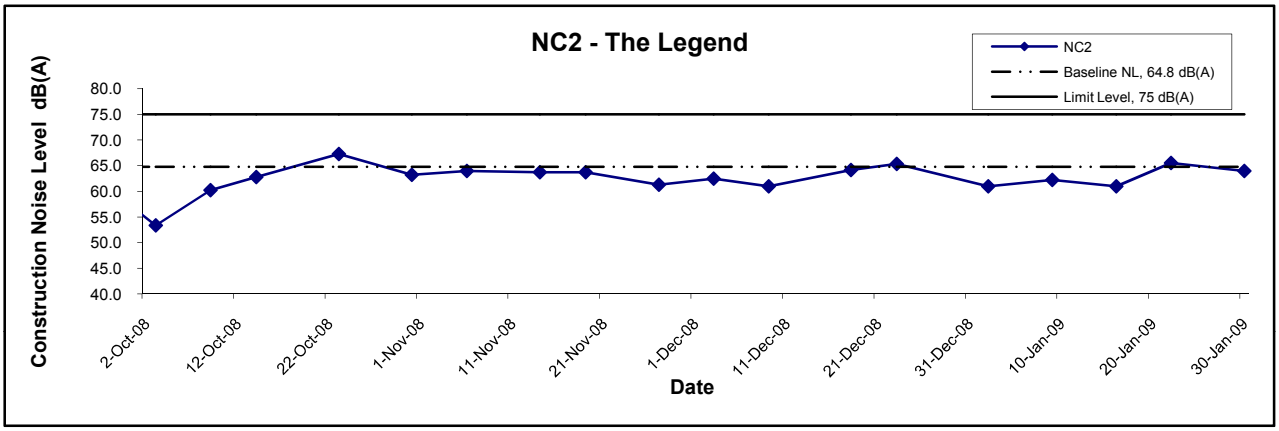
Location NC2 - The Legend								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
16-Jan-09	23:00	Sunny	54.3	56.5	51.5	54.5	53.9	45.6
	23:05		54.5	57.0	51.5			
	23:10		54.8	57.0	52.0			
22-Jan-09	23:00	Fine	53.7	57.0	51.0	54.0		37.6
	23:05		54.2	57.5	51.5			
	23:10		54.0	57.5	51.5			
30-Jan-09	23:15	Fine	53.0	60.5	51.0	53.4		53.4, Measured ≦ Baseline
	23:20		53.5	60.5	51.0			
	23:25		53.7	60.5	51.5			

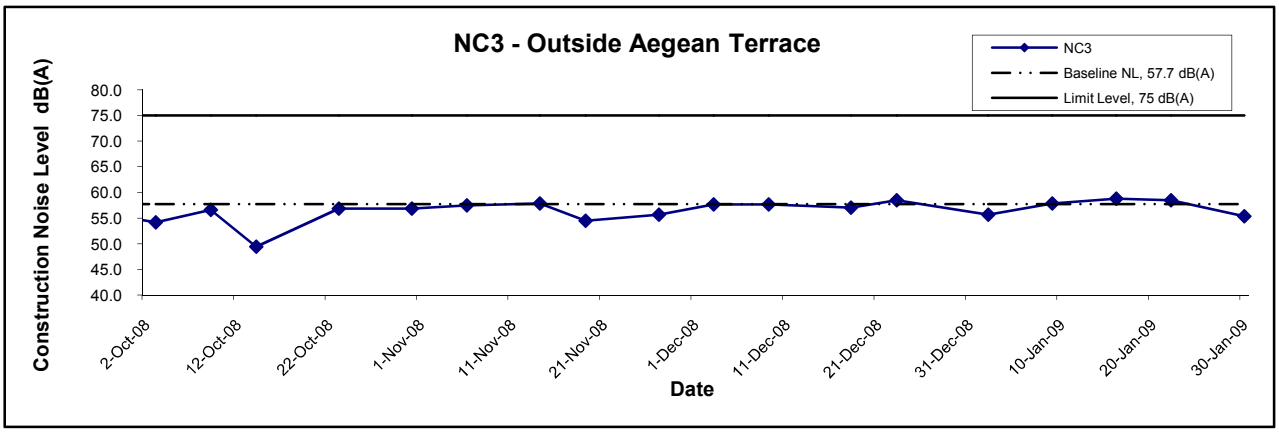
(Restricted Hours - 23:00 to 07:00 on all days)

Location NC3 - Outside Aegean Terrace								
Date	Time	Weather	dB (A) (5-min)				Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	Average L_{eq}	L_{eq}	L_{eq}
9-Jan-09	23:05	Fine	53.9	55.0	46.5	53.7	52.0	48.8
	23:10		53.7	55.0	46.0			
	23:15		53.5	55.0	46.0			
17-Jan-09	00:05	Sunny	52.8	54.5	47.0	52.8		45.1
	00:10		53.0	54.5	47.0			
	00:15		52.6	54.0	46.5			
23-Jan-09	00:25	Fine	52.4	54.5	46.5	52.6		43.7
	00:30		52.8	54.5	46.0			
	00:35		52.5	54.5	46.0			
31-Jan-09	00:20	Fine	49.7	50.5	44.0	49.7		49.7, Measured ≦ Baseline
	00:25		49.8	50.5	44.5			
	00:30		49.6	50.5	44.5			

Noise Levels

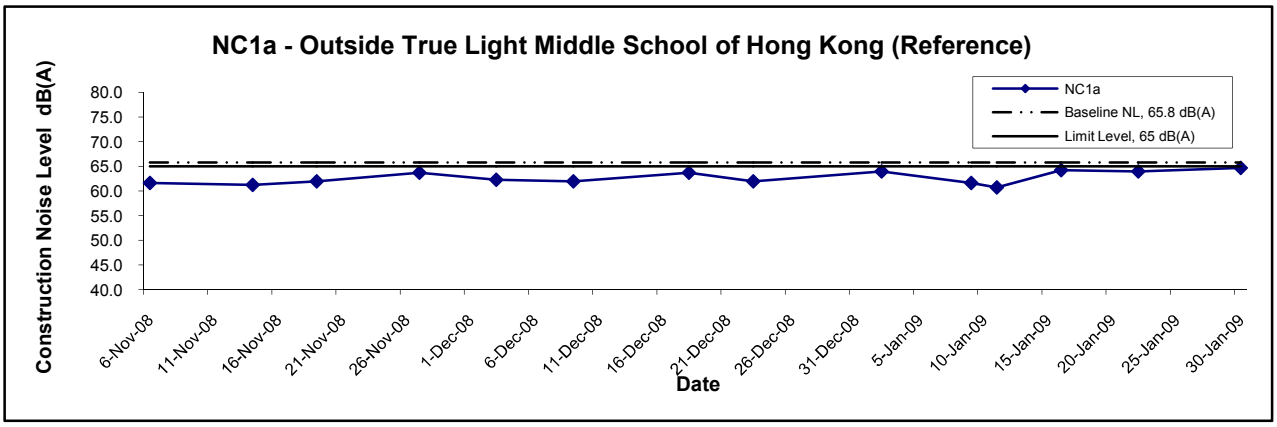


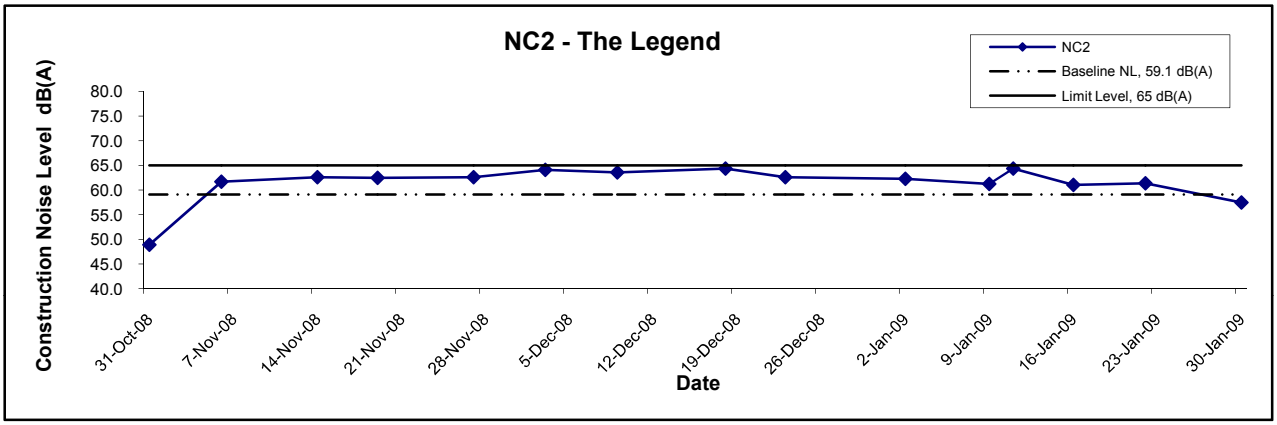


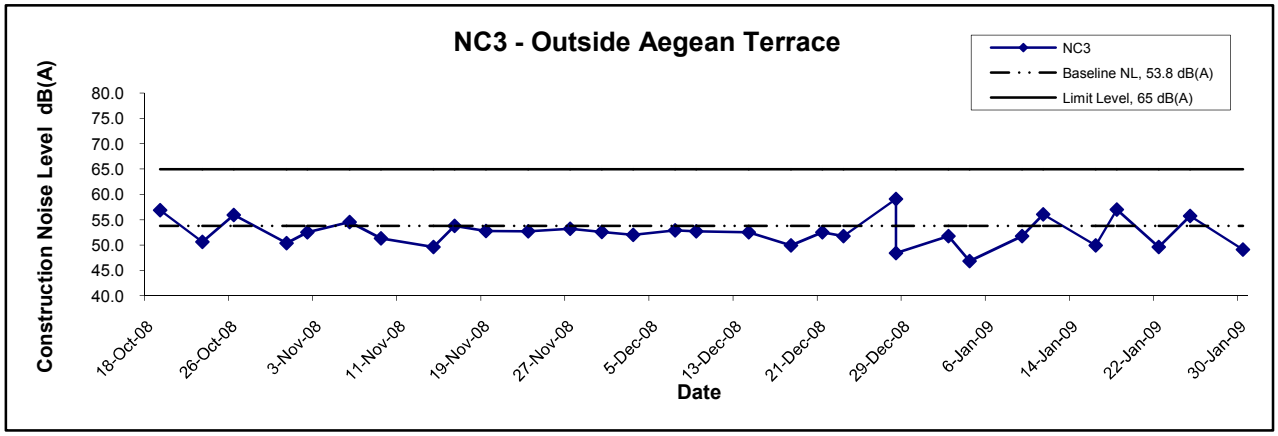


Title		Scale	Project No.	
	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	N.T.S	MA8001	CINOTECH
	Graphical Presentation of Construction Noise Monitoring Results	Date: Jan 09	Appendix: G	

Noise Levels
(Restricted Hours - 07:00 - 23:00 holidays & 19:00 - 23:00 on all other days)

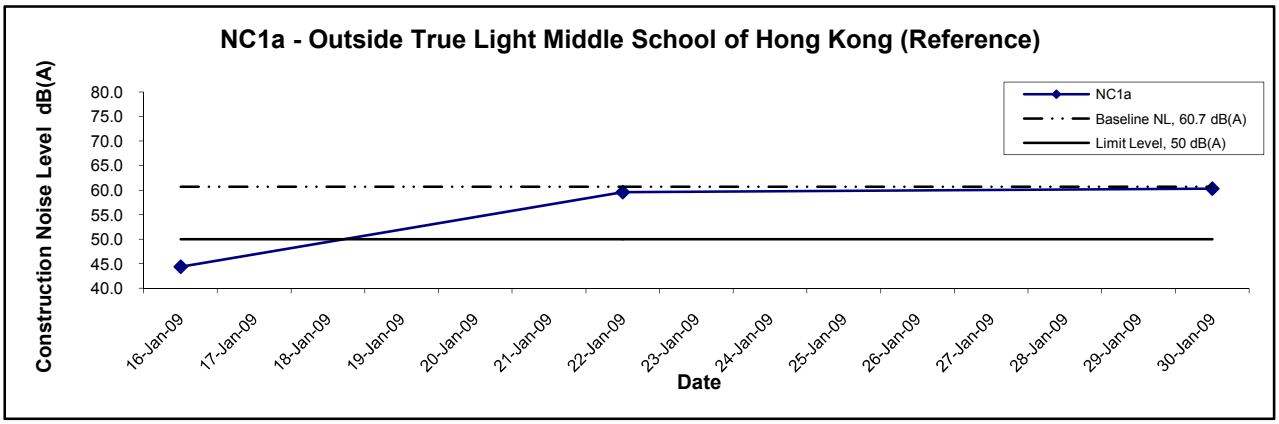


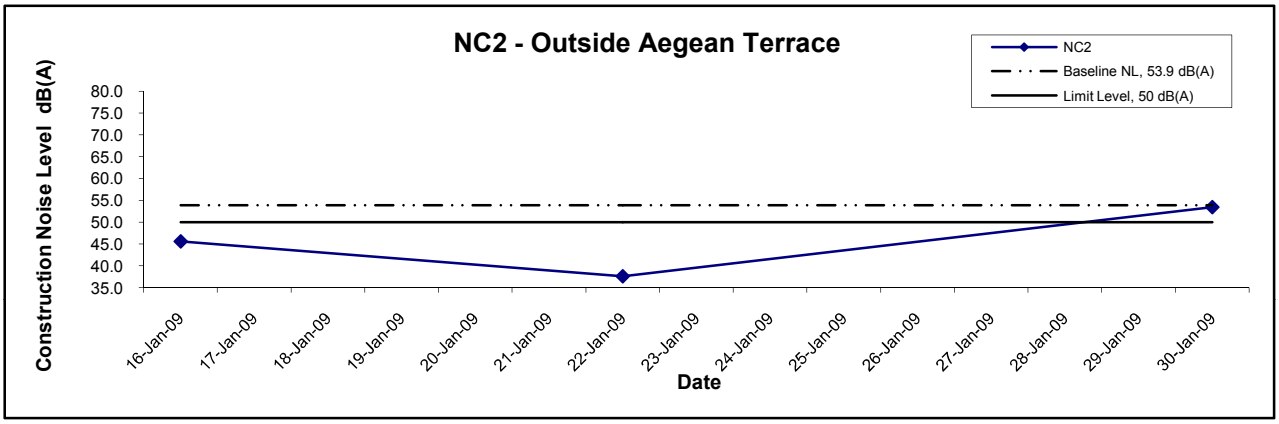


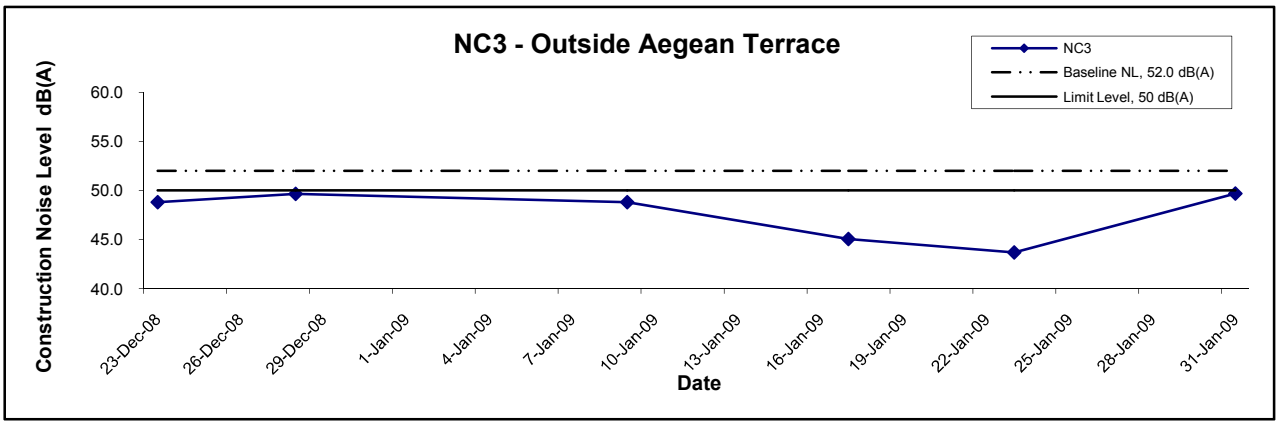


Title	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: G	CINOTECH

Noise Levels
(Restricted Hours - 23:00 to 07:00 on all days)







Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: G	CINOTECH

APPENDIX H
WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATION

Water Quality Monitoring Results at CE - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	16:25	Surface	1	21.7 21.8	21.8	7.7 7.8	7.8	31.2 31.1	31.2	109.8 103.7	106.8	7.3 6.8	7.1	6.8	3.0 3.2	3.1	3.7	8.0 8.0	8.0	11.5
				Middle	6	21.6 21.6	21.6	8.3 7.9	8.1	31.4 31.4	31.4	85.2 84.5	84.9	6.5 6.4	6.5		3.7 3.8	3.8		12.0 12.0	12.0	
				Bottom	11	21.5 21.5	21.5	7.9 8.1	8.0	31.5 31.5	31.5	82.1 81.8	82.0	6.3 6.2	6.3	6.3	4.1 4.2	4.2		14.0 15.0	14.5	
5-Jan-09	Sunny	Calm	17:24	Surface	1	21.7 21.8	21.8	7.5 7.8	7.7	31.4 31.3	31.4	109.7 103.6	106.7	7.2 6.8	7.0	6.7	1.6 1.8	1.7	2.3	13.0 13.0	13.0	8.8
				Middle	6	21.5 21.5	21.5	8.0 7.5	7.8	31.6 31.6	31.6	95.1 94.4	94.8	6.4 6.4	6.4		2.3 2.4	2.4		7.0 7.0	7.0	
				Bottom	11	21.5 21.4	21.5	7.9 8.1	8.0	31.7 31.7	31.7	92.0 91.7	91.9	6.2 6.2	6.2	6.2	2.7 2.8	2.8		6.0 7.0	6.5	
7-Jan-09	Sunny	Moderate	09:01	Surface	1	19.9 19.9	19.9	7.5 7.4	7.5	32.7 33.1	32.9	87.7 82.5	85.1	6.8 6.4	6.6	6.5	3.6 3.6	3.6	3.9	14.0 14.0	14.0	13.2
				Middle	5.5	19.7 19.7	19.7	7.9 7.7	7.8	33.1 33.4	33.3	81.5 81.3	81.4	6.4 6.4	6.4		3.9 3.8	3.9		12.0 12.0	12.0	
				Bottom	10	19.2 19.2	19.2	7.6 7.8	7.7	33.4 32.6	33.0	92.4 89.4	90.9	6.8 6.6	6.7	6.7	4.2 4.4	4.3		13.0 14.0	13.5	
9-Jan-09	Sunny	Moderate	10:45	Surface	1	19.9 19.9	19.9	8.0 7.9	8.0	30.9 30.9	30.9	93.3 91.6	92.5	6.5 6.4	6.5	6.4	4.0 4.1	4.1	4.8	11.0 11.0	11.0	12.2
				Middle	5.5	19.5 19.5	19.5	8.2 8.2	8.2	30.9 30.9	30.9	88.0 87.8	87.9	6.3 6.2	6.3		4.8 5.0	4.9		17.0 17.0	17.0	
				Bottom	10	19.4 19.4	19.4	7.8 8.2	8.0	31.2 31.0	31.1	85.6 85.4	85.5	6.2 6.1	6.2	6.2	5.5 5.4	5.5		8.0 9.0	8.5	
12-Jan-09	Sunny	Moderate	14:23	Surface	1	20.2 20.2	20.2	7.3 7.4	7.4	32.8 33.1	33.0	88.4 85.4	86.9	6.9 6.7	6.8	6.7	3.8 3.8	3.8	4.8	8.0 8.0	8.0	9.8
				Middle	6	20.2 20.2	20.2	7.7 7.4	7.6	33.1 33.5	33.3	84.9 80.9	82.9	6.6 6.3	6.5		5.3 5.3	5.3		11.0 11.0	11.0	
				Bottom	11	20.2 20.2	20.2	7.5 7.7	7.6	33.5 32.5	33.0	80.2 87.5	83.9	6.3 6.8	6.6	6.6	5.3 5.3	5.3		10.0 11.0	10.5	
14-Jan-09	Sunny	Moderate	15:43	Surface	1	16.3 16.4	16.4	9.1 8.8	9.0	34.1 34.1	34.1	98.6 97.2	97.9	7.1 7.2	7.2	7.4	3.3 2.7	3.0	3.5	12.0 12.0	12.0	11.5
				Middle	5.5	16.5 16.4	16.5	8.6 8.0	8.3	34.1 34.1	34.1	102.0 105.5	103.8	7.5 7.6	7.6		3.4 3.4	3.4		10.0 10.0	10.0	
				Bottom	10	16.5 16.5	16.5	8.1 7.7	7.9	34.1 34.2	34.2	105.5 102.5	104.0	7.6 7.6	7.6	7.6	4.0 4.3	4.2		13.0 12.0	12.5	
16-Jan-09	Sunny	Moderate	15:26	Surface	1	16.9 16.8	16.9	8.2 7.9	8.1	31.8 31.8	31.8	105.8 105.9	105.9	7.3 7.3	7.3	7.1	4.3 4.2	4.3	4.3	7.0 7.0	7.0	8.0
				Middle	5.5	16.8 16.8	16.8	7.7 8.1	7.9	33.4 33.4	33.4	100.6 99.8	100.2	6.9 6.9	6.9		4.0 3.9	4.0		7.0 7.0	7.0	
				Bottom	10	16.5 16.2	16.4	8.0 7.8	7.9	35.4 35.4	35.4	94.2 92.3	93.3	6.5 6.4	6.5	6.5	4.6 4.5	4.6		10.0 10.0	10.0	
19-Jan-09	Fine	Moderate	17:55	Surface	1	16.3 16.5	16.4	9.1 8.8	9.0	33.9 34.2	34.1	98.5 97.3	97.9	7.3 7.2	7.3	7.5	3.2 2.7	3.0	3.5	9.0 9.0	9.0	10.2
				Middle	5.5	16.3 16.5	16.4	8.6 7.9	8.3	34.0 34.1	34.1	102.1 105.7	103.9	7.6 7.6	7.6		3.5 3.4	3.5		12.0 12.0	12.0	
				Bottom	10	16.4 16.4	16.4	8.3 7.9	8.1	34.0 34.0	34.0	105.4 102.3	103.9	7.8 7.5	7.7	7.7	4.0 4.2	4.1		9.0 10.0	9.5	
29-Jan-09	Sunny	Calm	14:35	Surface	1	18.3 18.4	18.4	8.2 8.2	8.2	30.9 30.8	30.9	99.4 100.3	99.9	7.1 7.1	7.1	6.7	2.8 3.0	2.9	3.5	15.0 15.0	15.0	14.0
				Middle	6	18.2 18.2	18.2	8.3 8.1	8.2	31.2 31.1	31.2	91.8 91.1	91.5	6.3 6.2	6.3		3.5 3.6	3.6		13.0 13.0	13.0	
				Bottom	11	18.1 18.1	18.1	8.0 8.0	8.0	31.3 31.3	31.3	88.7 88.4	88.6	6.1 6.0	6.1	6.1	3.9 4.0	4.0		14.0 14.0	14.0	
31-Jan-09	Sunny	Calm	16:50	Surface	1	17.4 17.4	17.4	7.7 7.6	7.7	31.0 30.9	31.0	99.4 97.7	98.6	6.4 6.4	6.4	6.5	3.2 3.3	3.3	3.9	15.0 15.0	15.0	13.0
				Middle	5.5	16.9 16.9	16.9	8.2 8.1	8.2	31.0 31.1	31.1	91.5 89.6	90.6	6.4 6.5	6.5		4.0 3.9	4.0		9.0 9.0	9.0	
				Bottom	10	16.7 16.7	16.7	7.8 8.2	8.0	31.3 31.2	31.3	86.6 86.3	86.5	6.6 6.7	6.7	6.7	4.3 4.4	4.4		15.0 15.0	15.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at CF - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	11:12	Surface	1	22.4 22.4	22.4	7.8 8.2	8.0	29.5 29.1	29.3	89.3 89.2	89.3	6.9 6.8	6.9	6.9	2.9 2.7	2.8	3.0	14.0 14.0	14.0	11.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	21.9 21.9	21.9	8.5 8.2	8.4	30.1 30.1	30.1	79.5 78.9	79.2	6.2 6.1	6.2	6.2	3.1 3.2	3.2		8.0 9.0	8.5	
5-Jan-09	Sunny	Calm	12:33	Surface	1	22.0 22.1	22.1	7.7 8.0	7.9	30.8 30.9	30.9	98.0 97.2	97.6	6.4 6.4	6.4	6.4	1.4 1.2	1.3	2.1	11.0 11.0	11.0	9.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	22.1 22.1	22.1	8.3 8.0	8.2	31.1 31.1	31.1	96.0 95.9	96.0	6.3 6.3	6.3	6.3	2.8 2.8	2.8		7.0 7.0	7.0	
7-Jan-09	Sunny	Moderate	13:37	Surface	1	20.2 20.1	20.2	7.4 7.7	7.6	32.6 32.5	32.6	89.1 99.7	94.4	6.6 7.3	7.0	7.0	2.4 2.4	2.4	3.2	6.0 6.0	6.0	9.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.5 19.5	19.5	8.0 7.8	7.9	33.6 33.6	33.6	79.0 79.1	79.1	6.1 6.1	6.1	6.1	3.9 3.8	3.9		13.0 13.0	13.0	
9-Jan-09	Sunny	Moderate	15:07	Surface	1	19.8 19.9	19.9	7.7 8.0	7.9	30.5 30.6	30.6	95.7 94.9	95.3	6.7 6.6	6.7	6.7	3.1 2.9	3.0	3.3	13.0 13.0	13.0	12.2
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	19.8 19.8	19.8	8.2 7.9	8.1	30.8 30.8	30.8	93.7 93.6	93.7	6.5 6.5	6.5	6.5	3.5 3.6	3.6		9.0 10.0	9.5	
12-Jan-09	Sunny	Moderate	09:10	Surface	1	20.1 20.2	20.2	7.4 7.9	7.7	32.6 32.6	32.6	92.6 87.8	90.2	6.5 6.5	6.5	6.5	2.5 2.3	2.4	2.6	9.0 9.0	9.0	10.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.2 20.2	20.2	8.3 7.9	8.1	33.6 33.5	33.6	92.5 91.6	92.1	6.4 6.5	6.5	6.5	2.7 2.6	2.7		11.0 11.0	11.0	
14-Jan-09	Sunny	Moderate	09:23	Surface	1	16.3 16.5	16.4	8.0 8.6	8.3	33.4 33.5	33.5	114.8 116.6	115.7	8.4 8.6	8.5	8.5	2.9 2.9	2.9	3.0	9.0 10.0	9.5	9.8
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	16.2 16.2	16.2	9.0 8.6	8.8	33.8 33.6	33.7	108.7 114.1	111.4	7.9 8.5	8.2	8.2	3.0 3.0	3.0		10.0 10.0	10.0	
16-Jan-09	Sunny	Moderate	10:48	Surface	1	17.0 17.0	17.0	8.2 8.4	8.3	31.5 31.5	31.5	102.6 102.6	102.6	7.0 7.0	7.0	7.0	4.4 4.3	4.4	4.2	10.0 10.0	10.0	9.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	16.7 16.6	16.7	7.9 8.1	8.0	32.2 32.2	32.2	103.8 102.7	103.3	7.1 7.1	7.1	7.1	3.7 4.1	3.9		8.0 8.0	8.0	
19-Jan-09	Fine	Moderate	12:10	Surface	1	16.4 16.4	16.4	8.0 8.6	8.3	33.4 33.5	33.5	114.8 116.4	115.6	8.4 8.5	8.5	8.5	2.5 2.5	2.5	2.9	9.0 9.0	9.0	11.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	16.2 16.4	16.3	8.8 8.6	8.7	33.7 33.8	33.8	108.6 114.1	111.4	8.1 8.3	8.2	8.2	3.3 3.2	3.3		13.0 13.0	13.0	
21-Jan-09	Sunny	Moderate	09:39	Surface	1	20.5 20.6	20.6	7.8 7.7	7.8	33.6 33.6	33.6	95.0 94.2	94.6	6.3 6.3	6.3	6.3	2.2 2.3	2.3	2.7	3.0 3.0	3.0	3.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	20.2 20.2	20.2	7.7 7.8	7.8	33.5 33.5	33.5	89.9 90.0	90.0	6.4 6.4	6.4	6.4	2.9 3.0	3.0		3.0 3.0	3.0	
23-Jan-09	Sunny	Calm	10:15	Surface	1	21.4 21.5	21.5	7.8 7.7	7.8	34.0 34.2	34.1	99.1 98.0	98.6	6.7 6.6	6.7	6.7	1.9 1.8	1.9	2.3	3.0 3.0	3.0	4.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	21.4 21.4	21.4	7.7 7.8	7.8	34.5 34.4	34.5	96.6 96.4	96.5	6.5 6.5	6.5	6.5	2.6 2.6	2.6		5.0 5.0	5.0	
29-Jan-09	Fine	Calm	08:15	Surface	1	18.7 18.7	18.7	7.9 8.3	8.1	30.4 30.5	30.5	99.7 98.9	99.3	6.8 6.7	6.8	6.8	2.6 2.4	2.5	2.8	10.0 10.0	10.0	11.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	18.7 18.7	18.7	8.5 8.3	8.4	30.7 30.7	30.7	97.7 97.6	97.7	6.6 6.6	6.6	6.6	3.0 3.1	3.1		12.0 12.0	12.0	
31-Jan-09	Sunny	Calm	09:00	Surface	1	17.0 17.1	17.1	7.8 8.1	8.0	30.8 30.9	30.9	101.4 100.5	101.0	6.8 6.8	6.8	6.8	2.2 2.4	2.3	2.9	17.0 16.0	16.5	14.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	17.1 17.1	17.1	8.4 8.1	8.3	31.1 31.1	31.1	99.2 99.0	99.1	6.7 6.6	6.7	6.7	3.3 3.4	3.4		12.0 12.0	12.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at I1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	15:49	Surface	1	22.6 22.6	22.6	8.2 7.9	8.1	31.9 31.9	31.9	93.3 92.4	92.9	6.3 6.3	6.3	6.4	3.1 3.1	3.1	3.4	16.0 16.0	16.0	10.7
				Middle	4.5	22.6 22.6	22.6	8.2 7.8	8.0	32.0 31.9	32.0	93.1 93.1	93.1	6.4 6.4	6.4		3.5 3.4	3.5		10.0 10.0	10.0	
				Bottom	8	22.6 22.6	22.6	8.3 7.9	8.1	31.5 32.1	31.8	91.7 92.0	91.9	6.2 6.2	6.2	6.2	3.5 3.4	3.5		6.0 6.0	6.0	
5-Jan-09	Sunny	Calm	16:49	Surface	1	22.0 22.0	22.0	8.1 7.9	8.0	31.3 31.3	31.3	106.2 103.1	104.7	7.1 6.9	7.0	6.7	1.2 1.0	1.1	1.4	9.0 9.0	9.0	8.0
				Middle	4.5	21.9 21.9	21.9	8.2 7.7	8.0	31.4 31.4	31.4	95.7 95.7	95.7	6.4 6.4	6.4		1.3 1.4	1.4		7.0 7.0	7.0	
				Bottom	8	21.7 21.7	21.7	8.2 7.7	8.0	31.5 31.6	31.6	94.4 94.2	94.3	6.4 6.4	6.4	6.4	1.6 1.7	1.7		8.0 8.0	8.0	
7-Jan-09	Sunny	Moderate	08:42	Surface	1	19.8 19.8	19.8	7.7 7.6	7.7	31.4 31.4	31.4	100.5 102.0	101.3	7.4 7.5	7.5	7.0	3.2 3.1	3.2	3.8	8.0 8.0	8.0	7.8
				Middle	4.5	19.5 19.5	19.5	7.8 7.6	7.7	32.0 32.0	32.0	85.4 83.1	84.3	6.4 6.3	6.4		3.6 3.7	3.7		8.0 8.0	8.0	
				Bottom	8	18.7 18.7	18.7	7.9 7.6	7.8	32.5 32.5	32.5	82.9 82.4	82.7	6.4 6.4	6.4	6.4	4.4 4.5	4.5		7.0 8.0	7.5	
9-Jan-09	Sunny	Moderate	10:23	Surface	1	19.8 19.8	19.8	8.1 7.9	8.0	30.9 30.9	30.9	92.5 92.8	92.7	6.4 6.5	6.5	6.4	3.1 3.1	3.1	3.4	11.0 11.0	11.0	12.3
				Middle	4.5	19.7 19.7	19.7	7.9 8.0	8.0	30.9 30.9	30.9	88.0 88.4	88.2	6.2 6.2	6.2		3.4 3.3	3.4		13.0 13.0	13.0	
				Bottom	8	19.5 19.5	19.5	8.0 8.1	8.1	30.8 31.1	31.0	85.9 85.3	85.6	6.1 6.0	6.1	6.1	3.6 3.8	3.7		13.0 13.0	13.0	
12-Jan-09	Sunny	Moderate	13:46	Surface	1	20.2 20.2	20.2	7.7 7.7	7.7	31.3 31.2	31.3	91.9 93.3	92.6	6.5 6.6	6.6	6.8	2.7 2.7	2.7	3.0	8.0 8.0	8.0	9.0
				Middle	4.5	20.2 20.2	20.2	7.7 7.6	7.7	31.7 31.7	31.7	94.3 94.0	94.2	6.9 6.8	6.9		3.1 3.0	3.1		9.0 9.0	9.0	
				Bottom	8	20.2 20.2	20.2	8.0 7.6	7.8	32.7 32.7	32.7	75.1 75.0	75.1	6.0 6.1	6.1	6.1	3.1 3.0	3.1		10.0 10.0	10.0	
14-Jan-09	Sunny	Moderate	15:15	Surface	1	16.4 16.3	16.4	8.6 7.7	8.2	34.1 34.0	34.1	91.1 90.7	90.9	6.5 6.7	6.6	6.8	2.6 2.7	2.7	3.5	9.0 9.0	9.0	11.7
				Middle	4.5	16.3 16.4	16.4	8.8 8.9	8.9	33.9 34.1	34.0	96.1 94.8	95.5	6.9 6.9	6.9		3.4 3.8	3.6		15.0 15.0	15.0	
				Bottom	8	16.4 16.5	16.5	7.8 8.6	8.2	34.0 33.9	34.0	86.2 95.1	90.7	6.3 6.9	6.6	6.6	4.2 4.0	4.1		11.0 11.0	11.0	
16-Jan-09	Sunny	Moderate	15:51	Surface	1	16.9 16.9	16.9	8.0 7.5	7.8	31.7 31.7	31.7	101.5 100.8	101.2	7.0 7.0	7.0	6.5	4.1 4.0	4.1	4.6	4.0 4.0	4.0	7.2
				Middle	4.5	16.9 16.9	16.9	8.3 8.0	8.2	31.7 31.7	31.7	85.2 84.3	84.8	5.9 5.8	5.9		5.0 4.7	4.9		6.0 6.0	6.0	
				Bottom	8	16.8 16.7	16.8	8.3 8.2	8.3	32.4 32.3	32.4	85.6 86.0	85.8	6.0 6.1	6.1	6.1	4.7 4.8	4.8		12.0 11.0	11.5	
19-Jan-09	Fine	Moderate	17:27	Surface	1	16.4 16.4	16.4	8.6 7.6	8.1	33.9 34.1	34.0	91.1 90.7	90.9	6.5 6.7	6.6	6.8	2.6 2.7	2.7	3.5	12.0 12.0	12.0	11.0
				Middle	4.5	16.4 16.4	16.4	8.8 8.9	8.9	33.9 33.9	33.9	96.3 94.7	95.5	7.1 6.9	7.0		3.5 3.7	3.6		9.0 9.0	9.0	
				Bottom	8	16.4 16.4	16.4	7.8 8.7	8.3	33.9 33.9	33.9	86.0 95.2	90.6	6.2 7.0	6.6	6.6	4.2 4.1	4.2		12.0 12.0	12.0	
29-Jan-09	Sunny	Calm	14:02	Surface	1	18.6 18.7	18.7	8.1 7.7	7.9	30.9 30.9	30.9	100.9 99.8	100.4	7.0 6.7	6.9	6.6	2.4 2.2	2.3	2.6	8.0 9.0	8.5	10.8
				Middle	4.5	18.5 18.5	18.5	8.3 8.3	8.3	31.0 31.0	31.0	92.4 92.4	92.4	6.3 6.3	6.3		2.5 2.6	2.6		9.0 9.0	9.0	
				Bottom	8	18.4 18.4	18.4	7.8 8.2	8.0	31.1 31.1	31.1	91.1 90.9	91.0	6.2 6.2	6.2	6.2	2.8 2.9	2.9		15.0 15.0	15.0	
31-Jan-09	Sunny	Calm	16:25	Surface	1	17.3 17.3	17.3	7.9 7.9	7.9	30.9 30.9	30.9	98.5 95.6	97.1	6.3 6.5	6.4	6.5	2.9 2.8	2.9	3.2	8.0 8.0	8.0	12.7
				Middle	4.5	17.1 17.1	17.1	7.9 7.7	7.8	31.0 31.0	31.0	93.0 92.5	92.8	6.6 6.6	6.6		3.3 3.3	3.3		17.0 17.0	17.0	
				Bottom	8	16.9 16.9	16.9	8.1 7.9	8.0	30.9 31.2	31.1	90.1 89.5	89.8	6.5 6.4	6.5	6.5	3.4 3.4	3.4		13.0 13.0	13.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at I1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	11:40	Surface	1	22.4 22.2	22.3	7.7 7.8	7.8	31.7 31.8	31.8	87.3 87.9	87.6	6.2 6.3	6.3	6.4	2.8 2.8	2.8	3.1	11.0 11.0	11.0	9.7
				Middle	4.5	22.6 22.6	22.6	8.0 8.0	8.0	31.7 31.7	31.7	89.6 89.9	89.8	6.5 6.5	6.5		3.1 3.2	3.2		8.0 8.0	8.0	
				Bottom	8	22.6 22.6	22.6	8.2 8.2	8.2	32.0 31.8	31.9	89.8 90.5	90.2	6.5 6.5	6.5	6.5	3.3 3.3	3.3		10.0 10.0	10.0	
5-Jan-09	Sunny	Calm	13:18	Surface	1	22.3 22.3	22.3	7.7 7.8	7.8	31.4 31.4	31.4	100.7 101.1	100.9	6.6 6.6	6.6	6.5	1.5 1.5	1.5	1.7	7.0 7.0	7.0	7.2
				Middle	5	22.1 22.2	22.2	7.9 7.8	7.9	31.5 31.5	31.5	97.0 96.1	96.6	6.3 6.3	6.3		1.6 1.6	1.6		8.0 8.0	8.0	
				Bottom	9	22.1 22.0	22.1	8.1 8.1	8.1	31.5 31.5	31.5	94.7 93.6	94.2	6.2 6.1	6.2	6.2	1.9 2.1	2.0		6.0 7.0	6.5	
7-Jan-09	Sunny	Moderate	13:08	Surface	1	20.1 20.1	20.1	7.4 7.4	7.4	34.5 34.6	34.6	99.7 99.1	99.4	7.7 7.6	7.7	7.7	3.2 3.2	3.2	3.7	6.0 6.0	6.0	8.2
				Middle	4.5	20.0 20.1	20.1	7.6 7.6	7.6	34.7 34.8	34.8	99.4 98.3	98.9	7.6 7.6	7.6		3.7 3.8	3.8		7.0 7.0	7.0	
				Bottom	8	20.4 20.4	20.4	7.7 8.0	7.9	35.2 35.2	35.2	99.0 99.9	99.5	7.7 7.7	7.7	7.7	4.0 4.1	4.1		12.0 11.0	11.5	
9-Jan-09	Sunny	Moderate	15:37	Surface	1	19.7 19.6	19.7	7.6 7.7	7.7	29.7 31.0	30.4	90.7 93.5	92.1	6.4 6.5	6.5	6.4	3.0 2.9	3.0	3.4	7.0 7.0	7.0	12.3
				Middle	4.5	19.5 19.5	19.5	7.9 7.7	7.8	31.1 30.9	31.0	87.6 88.3	88.0	6.1 6.2	6.2		3.3 3.5	3.4		12.0 12.0	12.0	
				Bottom	8	19.3 19.3	19.3	7.8 8.1	8.0	31.0 31.1	31.1	86.7 86.7	86.7	6.1 6.1	6.1	6.1	3.6 3.8	3.7		16.0 16.0	16.0	
12-Jan-09	Sunny	Moderate	08:32	Surface	1	20.0 19.8	19.9	7.7 7.6	7.7	34.9 35.0	35.0	87.6 88.2	87.9	6.2 6.3	6.3	6.4	2.4 2.4	2.4	2.7	9.0 10.0	9.5	9.5
				Middle	5	20.2 20.2	20.2	7.8 7.6	7.7	34.9 34.9	34.9	89.9 90.2	90.1	6.5 6.5	6.5		2.7 2.8	2.8		7.0 7.0	7.0	
				Bottom	9	20.2 20.2	20.2	8.0 8.0	8.0	35.2 35.0	35.1	90.1 90.1	90.1	6.5 6.5	6.5	6.5	2.9 2.9	2.9		12.0 12.0	12.0	
14-Jan-09	Sunny	Moderate	10:00	Surface	1	16.4 16.5	16.5	8.0 8.3	8.2	34.1 34.0	34.1	92.0 91.6	91.8	6.8 6.8	6.8	6.8	2.0 2.0	2.0	2.5	8.0 8.0	8.0	10.3
				Middle	4.5	16.4 16.3	16.4	8.1 8.2	8.2	34.1 34.0	34.1	86.3 92.9	89.6	6.4 6.9	6.7		2.3 2.6	2.5		10.0 10.0	10.0	
				Bottom	8	16.4 16.3	16.4	8.7 8.5	8.6	34.1 34.2	34.2	94.7 95.2	95.0	6.9 6.8	6.9	6.9	2.8 3.1	3.0		13.0 13.0	13.0	
16-Jan-09	Sunny	Moderate	11:17	Surface	1	16.3 16.0	16.2	8.3 8.4	8.4	31.4 31.5	31.5	97.8 97.7	97.8	6.7 6.7	6.7	6.4	4.4 4.6	4.5	4.1	9.0 9.0	9.0	8.7
				Middle	4.5	17.1 17.1	17.1	7.9 7.9	7.9	31.7 31.7	31.7	87.4 86.7	87.1	6.0 6.0	6.0		4.1 4.0	4.1		12.0 12.0	12.0	
				Bottom	8	17.0 17.0	17.0	7.8 8.0	7.9	32.3 32.3	32.3	87.4 86.0	86.7	6.3 6.2	6.3	6.3	3.7 3.7	3.7		5.0 5.0	5.0	
19-Jan-09	Fine	Moderate	12:47	Surface	1	16.4 16.4	16.4	7.9 8.3	8.1	34.0 34.0	34.0	91.8 91.5	91.7	6.7 6.6	6.7	6.6	2.0 2.1	2.1	2.4	9.0 1.0	5.0	10.3
				Middle	4.5	16.5 16.5	16.5	8.2 8.2	8.2	33.9 34.1	34.0	86.3 92.7	89.5	6.2 6.8	6.5		2.1 2.4	2.3		13.0 13.0	13.0	
				Bottom	8	16.5 16.5	16.5	8.5 8.7	8.6	34.2 34.2	34.2	94.8 95.2	95.0	7.0 6.8	6.9	6.9	2.8 3.0	2.9		13.0 13.0	13.0	
21-Jan-09	Sunny	Moderate	10:14	Surface	1	20.5 20.5	20.5	7.8 7.7	7.8	33.6 33.6	33.6	94.4 92.2	93.3	6.2 6.4	6.3	6.4	1.9 1.9	1.9	2.3	3.0 3.0	3.0	2.7
				Middle	4.5	20.4 20.4	20.4	7.9 7.6	7.8	33.6 33.6	33.6	90.0 89.7	89.9	6.4 6.4	6.4		2.3 2.4	2.4		<2.5 <2.5	<2.5	
				Bottom	8	20.3 20.3	20.3	8.0 7.8	7.9	33.4 33.8	33.6	88.3 88.0	88.2	6.4 6.3	6.4	6.4	2.6 2.6	2.6		<2.5 <2.5	<2.5	
23-Jan-09	Sunny	Calm	10:52	Surface	1	21.6 21.6	21.6	7.6 7.8	7.7	34.4 34.4	34.4	95.5 99.5	97.5	6.8 6.7	6.8	6.5	1.9 2.0	2.0	2.3	4.0 4.0	4.0	4.0
				Middle	4.5	21.4 21.4	21.4	7.8 7.7	7.8	34.8 34.8	34.8	90.7 90.6	90.7	6.2 6.2	6.2		2.3 2.4	2.4		4.0 4.0	4.0	
				Bottom	8	21.3 21.3	21.3	8.2 8.0	8.1	34.9 34.9	34.9	90.0 90.3	90.2	6.3 6.3	6.3	6.3	2.6 2.6	2.6		4.0 4.0	4.0	
29-Jan-09	Fine	Calm	08:52	Surface	1	18.9 19.0	19.0	7.8 8.2	8.0	31.0 31.0	31.0	102.4 99.8	101.1	6.9 6.9	6.9	6.8	2.7 2.7	2.7	2.9	13.0 12.0	12.5	10.8
				Middle	5	18.8 18.8	18.8	8.2 8.0	8.1	31.0 31.0	31.0	98.7 97.8	98.3	6.7 6.6	6.7		2.8 2.8	2.8		12.0 12.0	12.0	
				Bottom	9	18.7 18.7	18.7	8.2 8.4	8.3	31.0 31.0	31.0	96.4 95.3	95.9	6.5 6.4	6.5	6.5	3.1 3.3	3.2		8.0 8.0	8.0	
31-Jan-09	Sunny	Calm	09:33	Surface	1	16.9 16.8	16.9	7.6 7.7	7.7	29.7 31.4	30.6	97.1 100.4	98.8	7.0 6.8	6.9	6.7	2.7 2.8	2.8	3.2	10.0 10.0	10.0	9.8
				Middle	4.5	16.9 16.9	16.9	8.1 7.8	8.0	31.5 31.3	31.4	93.2 93.0	93.1	6.4 6.4	6.4		3.1 3.2	3.2		9.0 10.0	9.5	
				Bottom	8	16.8 16.8	16.8	7.9 8.2	8.1	31.4 31.5	31.5	91.5 90.8	91.2	6.3 6.3	6.3	6.3	3.4 3.5	3.5		10.0 10.0	10.0	

Remarks: The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

* DA: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at I2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	15:42	Surface	1	22.4 22.5	22.5	7.9 8.1	8.0	32.2 32.1	32.2	103.7 100.1	101.9	6.9 6.6	6.8	6.5	2.5 2.7	2.6	2.9	6.0 6.0	6.0	8.2
				Middle	4.5	22.6 22.6	22.6	7.7 7.8	7.8	32.1 32.1	32.1	93.2 93.2	93.2	6.1 6.1	6.1		3.0 3.0	3.0		12.0 11.0	11.5	
				Bottom	8	22.6 22.6	22.6	8.2 8.1	8.2	32.2 32.2	32.2	93.7 93.7	93.7	6.2 6.2	6.2	6.2	3.2 3.2	3.2		7.0 7.0	7.0	
5-Jan-09	Sunny	Calm	16:32	Surface	1	22.0 22.1	22.1	7.7 8.1	7.9	31.2 31.2	31.2	99.8 97.1	98.5	6.7 6.5	6.6	6.5	1.3 1.4	1.4	1.7	9.0 9.0	9.0	8.3
				Middle	4.5	21.9 21.9	21.9	7.5 7.7	7.6	31.3 31.2	31.3	94.7 94.3	94.5	6.4 6.4	6.4		1.7 1.6	1.7		7.0 7.0	7.0	
				Bottom	8	21.8 21.8	21.8	8.0 8.0	8.0	31.1 31.4	31.3	92.2 91.6	91.9	6.2 6.2	6.2	6.2	1.9 2.1	2.0		9.0 9.0	9.0	
7-Jan-09	Sunny	Moderate	08:36	Surface	1	20.3 20.3	20.3	7.5 7.7	7.6	31.3 31.3	31.3	95.6 96.9	96.3	7.4 7.4	7.4	7.3	2.5 2.6	2.6	3.0	8.0 8.0	8.0	7.3
				Middle	4.5	19.7 19.6	19.7	7.5 7.5	7.5	31.6 31.6	31.6	95.5 93.8	94.7	7.1 7.0	7.1		2.9 2.9	2.9		8.0 8.0	8.0	
				Bottom	8	19.4 19.4	19.4	7.8 7.7	7.8	33.1 33.1	33.1	75.6 75.3	75.5	6.1 6.0	6.1	6.1	3.4 3.5	3.5		6.0 6.0	6.0	
9-Jan-09	Sunny	Moderate	10:16	Surface	1	19.8 19.8	19.8	8.0 7.9	8.0	31.0 31.0	31.0	98.9 95.8	97.4	6.9 6.7	6.8	6.5	2.9 2.7	2.8	3.1	16.0 16.0	16.0	12.0
				Middle	4.5	19.6 19.6	19.6	8.1 7.8	8.0	31.1 31.1	31.1	88.4 88.4	88.4	6.2 6.2	6.2		3.0 3.1	3.1		10.0 10.0	10.0	
				Bottom	8	19.5 19.5	19.5	8.3 8.0	8.2	31.2 31.2	31.2	87.1 86.9	87.0	6.1 6.1	6.1	6.1	3.3 3.4	3.4		10.0 10.0	10.0	
12-Jan-09	Sunny	Moderate	13:36	Surface	1	20.0 20.1	20.1	7.6 7.5	7.6	30.7 30.7	30.7	88.7 90.1	89.4	7.6 7.7	7.7	6.9	2.1 2.3	2.2	2.5	10.0 10.0	10.0	11.2
				Middle	4.5	20.2 20.2	20.2	7.6 7.8	7.7	31.4 31.4	31.4	90.0 88.6	89.3	6.1 6.0	6.1		2.6 2.6	2.6		8.0 9.0	8.5	
				Bottom	8	20.2 20.2	20.2	7.6 7.9	7.8	32.3 32.3	32.3	80.0 80.1	80.1	6.4 6.4	6.4	6.4	2.8 2.8	2.8		15.0 15.0	15.0	
14-Jan-09	Sunny	Moderate	15:04	Surface	1	16.5 16.5	16.5	8.2 8.7	8.5	34.1 34.1	34.1	93.7 93.3	93.5	6.7 6.7	6.7	6.7	1.8 2.1	2.0	2.4	14.0 14.0	14.0	12.0
				Middle	4.5	16.3 16.3	16.3	8.1 8.2	8.2	33.9 33.9	33.9	91.7 90.0	90.9	6.8 6.6	6.7		2.1 2.2	2.2		12.0 13.0	12.5	
				Bottom	8	16.4 16.4	16.4	8.4 8.5	8.5	34.0 33.9	34.0	87.9 84.7	86.3	6.6 6.4	6.5	6.5	2.7 3.3	3.0		9.0 10.0	9.5	
16-Jan-09	Sunny	Moderate	16:00	Surface	1	16.9 16.9	16.9	8.0 7.7	7.9	31.6 31.6	31.6	99.2 99.3	99.3	6.8 6.8	6.8	6.5	3.8 3.8	3.8	4.0	9.0 9.0	9.0	8.3
				Middle	5	16.9 16.9	16.9	7.9 8.3	8.1	31.9 31.8	31.9	89.9 88.8	89.4	6.2 6.1	6.2		3.5 3.5	3.5		7.0 7.0	7.0	
				Bottom	9	16.8 16.7	16.8	7.7 7.8	7.8	33.3 33.2	33.3	85.9 85.1	85.5	6.1 6.0	6.1	6.1	4.6 4.7	4.7		9.0 9.0	9.0	
19-Jan-09	Fine	Moderate	17:16	Surface	1	16.6 16.4	16.5	8.0 8.8	8.4	34.0 33.9	34.0	93.5 93.3	93.4	6.9 6.8	6.9	6.8	2.0 1.9	2.0	2.4	16.0 16.0	16.0	10.3
				Middle	4.5	16.4 16.5	16.5	8.0 8.1	8.1	34.0 34.1	34.1	91.6 89.9	90.8	6.7 6.6	6.7		2.3 2.0	2.2		11.0 11.0	11.0	
				Bottom	8	16.5 16.5	16.5	8.3 8.4	8.4	34.1 34.0	34.1	87.9 84.8	86.4	6.7 6.5	6.6	6.6	2.7 3.2	3.0		4.0 4.0	4.0	
29-Jan-09	Sunny	Calm	13:53	Surface	1	18.7 18.7	18.7	7.9 8.1	8.0	30.8 30.8	30.8	96.5 93.8	95.2	6.5 6.4	6.5	6.4	2.5 2.6	2.6	2.9	12.0 12.0	12.0	10.7
				Middle	4.5	18.6 18.6	18.6	7.8 8.0	7.9	30.9 30.8	30.9	91.4 91.0	91.2	6.2 6.2	6.2		2.9 2.8	2.9		8.0 8.0	8.0	
				Bottom	8	18.4 18.4	18.4	8.0 8.2	8.1	30.7 31.0	30.9	88.9 88.3	88.6	6.1 6.0	6.1	6.1	3.1 3.3	3.2		12.0 12.0	12.0	
31-Jan-09	Sunny	Calm	16:16	Surface	1	17.2 17.2	17.2	7.9 8.0	8.0	31.0 31.1	31.1	103.8 100.8	102.3	6.7 6.7	6.7	6.7	2.6 2.6	2.6	3.0	10.0 10.0	10.0	10.7
				Middle	4.5	17.1 17.1	17.1	7.9 7.8	7.9	31.2 31.2	31.2	93.3 93.3	93.3	6.7 6.5	6.6		2.9 3.0	3.0		10.0 10.0	10.0	
				Bottom	8	16.9 16.9	16.9	8.2 8.0	8.1	31.3 31.3	31.3	91.7 91.5	91.6	6.6 6.5	6.6	6.6	3.2 3.3	3.3		12.0 12.0	12.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at I2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	11:31	Surface	1	22.5 22.6	22.6	7.7 7.7	7.7	31.2 31.3	31.3	89.2 88.3	88.8	6.3 6.4	6.4	6.4	3.3 3.2	3.3	3.1	14.0 14.0	14.0	13.2
				Middle	4.5	22.6 22.6	22.6	7.7 7.7	7.7	31.2 31.3	31.3	88.3 88.0	88.2	6.3 6.3	6.3		2.8 2.8	2.8		9.0 10.0	9.5	
				Bottom	8	22.6 22.6	22.6	7.6 7.7	7.7	31.4 31.5	31.5	88.0 86.9	87.5	6.2 6.2	6.2	6.2	3.1 3.2	3.2		16.0 16.0	16.0	
5-Jan-09	Sunny	Calm	13:07	Surface	1	22.1 22.1	22.1	7.7 7.7	7.7	31.3 31.3	31.3	103.1 101.0	102.1	6.9 6.8	6.9	6.7	1.5 1.3	1.4	1.5	12.0 12.0	12.0	8.7
				Middle	4.5	21.9 21.9	21.9	7.5 7.9	7.7	31.4 31.4	31.4	96.8 95.1	96.0	6.5 6.4	6.5		1.4 1.3	1.4		7.0 7.0	7.0	
				Bottom	8	21.8 21.8	21.8	7.6 7.6	7.6	31.5 31.5	31.5	94.2 94.0	94.1	6.4 6.3	6.4	6.4	1.8 1.8	1.8		7.0 7.0	7.0	
7-Jan-09	Sunny	Moderate	13:58	Surface	1	20.1 20.1	20.1	7.4 7.4	7.4	32.7 34.7	33.7	100.4 99.7	100.1	7.7 7.7	7.7	7.7	3.0 3.1	3.1	3.3	10.0 10.0	10.0	9.3
				Middle	4.5	20.2 20.2	20.2	7.2 7.4	7.3	35.2 35.3	35.3	98.5 96.6	97.6	7.7 7.6	7.7		3.2 3.2	3.2		12.0 12.0	12.0	
				Bottom	8	20.4 20.4	20.4	7.3 7.4	7.4	34.5 34.6	34.6	100.6 99.7	100.2	7.7 7.9	7.8	7.8	3.6 3.7	3.7		6.0 6.0	6.0	
9-Jan-09	Sunny	Moderate	15:25	Surface	1	19.9 19.8	19.9	7.6 7.6	7.6	31.0 31.0	31.0	95.8 93.7	94.8	6.7 6.5	6.6	6.5	2.9 3.1	3.0	3.2	16.0 16.0	16.0	12.0
				Middle	4.5	19.6 19.6	19.6	7.7 7.5	7.6	31.1 31.1	31.1	89.5 87.8	88.7	6.3 6.2	6.3		3.1 3.0	3.1		11.0 11.0	11.0	
				Bottom	8	19.5 19.5	19.5	7.5 7.6	7.6	31.2 31.2	31.2	86.9 86.7	86.8	6.1 6.1	6.1	6.1	3.5 3.6	3.6		13.0 13.0	13.0	
12-Jan-09	Sunny	Moderate	08:19	Surface	1	20.1 20.2	20.2	7.3 7.4	7.4	34.4 34.5	34.5	87.5 88.6	88.1	6.4 6.4	6.4	6.4	2.9 2.8	2.9	2.7	6.0 6.0	6.0	8.7
				Middle	4.5	20.2 20.2	20.2	7.6 7.4	7.5	34.4 34.5	34.5	88.6 88.0	88.3	6.3 6.2	6.3		2.4 2.4	2.4		9.0 9.0	9.0	
				Bottom	8	20.2 20.2	20.2	7.5 7.6	7.6	34.6 34.7	34.7	88.3 87.2	87.8	6.2 6.2	6.2	6.2	2.7 2.8	2.8		11.0 11.0	11.0	
14-Jan-09	Sunny	Moderate	09:50	Surface	1	16.4 16.5	16.5	7.7 8.0	7.9	34.1 33.9	34.0	90.6 90.3	90.5	6.5 6.6	6.6	6.6	2.5 2.7	2.6	3.4	6.0 7.0	6.5	10.5
				Middle	4.5	16.5 16.4	16.5	8.7 7.9	8.3	34.1 34.0	34.1	89.5 90.6	90.1	6.4 6.6	6.5		3.1 3.6	3.4		12.0 12.0	12.0	
				Bottom	8	16.3 16.4	16.4	8.4 8.6	8.5	34.2 34.1	34.2	92.9 94.0	93.5	6.7 6.9	6.8	6.8	4.0 4.2	4.1		13.0 13.0	13.0	
16-Jan-09	Sunny	Moderate	11:09	Surface	1	16.4 16.2	16.3	7.9 7.9	7.9	32.3 32.3	32.3	100.8 100.1	100.5	7.0 6.9	7.0	6.5	3.8 3.8	3.8	4.5	10.0 10.0	10.0	9.8
				Middle	5	16.9 16.9	16.9	7.8 8.0	7.9	32.9 32.9	32.9	86.7 85.2	86.0	6.0 5.9	6.0		4.1 3.8	4.0		10.0 10.0	10.0	
				Bottom	9	16.9 16.9	16.9	8.1 7.7	7.9	33.7 33.7	33.7	87.6 88.0	87.8	6.3 6.3	6.3	6.3	5.7 5.5	5.6		9.0 10.0	9.5	
19-Jan-09	Fine	Moderate	12:37	Surface	1	16.6 16.5	16.6	7.7 8.0	7.9	34.1 34.0	34.1	90.6 90.4	90.5	6.7 6.7	6.7	6.7	2.6 2.8	2.7	3.4	3.0 3.0	3.0	7.3
				Middle	4.5	16.5 16.4	16.5	8.6 7.9	8.3	33.9 34.0	34.0	89.4 90.6	90.0	6.6 6.7	6.7		3.1 3.5	3.3		8.0 8.0	8.0	
				Bottom	8	16.4 16.5	16.5	8.6 8.7	8.7	34.1 34.1	34.1	92.7 93.8	93.3	6.7 6.8	6.8	6.8	4.0 4.4	4.2		11.0 11.0	11.0	
21-Jan-09	Sunny	Moderate	10:05	Surface	1	20.4 20.4	20.4	8.1 7.9	8.0	33.7 33.7	33.7	103.1 99.9	101.5	6.9 6.8	6.9	6.8	2.2 2.2	2.2	2.4	3.0 3.0	3.0	3.0
				Middle	4.5	20.3 20.3	20.3	7.8 7.6	7.7	33.8 33.8	33.8	92.6 92.6	92.6	6.6 6.5	6.6		2.4 2.3	2.4		3.0 3.0	3.0	
				Bottom	8	20.2 20.2	20.2	7.8 8.1	8.0	33.9 33.9	33.9	91.7 91.6	91.7	6.5 6.5	6.5	6.5	2.7 2.7	2.7		3.0 3.0	3.0	
23-Jan-09	Sunny	Calm	10:39	Surface	1	21.5 21.5	21.5	8.1 7.9	8.0	34.3 34.3	34.3	99.1 98.0	98.6	6.9 6.7	6.8	6.6	2.3 2.4	2.4	2.4	4.0 4.0	4.0	4.7
				Middle	4.5	21.4 21.4	21.4	7.8 7.6	7.7	34.7 34.7	34.7	93.0 92.2	92.6	6.4 6.4	6.4		2.2 2.2	2.2		4.0 4.0	4.0	
				Bottom	8	21.3 21.3	21.3	7.8 8.1	8.0	35.0 35.0	35.0	91.9 91.8	91.9	6.4 6.4	6.4	6.4	2.4 2.5	2.5		6.0 6.0	6.0	
29-Jan-09	Fine	Calm	08:39	Surface	1	18.7 18.8	18.8	7.9 7.9	7.9	30.9 30.9	30.9	99.8 97.7	98.8	6.7 6.6	6.7	6.5	2.7 2.5	2.6	2.7	13.0 13.0	13.0	9.5
				Middle	4.5	18.5 18.5	18.5	8.1 7.8	8.0	31.0 31.0	31.0	93.5 91.8	92.7	6.3 6.2	6.3		2.6 2.5	2.6		10.0 10.0	10.0	
				Bottom	8	18.4 18.4	18.4	8.1 8.2	8.2	31.1 31.1	31.1	90.9 90.7	90.8	6.2 6.2	6.2	6.2	3.0 3.0	3.0		5.0 6.0	5.5	
31-Jan-09	Sunny	Calm	09:24	Surface	1	17.1 17.1	17.1	7.7 7.7	7.7	31.4 31.4	31.4	102.4 99.8	101.1	7.0 6.8	6.9	6.8	3.0 3.2	3.1	3.3	11.0 11.0	11.0	11.0
				Middle	4.5	16.9 16.9	16.9	7.6 7.7	7.7	31.4 31.4	31.4	95.3 94.0	94.7	6.7 6.6	6.7		3.4 3.4	3.4		12.0 12.0	12.0	
				Bottom	8	16.8 16.8	16.8	7.6 7.7	7.7	31.5 31.5	31.5	93.4 93.2	93.3	6.6 6.7	6.7	6.7	3.5 3.4	3.5		10.0 10.0	10.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at Intake A - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	15:29	Surface	1	22.2 22.4	22.3	8.0 7.5	7.8	32.5 32.2	32.4	105.6 100.2	102.9	7.0 6.6	6.8	6.6	2.5 2.4	2.5	2.8	19.0 19.0	19.0	12.7
				Middle	5	22.6 22.6	22.6	8.3 8.4	8.4	32.1 32.1	32.1	95.1 94.6	94.9	6.3 6.2	6.3		2.9 2.8	2.9		10.0 10.0	10.0	
				Bottom	9	22.6 22.6	22.6	7.6 8.1	7.9	32.2 32.1	32.2	94.3 94.3	94.3	6.2 6.2	6.2	6.2	2.9 2.8	2.9		9.0 9.0	9.0	
5-Jan-09	Sunny	Calm	16:16	Surface	1	22.1 22.1	22.1	7.9 7.8	7.9	31.2 31.2	31.2	100.6 98.9	99.8	6.8 6.6	6.7	6.5	2.2 2.3	2.3	2.6	6.0 6.0	6.0	7.0
				Middle	5.5	21.7 21.7	21.7	8.3 8.3	8.3	31.2 31.3	31.3	93.3 91.6	92.5	6.3 6.2	6.3		2.5 2.6	2.6		6.0 6.0	6.0	
				Bottom	10	21.6 21.6	21.6	7.5 8.1	7.8	31.5 31.4	31.5	88.9 88.7	88.8	6.0 6.0	6.0	6.0	2.9 2.8	2.9		9.0 9.0	9.0	
7-Jan-09	Sunny	Moderate	08:23	Surface	1	19.7 19.7	19.7	7.6 7.3	7.5	30.3 30.3	30.3	94.0 95.6	94.8	7.5 7.7	7.6	7.8	2.1 2.2	2.2	2.7	6.0 6.0	6.0	6.7
				Middle	5	19.4 19.4	19.4	7.9 7.9	7.9	31.3 31.4	31.4	106.7 105.6	106.2	7.9 7.8	7.9		2.5 2.6	2.6		8.0 8.0	8.0	
				Bottom	9	18.8 18.8	18.8	7.5 7.9	7.7	31.7 31.7	31.7	86.7 86.6	86.7	6.5 6.5	6.5	6.5	3.1 3.2	3.2		6.0 6.0	6.0	
9-Jan-09	Sunny	Moderate	10:06	Surface	1	19.7 19.9	19.8	8.1 7.9	8.0	31.3 31.1	31.2	99.7 99.4	99.6	7.5 7.2	7.4	7.1	2.8 2.8	2.8	3.1	8.0 8.0	8.0	10.8
				Middle	5	19.9 19.9	19.9	8.2 8.4	8.3	31.1 31.1	31.1	97.9 97.3	97.6	6.8 6.7	6.8		2.9 3.0	3.0		15.0 16.0	15.5	
				Bottom	9	19.9 19.9	19.9	7.9 8.1	8.0	31.1 31.1	31.1	96.6 95.8	96.2	6.7 6.7	6.7	6.7	3.4 3.5	3.5		9.0 9.0	9.0	
12-Jan-09	Sunny	Moderate	13:28	Surface	1	19.8 20.0	19.9	7.9 7.8	7.9	30.4 30.4	30.4	89.6 90.3	90.0	7.1 7.1	7.1	6.6	2.1 2.0	2.1	2.4	12.0 12.0	12.0	11.0
				Middle	5	20.2 20.2	20.2	8.1 7.9	8.0	31.3 31.2	31.3	91.6 88.6	90.1	6.2 6.0	6.1		2.5 2.4	2.5		12.0 12.0	12.0	
				Bottom	9	20.2 20.2	20.2	7.4 7.7	7.6	32.1 32.1	32.1	81.1 80.6	80.9	6.3 6.3	6.3	6.3	2.5 2.4	2.5		9.0 9.0	9.0	
14-Jan-09	Sunny	Moderate	14:52	Surface	1	16.4 16.5	16.5	9.0 7.9	8.5	33.9 33.9	33.9	94.8 94.7	94.8	6.9 6.9	6.9	7.6	1.8 2.1	2.0	2.3	13.0 13.0	13.0	13.3
				Middle	5	16.4 16.3	16.4	8.5 9.1	8.8	34.0 34.0	34.0	110.5 114.3	112.4	8.1 8.5	8.3		1.9 2.1	2.0		12.0 12.0	12.0	
				Bottom	9	16.5 16.3	16.4	8.1 8.2	8.2	33.9 34.1	34.0	76.8 95.2	86.0	5.6 6.9	6.3	6.3	3.0 2.9	3.0		15.0 15.0	15.0	
16-Jan-09	Sunny	Moderate	16:10	Surface	1	16.9 16.8	16.9	7.6 7.5	7.6	31.6 31.5	31.6	99.6 99.0	99.3	6.9 6.8	6.9	6.5	3.7 3.6	3.7	4.3	12.0 12.0	12.0	8.0
				Middle	5	16.8 16.8	16.8	8.2 8.1	8.2	31.6 31.6	31.6	88.6 88.6	88.6	6.1 6.1	6.1		3.9 4.0	4.0		6.0 6.0	6.0	
				Bottom	9	16.5 16.2	16.4	8.0 8.2	8.1	31.7 31.8	31.8	85.2 85.3	85.3	6.1 6.1	6.1	6.1	5.2 5.0	5.1		6.0 6.0	6.0	
19-Jan-09	Fine	Moderate	17:04	Surface	1	16.4 16.5	16.5	8.8 7.9	8.4	33.9 34.0	34.0	94.9 94.6	94.8	7.0 6.8	6.9	7.6	1.9 2.2	2.1	2.3	4.0 5.0	4.5	9.5
				Middle	5	16.3 16.3	16.3	8.4 9.1	8.8	33.9 33.9	33.9	110.7 114.5	112.6	8.0 8.5	8.3		1.8 2.0	1.9		13.0 13.0	13.0	
				Bottom	9	16.5 16.4	16.5	8.1 8.3	8.2	34.0 33.9	34.0	76.9 95.3	86.1	5.7 7.1	6.4	6.4	2.8 2.9	2.9		11.0 11.0	11.0	
29-Jan-09	Sunny	Calm	13:35	Surface	1	18.8 18.8	18.8	8.3 7.9	8.1	30.8 30.8	30.8	97.3 95.6	96.5	6.6 6.5	6.6	6.4	3.4 3.5	3.5	3.8	15.0 15.0	15.0	13.7
				Middle	5.5	18.3 18.3	18.3	8.0 8.5	8.3	30.8 30.8	30.8	90.0 98.3	94.2	6.1 6.1	6.1		3.7 3.8	3.8		14.0 14.0	14.0	
				Bottom	10	18.2 18.2	18.2	8.2 8.1	8.2	31.1 31.0	31.1	87.6 87.4	87.5	6.0 6.0	6.0	6.0	4.1 4.0	4.1		12.0 12.0	12.0	
31-Jan-09	Sunny	Calm	16:07	Surface	1	17.2 17.2	17.2	8.1 7.6	7.9	31.3 31.2	31.3	113.8 109.6	111.7	6.9 6.8	6.9	6.8	2.7 2.7	2.7	3.0	10.0 9.0	9.5	11.8
				Middle	5	16.9 16.9	16.9	8.2 8.4	8.3	31.2 31.2	31.2	103.7 103.1	103.4	6.5 6.6	6.6		2.9 2.9	2.9		11.0 11.0	11.0	
				Bottom	9	16.8 16.8	16.8	7.7 8.0	7.9	31.2 31.2	31.2	102.3 101.5	101.9	6.6 6.6	6.6	6.6	3.4 3.5	3.5		15.0 15.0	15.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at Intake A - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	11:21	Surface	1	22.3 22.3	22.3	7.8 7.7	7.8	29.5 29.5	29.5	99.4 95.5	97.5	7.5 7.3	7.4	7.1	2.3 2.3	2.3	2.3	15.0 15.0	15.0	12.7
				Middle	5	22.2 22.2	22.2	8.1 7.7	7.9	29.5 29.5	29.5	87.5 85.7	86.6	6.7 6.6	6.7		2.3 2.3	2.3		11.0 11.0	11.0	
				Bottom	9	22.0 21.9	22.0	7.9 8.5	8.2	30.0 30.1	30.1	79.7 79.5	79.6	6.2 6.2	6.2	6.2	2.4 2.4	2.4		12.0 12.0	12.0	
5-Jan-09	Sunny	Calm	12:46	Surface	1	21.9 21.8	21.9	7.6 7.8	7.7	30.0 31.4	30.7	98.0 100.8	99.4	6.7 6.8	6.8	6.7	1.5 1.3	1.4	1.7	8.0 8.0	8.0	9.2
				Middle	4.5	21.9 21.9	21.9	8.1 7.7	7.9	31.4 31.3	31.4	94.9 94.6	94.8	6.7 6.4	6.6		1.6 1.7	1.7		8.0 8.0	8.0	
				Bottom	8	21.9 21.8	21.9	7.7 8.2	8.0	31.3 31.4	31.4	94.0 94.0	94.0	6.3 6.3	6.3	6.3	1.9 2.1	2.0		11.0 12.0	11.5	
7-Jan-09	Sunny	Moderate	13:48	Surface	1	20.5 20.5	20.5	7.3 7.4	7.4	33.1 33.1	33.1	95.4 94.2	94.8	7.0 6.9	7.0	6.9	2.5 2.4	2.5	3.0	8.0 8.0	8.0	7.5
				Middle	5	20.2 20.2	20.2	7.8 7.4	7.6	33.3 33.3	33.3	91.6 90.5	91.1	6.7 6.6	6.7		3.1 3.1	3.1		8.0 8.0	8.0	
				Bottom	9	19.5 19.5	19.5	7.5 7.9	7.7	33.9 33.9	33.9	82.3 80.9	81.6	6.1 6.0	6.1	6.1	3.3 3.4	3.4		6.0 7.0	6.5	
9-Jan-09	Sunny	Moderate	15:16	Surface	1	20.1 20.1	20.1	7.7 7.7	7.7	31.1 31.1	31.1	98.4 98.8	98.6	6.8 6.8	6.8	6.7	3.2 3.3	3.3	3.5	12.0 12.0	12.0	10.8
				Middle	5	19.9 19.9	19.9	7.8 7.8	7.8	31.1 31.1	31.1	94.7 93.8	94.3	6.6 6.5	6.6		3.3 3.4	3.4		11.0 10.0	10.5	
				Bottom	9	19.8 19.8	19.8	7.8 8.1	8.0	31.1 31.1	31.1	92.4 91.3	91.9	6.4 6.4	6.4	6.4	3.6 3.8	3.7		11.0 11.0	11.0	
12-Jan-09	Sunny	Moderate	08:08	Surface	1	20.1 20.1	20.1	7.4 7.5	7.5	34.6 34.6	34.6	87.7 87.9	87.8	6.5 6.5	6.5	6.5	2.9 2.9	2.9	2.9	10.0 10.0	10.0	8.5
				Middle	5.5	20.2 20.2	20.2	7.8 7.4	7.6	34.6 34.6	34.6	88.7 88.6	88.7	6.4 6.3	6.4		2.9 2.9	2.9		8.0 7.0	7.5	
				Bottom	10	20.2 20.2	20.2	7.7 8.1	7.9	35.1 35.2	35.2	87.4 85.5	86.5	6.3 6.2	6.3	6.3	3.0 3.0	3.0		8.0 8.0	8.0	
14-Jan-09	Sunny	Moderate	09:37	Surface	1	16.6 16.6	16.6	8.7 8.1	8.4	33.9 33.9	33.9	93.2 93.3	93.3	6.9 6.8	6.9	6.8	1.9 1.9	1.9	2.2	9.0 9.0	9.0	10.5
				Middle	5	16.3 16.3	16.3	8.7 8.2	8.5	33.9 34.1	34.0	91.0 91.4	91.2	6.6 6.7	6.7		2.0 1.9	2.0		10.0 9.0	9.5	
				Bottom	9	16.4 16.3	16.4	8.9 8.3	8.6	33.9 34.1	34.0	82.3 82.0	82.2	6.0 6.1	6.1	6.1	2.5 2.6	2.6		13.0 13.0	13.0	
16-Jan-09	Sunny	Moderate	10:58	Surface	1	16.3 16.2	16.3	8.1 7.7	7.9	31.7 31.7	31.7	99.0 98.3	98.7	6.8 6.8	6.8	6.4	4.3 4.3	4.3	4.0	14.0 14.0	14.0	10.7
				Middle	5	16.7 16.7	16.7	8.2 8.0	8.1	32.2 32.2	32.2	85.5 85.4	85.5	5.9 5.9	5.9		4.2 4.2	4.2		11.0 11.0	11.0	
				Bottom	9	16.6 16.6	16.6	7.8 8.3	8.1	32.4 32.3	32.4	86.9 86.1	86.5	6.3 6.3	6.3	6.3	3.6 3.5	3.6		7.0 7.0	7.0	
19-Jan-09	Fine	Moderate	12:24	Surface	1	16.4 16.4	16.4	8.5 8.1	8.3	33.9 34.0	34.0	93.0 93.2	93.1	6.8 6.7	6.8	6.8	1.9 1.8	1.9	2.1	7.0 7.0	7.0	7.0
				Middle	5	16.5 16.4	16.5	8.8 8.1	8.5	33.9 34.1	34.0	91.1 91.3	91.2	6.7 6.8	6.8		1.9 2.1	2.0		5.0 5.0	5.0	
				Bottom	9	16.3 16.3	16.3	8.9 8.2	8.6	34.1 33.9	34.0	81.4 82.0	81.7	6.0 6.1	6.1	6.1	2.4 2.5	2.5		9.0 9.0	9.0	
21-Jan-09	Sunny	Moderate	09:51	Surface	1	20.2 20.2	20.2	7.6 7.8	7.7	34.0 33.8	33.9	101.4 100.8	101.1	7.1 6.9	7.0	6.8	0.9 0.8	0.9	1.2	3.0 <2.5	2.8	2.8
				Middle	5	19.5 19.5	19.5	7.8 7.7	7.8	33.8 33.8	33.8	100.2 99.6	99.9	6.6 6.6	6.6		1.2 1.1	1.2		<2.5 <2.5	<2.5	
				Bottom	9	19.5 19.5	19.5	8.2 8.0	8.1	33.8 33.8	33.8	99.0 98.4	98.7	6.6 6.6	6.6	6.6	1.5 1.5	1.5		3.0 3.0	3.0	
23-Jan-09	Sunny	Calm	10:27	Surface	1	21.6 21.6	21.6	7.8 7.7	7.8	34.9 34.9	34.9	96.5 97.4	97.0	6.3 6.5	6.4	6.4	2.1 2.3	2.2	2.5	3.0 4.0	3.5	3.2
				Middle	5	21.5 21.5	21.5	7.9 7.6	7.8	35.0 35.0	35.0	93.7 93.3	93.5	6.3 6.3	6.3		2.4 2.5	2.5		3.0 3.0	3.0	
				Bottom	9	21.5 21.5	21.5	8.0 7.8	7.9	35.1 35.0	35.1	92.1 91.4	91.8	6.1 6.1	6.1	6.1	2.7 2.7	2.7		3.0 3.0	3.0	
29-Jan-09	Fine	Calm	08:27	Surface	1	18.5 18.5	18.5	8.0 7.8	7.9	29.6 30.9	30.3	94.7 97.5	96.1	6.5 6.6	6.6	6.5	2.7 2.5	2.6	2.9	12.0 12.0	12.0	10.3
				Middle	4.5	18.6 18.6	18.6	8.4 8.1	8.3	31.0 30.8	30.9	91.6 91.3	91.5	6.6 6.2	6.4		2.8 2.9	2.9		9.0 9.0	9.0	
				Bottom	8	18.5 18.5	18.5	8.4 8.2	8.3	30.9 31.0	31.0	90.7 90.7	90.7	6.2 6.2	6.2	6.2	3.1 3.3	3.2		10.0 10.0	10.0	
31-Jan-09	Sunny	Calm	09:13	Surface	1	17.2 17.2	17.2	7.7 7.8	7.8	31.5 31.5	31.5	101.6 102.3	102.0	6.5 6.8	6.7	6.7	2.8 2.9	2.9	3.2	12.0 12.0	12.0	12.2
				Middle	5	17.1 17.1	17.1	8.0 7.8	7.9	31.5 31.5	31.5	98.4 97.7	98.1	6.6 6.6	6.6		3.2 3.3	3.3		16.0 15.0	15.5	
				Bottom	9	17.1 17.1	17.1	8.0 8.4	8.2	31.5 31.5	31.5	96.4 95.5	96.0	6.3 6.4	6.4	6.4	3.5 3.5	3.5		9.0 9.0	9.0	

Remarks: The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

* DA: Depth-Averaged

** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at Intake B - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	16:07	Surface	1	22.1 22.2	22.2	8.1 7.6	7.9	31.4 31.2	31.3	110.4 106.1	108.3	7.3 7.0	7.2	6.9	2.4 2.5	2.5	2.8	11.0 11.0	11.0	13.0
				Middle	5	22.2 22.2	22.2	8.1 8.1	8.1	31.2 31.2	31.2	100.3 99.7	100.0	6.6 6.5	6.6		2.6 2.6	2.6		12.0 12.0	12.0	
				Bottom	9	22.1 22.1	22.1	7.9 8.0	8.0	31.2 31.2	31.2	99.0 98.2	98.6	6.5 6.4	6.5	6.5	3.1 3.2	3.2		16.0 16.0	16.0	
5-Jan-09	Sunny	Calm	17:08	Surface	1	22.1 22.1	22.1	8.3 7.6	8.0	31.6 31.5	31.6	110.3 106.0	108.2	7.2 6.9	7.1	6.9	1.1 1.1	1.1	1.4	5.0 5.0	5.0	7.2
				Middle	5	22.1 22.1	22.1	8.0 8.3	8.2	31.4 31.5	31.5	100.2 99.6	99.9	6.6 6.5	6.6		1.2 1.2	1.2		7.0 7.0	7.0	
				Bottom	9	22.1 22.1	22.1	7.7 7.7	7.7	31.5 31.5	31.5	98.9 98.1	98.5	6.5 6.4	6.5	6.5	1.7 1.8	1.8		10.0 9.0	9.5	
7-Jan-09	Sunny	Moderate	08:53	Surface	1	19.8 19.8	19.8	7.8 7.4	7.6	33.1 33.3	33.2	94.2 91.6	92.9	6.9 6.7	6.8	6.6	3.4 3.3	3.4	3.8	5.0 6.0	5.5	6.2
				Middle	6	19.3 19.3	19.3	7.9 8.0	8.0	33.3 33.9	33.6	90.5 82.3	86.4	6.6 6.1	6.4		3.7 3.7	3.7		8.0 8.0	8.0	
				Bottom	11	19.0 19.0	19.0	7.5 7.7	7.6	33.9 32.7	33.3	80.9 81.5	81.2	6.0 6.1	6.1	6.1	4.2 4.1	4.2		5.0 5.0	5.0	
9-Jan-09	Sunny	Moderate	10:34	Surface	1	19.5 19.5	19.5	8.0 7.9	8.0	31.0 30.9	31.0	99.4 99.3	99.4	7.5 7.1	7.3	6.8	3.4 3.5	3.5	4.2	13.0 13.0	13.0	13.0
				Middle	6	19.3 19.3	19.3	7.9 8.0	8.0	31.2 31.2	31.2	87.8 87.1	87.5	6.2 6.1	6.2		4.0 4.1	4.1		13.0 13.0	13.0	
				Bottom	11	19.2 19.2	19.2	7.9 8.0	8.0	31.4 31.4	31.4	87.7 87.4	87.6	6.3 6.3	6.3	6.3	4.8 4.9	4.9		13.0 13.0	13.0	
12-Jan-09	Sunny	Moderate	14:04	Surface	1	19.8 19.9	19.9	8.1 7.4	7.8	32.1 32.2	32.2	96.2 95.7	96.0	6.7 6.7	6.7	6.4	2.8 2.7	2.8	3.4	12.0 12.0	12.0	11.7
				Middle	6	20.2 20.2	20.2	7.8 8.2	8.0	32.5 32.8	32.7	86.8 81.6	84.2	6.1 5.8	6.0		3.4 3.5	3.5		13.0 13.0	13.0	
				Bottom	11	20.2 20.2	20.2	7.5 7.6	7.6	33.6 32.8	33.2	87.2 85.8	86.5	6.5 6.4	6.5	6.5	3.9 3.9	3.9		10.0 10.0	10.0	
14-Jan-09	Sunny	Moderate	15:29	Surface	1	16.3 16.5	16.4	8.1 7.9	8.0	34.2 34.2	34.2	100.1 100.0	100.1	7.4 7.4	7.4	7.4	2.2 2.0	2.1	2.4	14.0 14.0	14.0	13.3
				Middle	6	16.3 16.4	16.4	7.8 8.1	8.0	34.0 34.1	34.1	100.6 100.0	100.3	7.2 7.3	7.3		2.2 2.2	2.2		11.0 11.0	11.0	
				Bottom	11	16.5 16.5	16.5	8.1 8.2	8.2	34.2 34.0	34.1	104.9 104.8	104.9	7.8 7.8	7.8	7.8	2.7 2.8	2.8		15.0 15.0	15.0	
16-Jan-09	Sunny	Moderate	15:37	Surface	1	16.8 16.8	16.8	8.7 8.6	8.7	31.8 31.7	31.8	106.7 106.8	106.8	7.3 7.3	7.3	7.1	4.1 4.0	4.1	3.8	11.0 11.0	11.0	8.0
				Middle	6	16.8 16.8	16.8	7.6 8.2	7.9	33.4 33.5	33.5	98.9 99.1	99.0	6.8 6.8	6.8		3.6 3.5	3.6		8.0 8.0	8.0	
				Bottom	11	16.8 16.8	16.8	7.8 8.0	7.9	35.1 35.0	35.1	86.0 85.8	85.9	6.1 6.1	6.1	6.1	3.8 3.8	3.8		5.0 5.0	5.0	
19-Jan-09	Fine	Moderate	17:41	Surface	1	16.3 16.4	16.4	8.0 8.0	8.0	34.0 34.1	34.1	100.2 99.9	100.1	7.2 7.2	7.2	7.3	2.2 1.8	2.0	2.4	10.0 10.0	10.0	9.0
				Middle	6	16.3 16.3	16.3	7.9 8.2	8.1	34.0 34.1	34.1	100.4 100.2	100.3	7.3 7.2	7.3		2.1 2.2	2.2		8.0 8.0	8.0	
				Bottom	11	16.4 16.3	16.4	7.9 8.1	8.0	34.0 34.0	34.0	104.8 105.0	104.9	7.6 7.6	7.6	7.6	2.7 3.0	2.9		9.0 9.0	9.0	
29-Jan-09	Sunny	Calm	14:17	Surface	1	18.7 18.8	18.8	7.9 7.8	7.9	31.2 31.0	31.1	105.0 103.7	104.4	7.6 7.3	7.5	7.2	2.2 2.3	2.3	2.6	11.0 11.0	11.0	9.3
				Middle	5	18.8 18.8	18.8	7.8 8.1	8.0	31.0 31.0	31.0	101.9 101.3	101.6	6.9 6.8	6.9		2.4 2.4	2.4		7.0 7.0	7.0	
				Bottom	9	18.7 18.7	18.7	8.0 8.1	8.1	31.0 31.0	31.0	100.6 99.8	100.2	6.8 6.7	6.8	6.8	2.9 3.0	3.0		10.0 10.0	10.0	
31-Jan-09	Sunny	Calm	16:37	Surface	1	16.9 17.0	17.0	7.9 7.7	7.8	31.1 31.0	31.1	112.3 106.2	109.3	6.8 6.7	6.8	6.7	3.0 3.2	3.1	3.7	16.0 16.0	16.0	14.7
				Middle	6	16.7 16.6	16.7	8.1 8.0	8.1	31.3 31.3	31.3	92.7 92.0	92.4	6.5 6.6	6.6		3.5 3.7	3.6		14.0 14.0	14.0	
				Bottom	11	16.6 16.6	16.6	7.9 8.1	8.0	31.5 31.5	31.5	89.5 89.1	89.3	6.5 6.4	6.5	6.5	4.2 4.3	4.3		14.0 14.0	14.0	

Remarks: * DA: Depth-Averaged
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at Intake B - Mid-Flood Tide

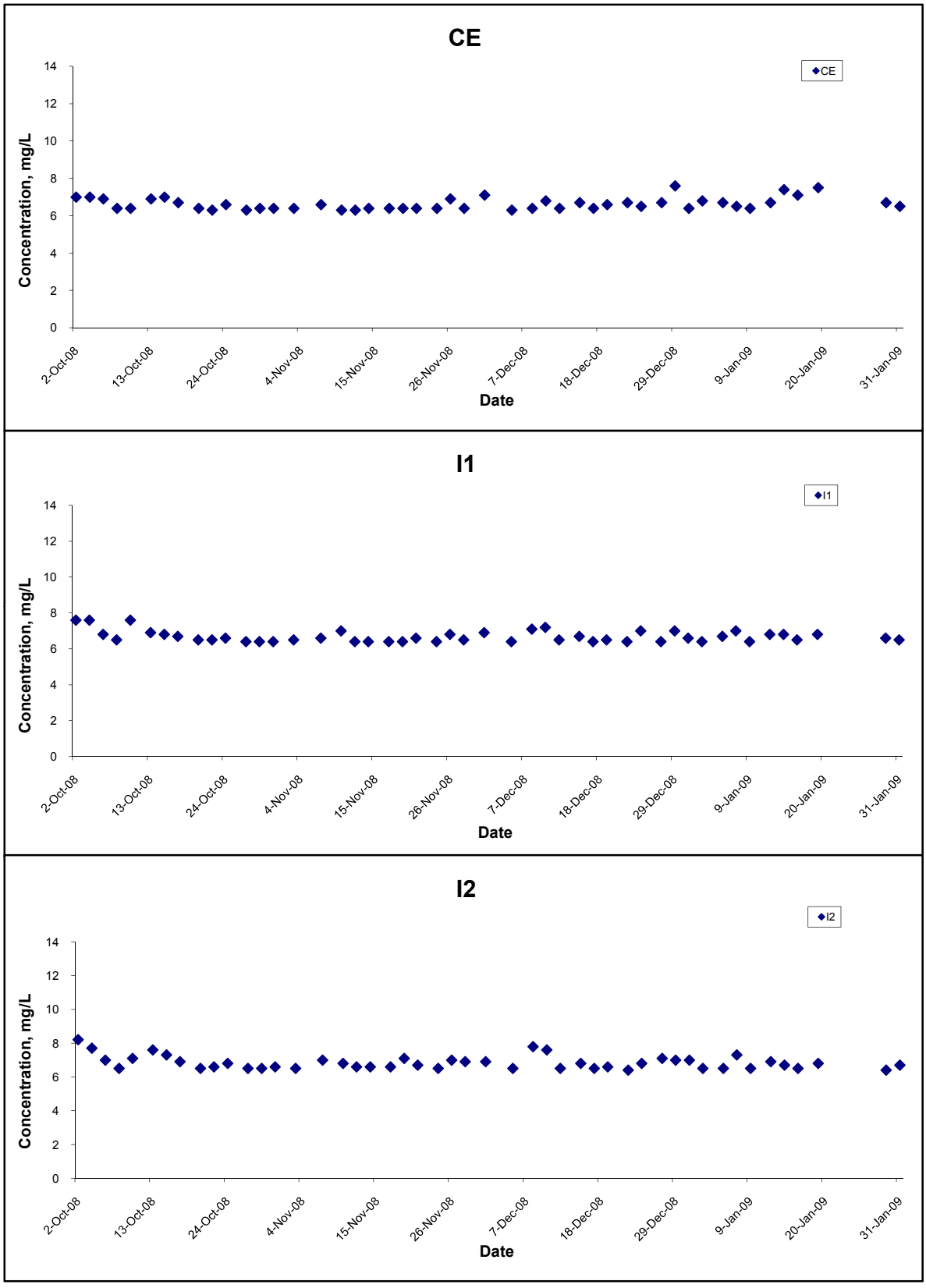
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Jan-09	Fine	Calm	11:55	Surface	1	22.2 22.3	22.3	8.5 8.3	8.4	31.9 31.9	31.9	88.1 89.4	88.8	6.5 6.6	6.6	6.6	2.6 2.7	2.7	3.1	9.0 10.0	9.5	11.2
				Middle	5	22.6 22.6	22.6	8.1 7.8	8.0	32.0 32.5	32.3	91.1 86.4	88.8	6.9 6.1	6.5		3.2 3.3	3.3		14.0 14.0	14.0	
				Bottom	9	22.6 22.6	22.6	7.9 7.8	7.9	33.0 32.5	32.8	87.9 88.1	88.0	6.2 6.3	6.3	6.3	3.2 3.2	3.2		10.0 10.0	10.0	
5-Jan-09	Sunny	Calm	13:32	Surface	1	21.5 21.6	21.6	8.4 8.2	8.3	31.5 31.5	31.5	99.7 99.5	99.6	6.7 6.7	6.7	6.4	1.8 1.5	1.7	2.1	7.0 7.0	7.0	7.5
				Middle	6	21.5 21.6	21.6	8.1 7.7	7.9	31.4 31.4	31.4	90.8 90.2	90.5	6.1 6.1	6.1		2.1 2.2	2.2		7.0 7.0	7.0	
				Bottom	11	21.6 21.5	21.6	7.8 7.6	7.7	31.4 30.9	31.2	89.1 89.0	89.1	6.0 6.0	6.0	6.0	2.3 2.5	2.4		8.0 9.0	8.5	
7-Jan-09	Sunny	Moderate	13:19	Surface	1	20.5 20.5	20.5	8.0 7.9	8.0	34.9 35.0	35.0	103.5 103.0	103.3	8.0 8.1	8.1	8.0	3.0 3.0	3.0	3.5	9.0 9.0	9.0	9.0
				Middle	6	20.5 20.5	20.5	7.7 7.5	7.6	35.4 36.2	35.8	101.7 101.4	101.6	7.9 7.9	7.9		3.5 3.6	3.6		8.0 8.0	8.0	
				Bottom	11	20.4 20.4	20.4	7.5 7.5	7.5	33.0 33.0	33.0	82.1 80.2	81.2	6.1 6.0	6.1	6.1	4.0 4.0	4.0		10.0 10.0	10.0	
9-Jan-09	Sunny	Moderate	15:50	Surface	1	19.4 19.3	19.4	8.2 8.0	8.1	31.1 31.1	31.1	92.4 92.2	92.3	6.5 6.5	6.5	6.4	3.3 3.2	3.3	3.8	11.0 11.0	11.0	13.0
				Middle	6	19.3 19.3	19.3	7.8 7.7	7.8	31.1 31.1	31.1	87.5 87.1	87.3	6.3 6.2	6.3		3.8 3.9	3.9		12.0 12.0	12.0	
				Bottom	11	19.2 19.2	19.2	7.8 7.7	7.8	31.1 30.6	30.9	84.8 84.7	84.8	6.1 6.1	6.1	6.1	4.1 4.2	4.2		17.0 17.0	17.0	
12-Jan-09	Sunny	Moderate	08:48	Surface	1	19.8 19.9	19.9	8.0 7.9	8.0	35.1 35.1	35.1	88.4 89.7	89.1	6.5 6.6	6.6	6.6	2.2 2.3	2.3	2.7	9.0 9.0	9.0	9.7
				Middle	5	20.2 20.2	20.2	7.8 7.5	7.7	35.2 35.7	35.5	91.4 86.7	89.1	6.9 6.1	6.5		2.8 2.9	2.9		9.0 9.0	9.0	
				Bottom	9	20.2 20.2	20.2	7.5 7.7	7.6	36.2 35.7	36.0	88.2 88.4	88.3	6.2 6.3	6.3	6.3	2.8 2.8	2.8		11.0 11.0	11.0	
14-Jan-09	Sunny	Moderate	10:14	Surface	1	16.4 16.5	16.5	7.8 8.2	8.0	34.2 34.2	34.2	98.0 98.5	98.3	7.1 7.2	7.2	7.2	2.5 2.3	2.4	2.7	7.0 7.0	7.0	9.3
				Middle	6	16.4 16.5	16.5	8.5 8.0	8.3	34.2 34.2	34.2	97.3 99.0	98.2	7.1 7.2	7.2		2.3 2.7	2.5		8.0 8.0	8.0	
				Bottom	11	16.4 16.4	16.4	8.0 8.9	8.5	34.0 34.1	34.1	104.5 104.5	104.5	7.6 7.5	7.6	7.6	2.9 3.2	3.1		13.0 13.0	13.0	
16-Jan-09	Sunny	Moderate	11:28	Surface	1	17.0 17.0	17.0	7.9 7.8	7.9	31.7 31.7	31.7	106.8 107.0	106.9	7.3 7.3	7.3	6.8	4.3 4.4	4.4	4.0	8.0 8.0	8.0	9.8
				Middle	6	17.0 16.9	17.0	8.0 8.3	8.2	32.7 32.6	32.7	92.0 92.0	92.0	6.3 6.3	6.3		3.9 3.7	3.8		12.0 12.0	12.0	
				Bottom	11	16.9 17.0	17.0	7.7 8.4	8.1	35.1 35.1	35.1	81.2 80.6	80.9	6.1 6.0	6.1	6.1	3.6 3.7	3.7		9.0 10.0	9.5	
19-Jan-09	Fine	Moderate	13:01	Surface	1	16.4 16.5	16.5	7.8 8.0	7.9	34.2 34.0	34.1	98.1 98.5	98.3	7.2 7.2	7.2	7.2	2.5 2.2	2.4	2.7	5.0 6.0	5.5	8.2
				Middle	6	16.5 16.4	16.5	8.6 8.0	8.3	34.0 34.1	34.1	97.4 99.1	98.3	7.2 7.1	7.2		2.3 2.5	2.4		9.0 9.0	9.0	
				Bottom	11	16.3 16.4	16.4	8.0 8.9	8.5	34.0 34.2	34.1	104.5 104.6	104.6	7.7 7.6	7.7	7.7	2.9 3.4	3.2		10.0 10.0	10.0	
21-Jan-09	Sunny	Moderate	10:29	Surface	1	20.1 20.2	20.2	7.7 7.9	7.8	33.7 33.6	33.7	107.5 105.4	106.5	7.1 6.9	7.0	6.8	1.8 1.9	1.9	2.4	<2.5 <2.5	<2.5	2.8
				Middle	5.5	20.1 20.1	20.1	8.4 8.0	8.2	33.9 33.9	33.9	91.8 91.3	91.6	6.5 6.5	6.5		2.2 2.3	2.3		3.0 3.0	3.0	
				Bottom	10	20.0 20.0	20.0	7.7 8.2	8.0	34.0 34.0	34.0	89.2 88.9	89.1	6.4 6.4	6.4	6.4	2.9 2.9	2.9		<2.5 3.0	2.8	
23-Jan-09	Sunny	Calm	11:10	Surface	1	21.7 21.6	21.7	7.7 7.9	7.8	34.6 34.6	34.6	98.9 98.9	98.9	6.8 6.7	6.8	6.5	1.8 1.9	1.9	2.3	3.0 3.0	3.0	3.2
				Middle	6	21.5 21.5	21.5	8.4 8.0	8.2	34.9 34.9	34.9	86.9 86.6	86.8	6.1 6.1	6.1		2.4 2.5	2.5		3.0 3.0	3.0	
				Bottom	11	21.2 21.2	21.2	7.7 8.2	8.0	35.0 34.1	34.6	85.8 85.9	85.9	6.0 6.1	6.1	6.1	2.5 2.6	2.6		3.0 4.0	3.5	
29-Jan-09	Fine	Calm	09:10	Surface	1	18.2 18.2	18.2	8.2 8.2	8.2	31.0 31.0	31.0	96.4 96.2	96.3	6.6 6.6	6.6	6.4	3.0 2.7	2.9	3.3	5.0 6.0	5.5	8.5
				Middle	6	18.2 18.2	18.2	8.3 8.0	8.2	31.0 31.0	31.0	90.6 90.1	90.4	6.2 6.1	6.2		3.3 3.4	3.4		8.0 8.0	8.0	
				Bottom	11	18.2 18.2	18.2	7.9 8.4	8.2	31.0 30.5	30.8	88.8 88.7	88.8	6.2 6.2	6.2	6.2	3.5 3.7	3.6		12.0 12.0	12.0	
31-Jan-09	Sunny	Calm	09:44	Surface	1	16.6 16.6	16.6	8.4 8.2	8.3	31.5 31.5	31.5	99.6 99.5	99.6	6.9 6.8	6.9	6.7	2.5 2.6	2.6	3.0	10.0 10.0	10.0	11.0
				Middle	6	16.7 16.7	16.7	8.1 7.8	8.0	31.5 31.5	31.5	89.2 88.7	89.0	6.4 6.4	6.4		3.0 3.2	3.1		10.0 10.0	10.0	
				Bottom	11	16.7 16.7	16.7	7.9 7.8	7.9	31.4 30.9	31.2	87.8 87.8	87.8	6.3 6.3	6.3	6.3	3.2 3.3	3.3		13.0 13.0	13.0	

Remarks: The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

* DA: Depth-Averaged

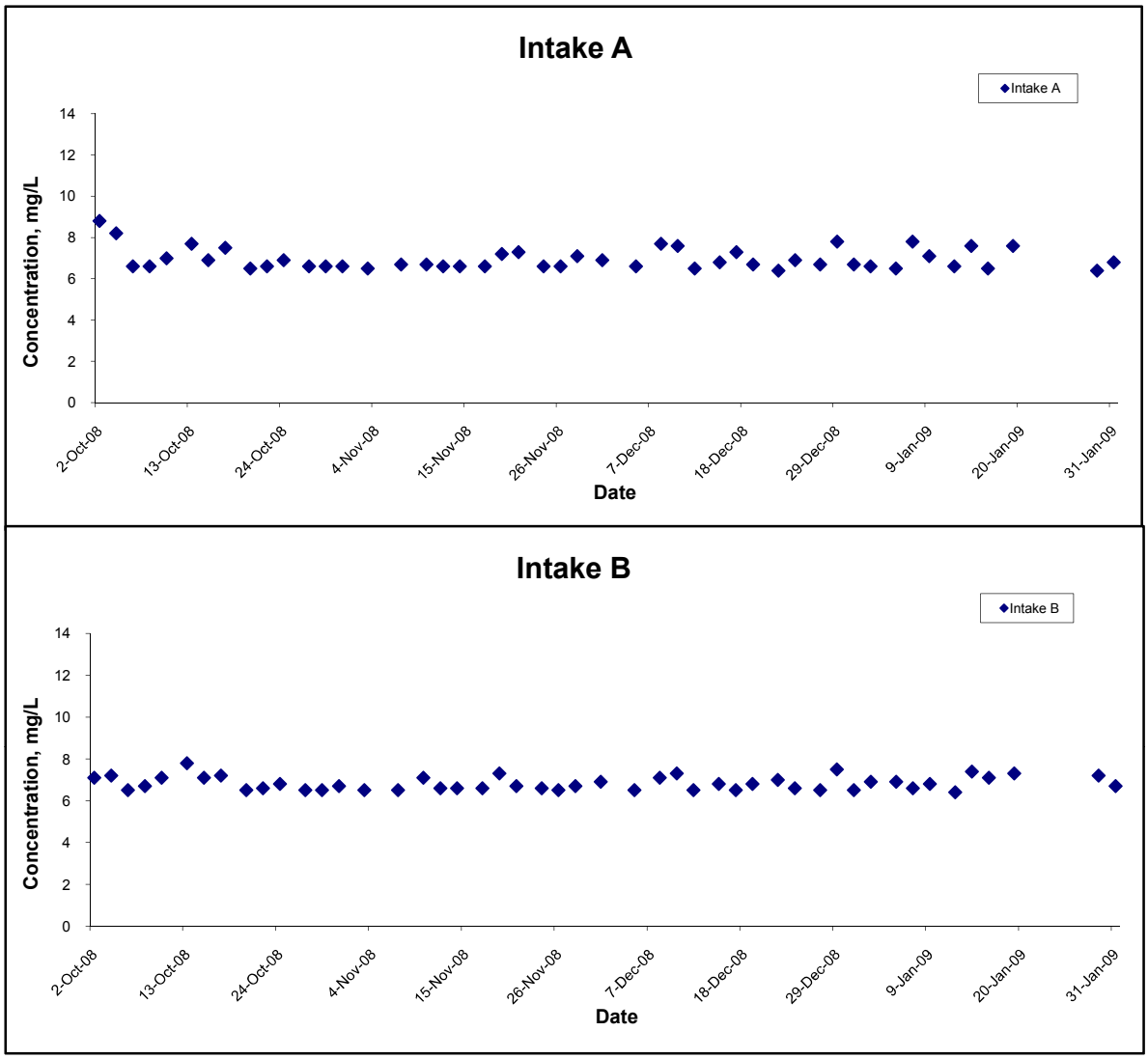
** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



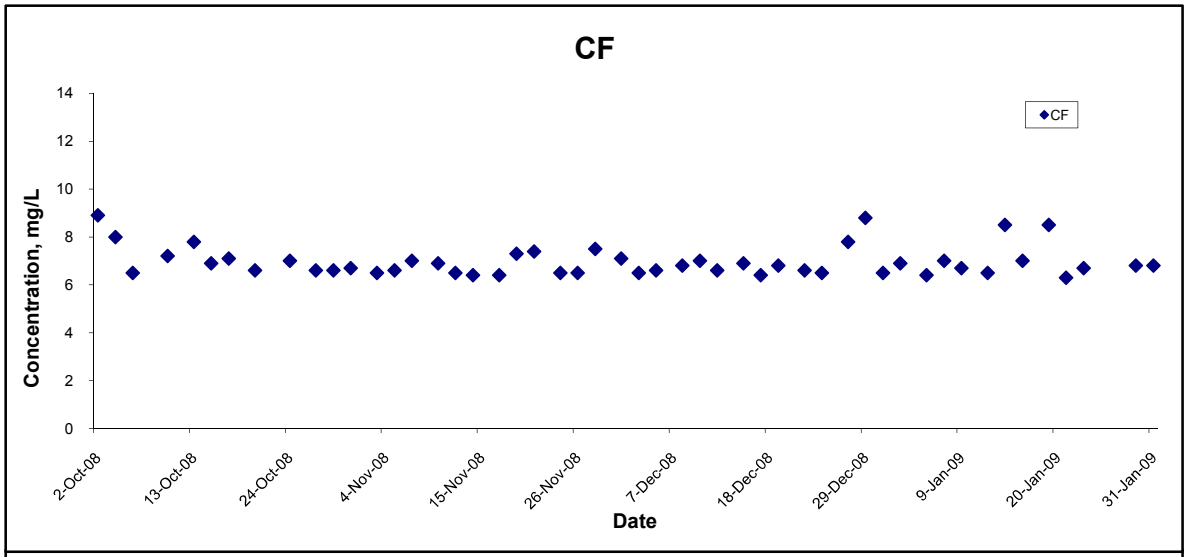
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jan 09	Appendix: H	

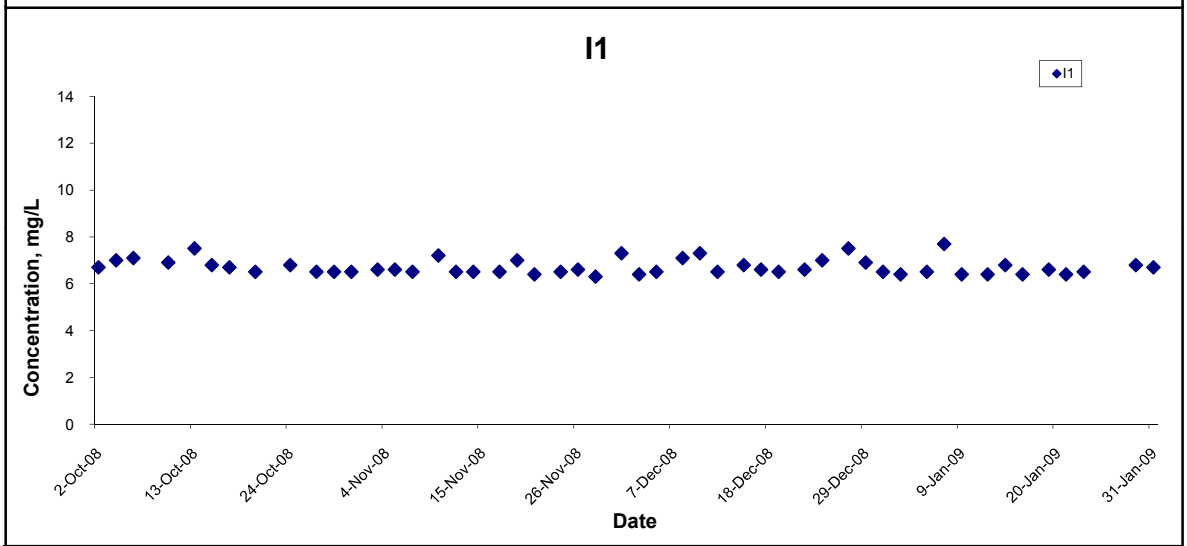
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

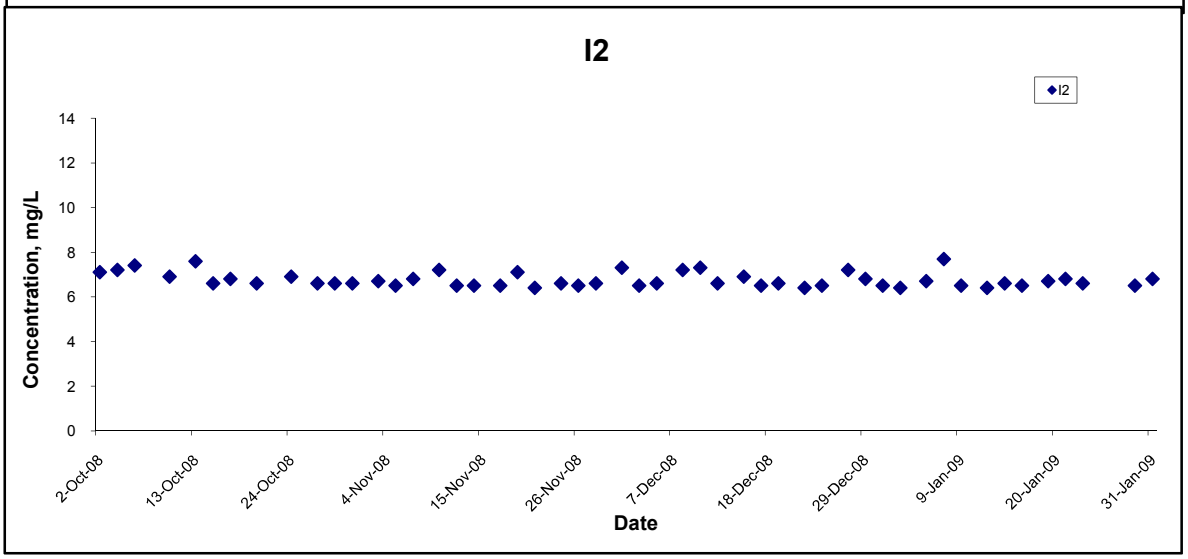


Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide







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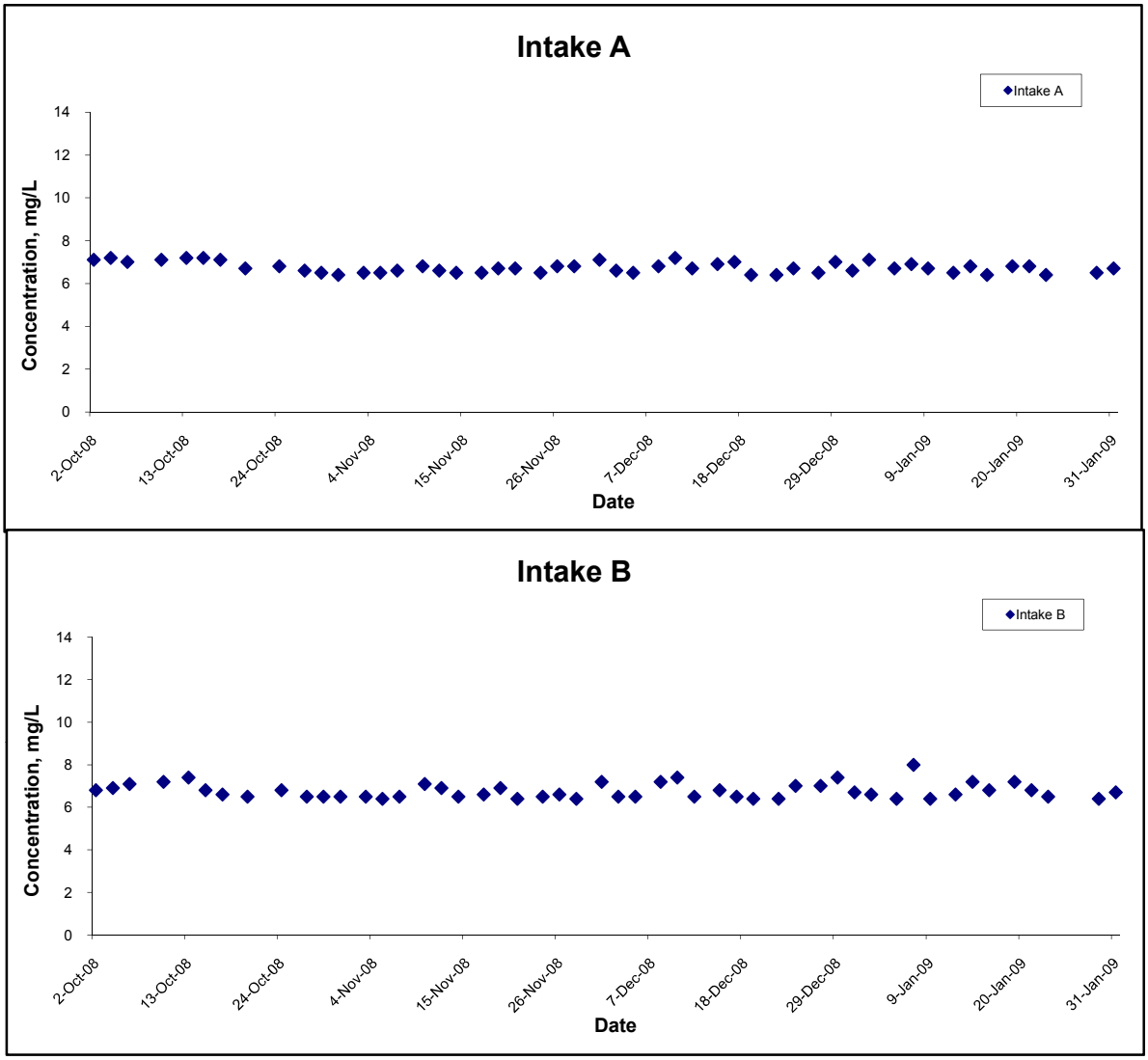
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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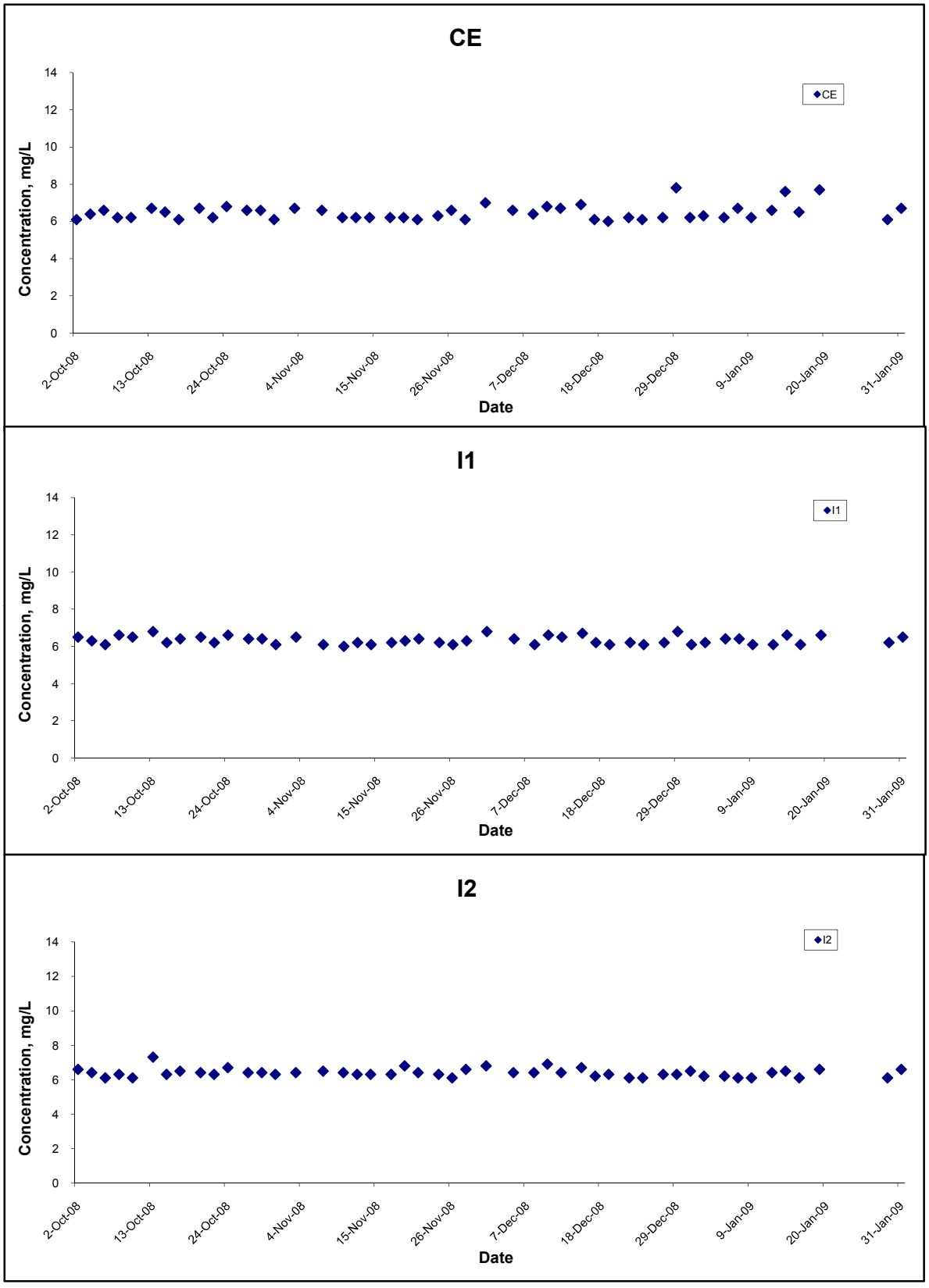
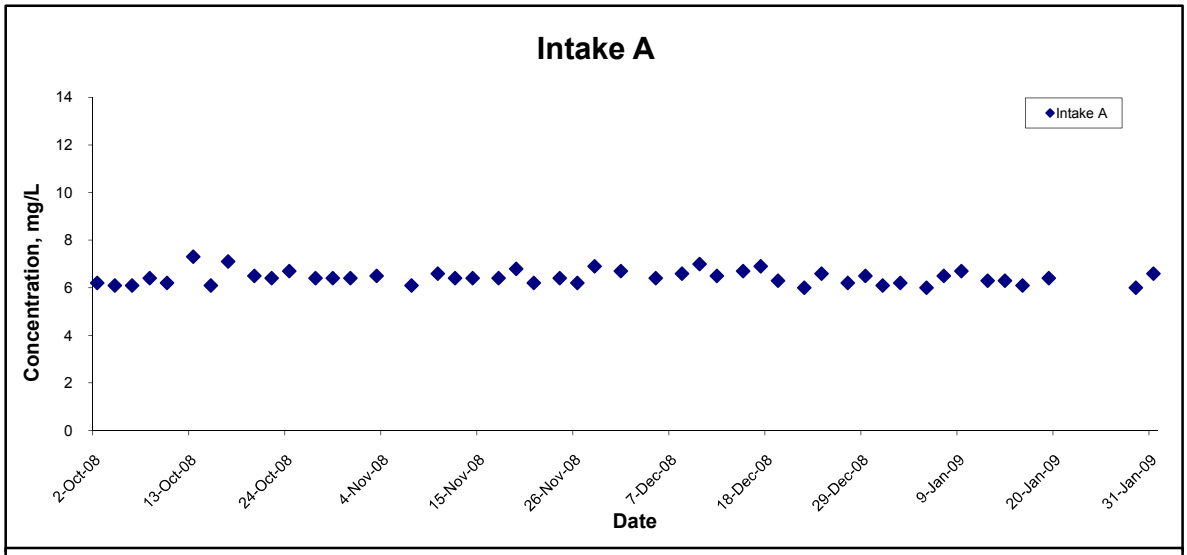
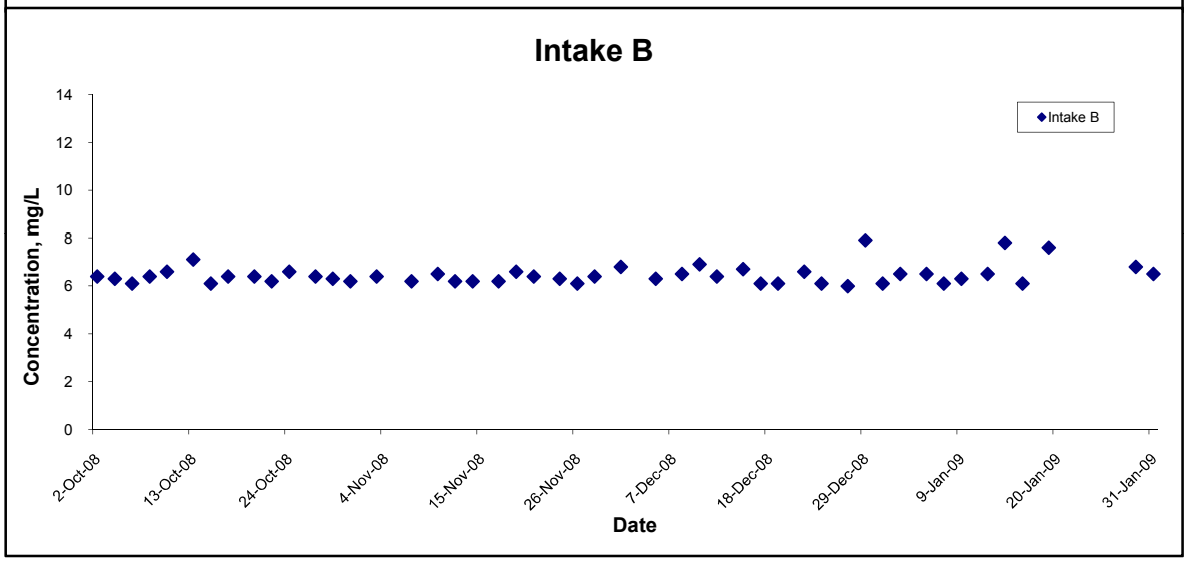
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

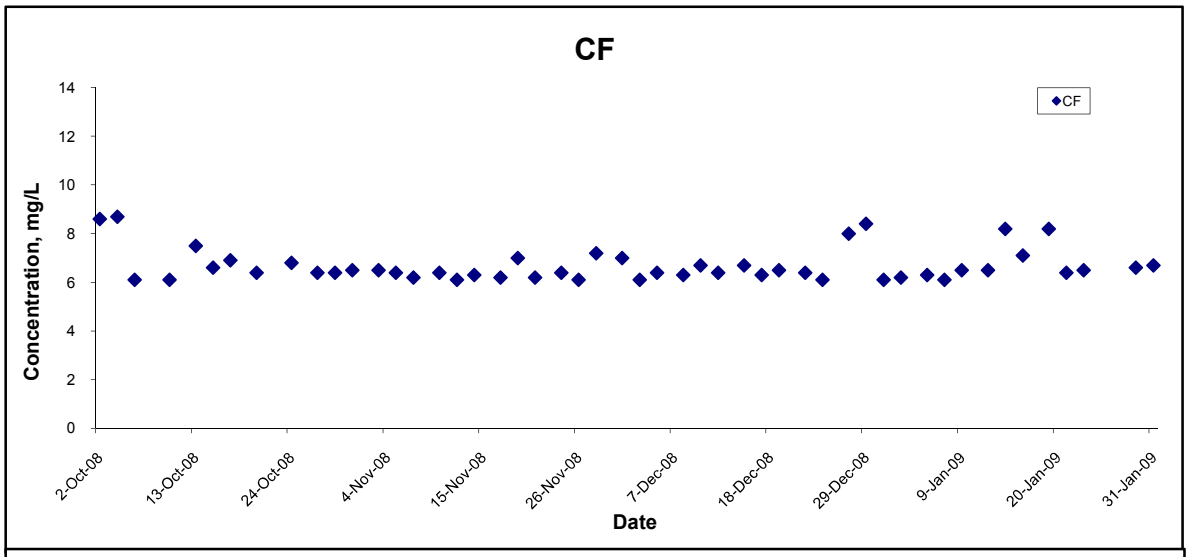
Dissolved Oxygen (Bottom) at Mid-Ebb Tide

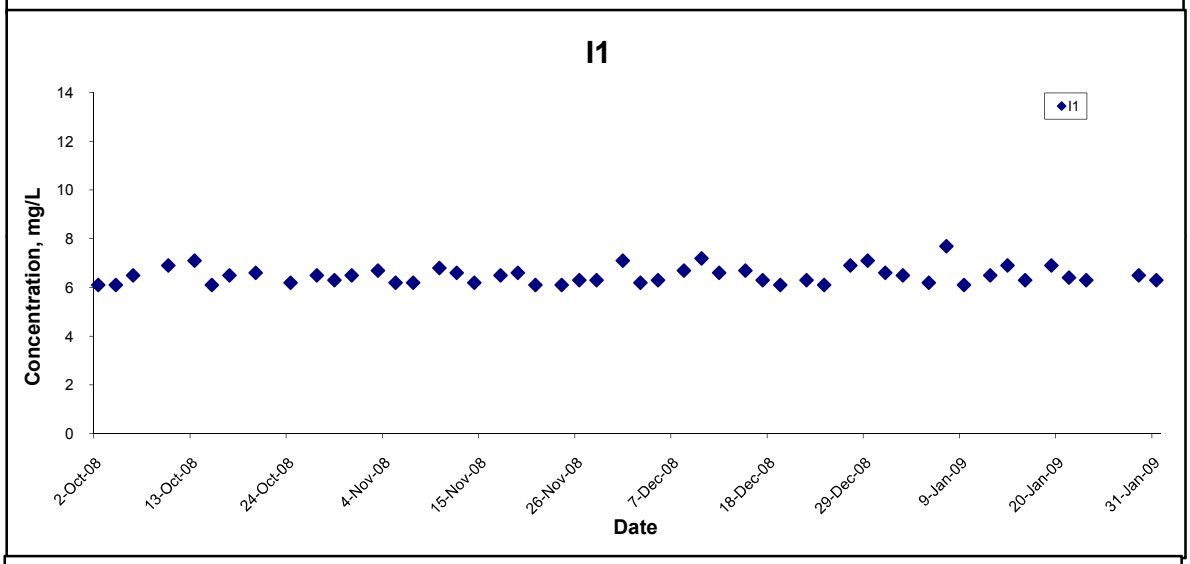


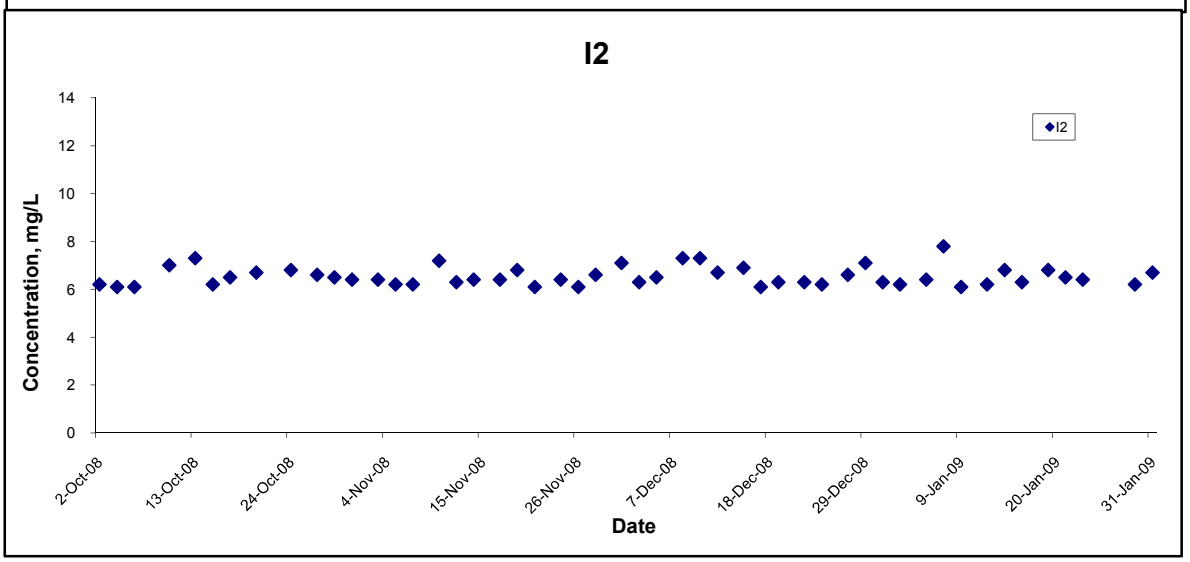


Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Dissolved Oxygen (Bottom) at Mid-Flood Tide







Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
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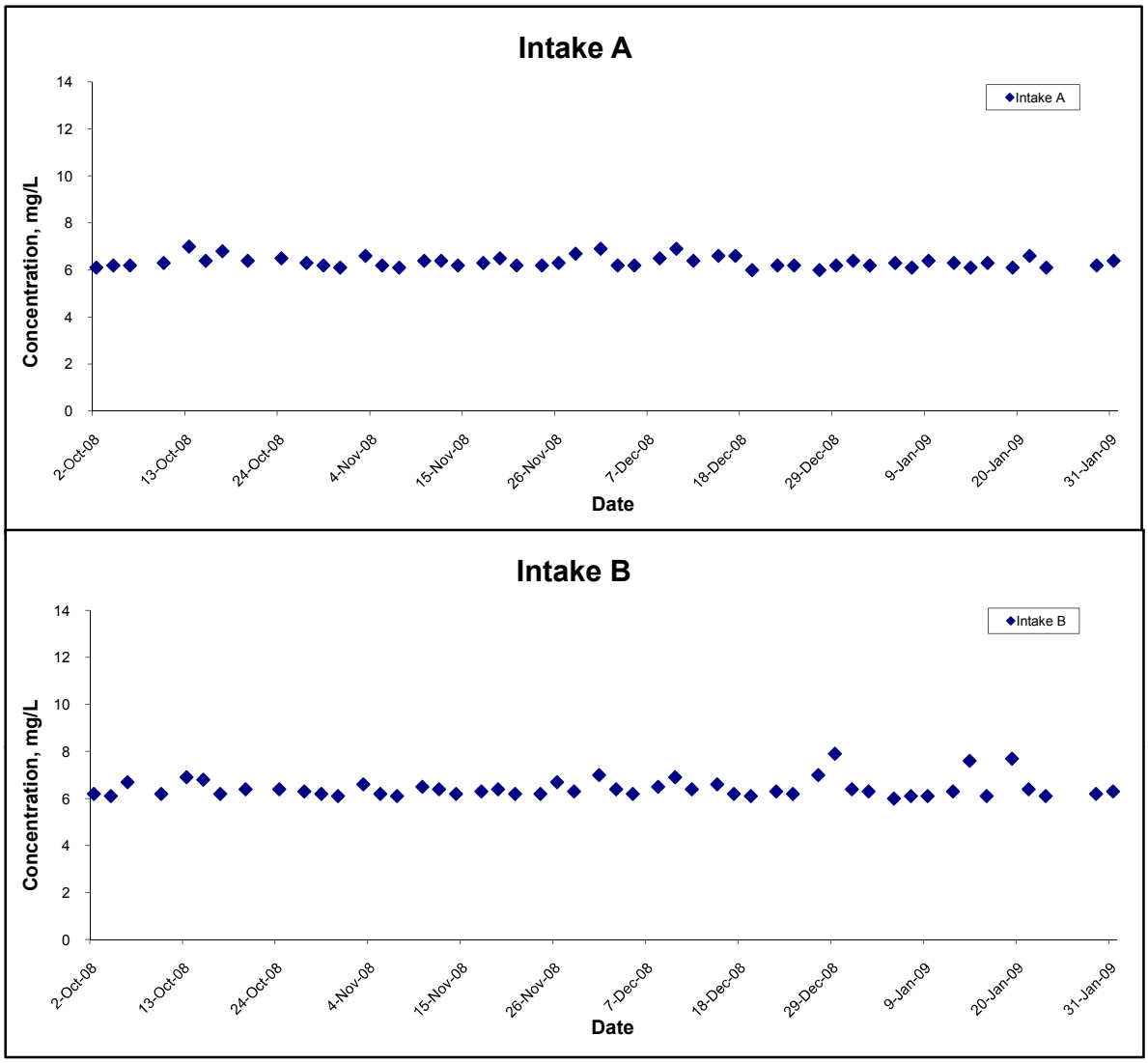
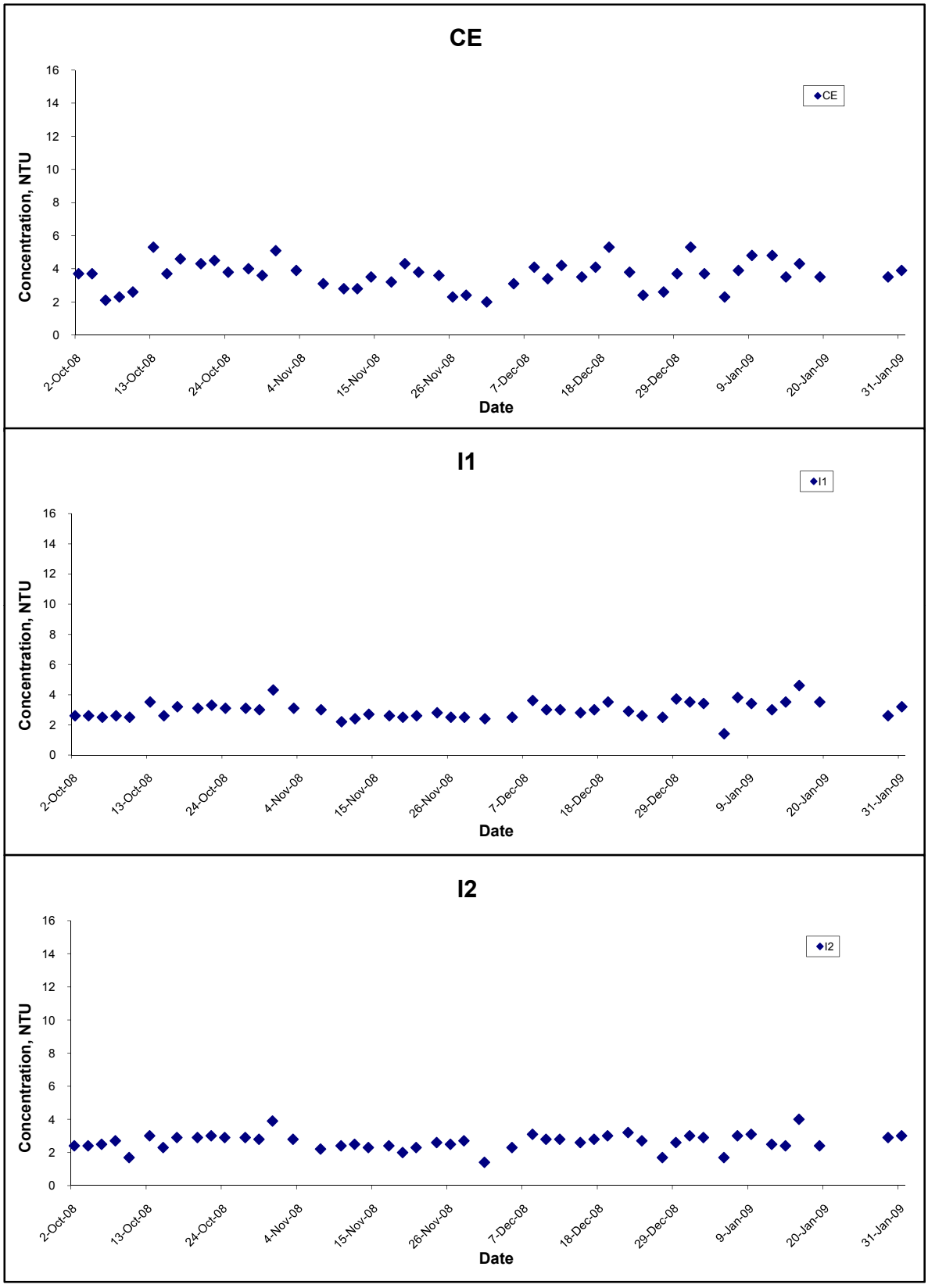
Dissolved Oxygen (Bottom) at Mid-Flood Tide



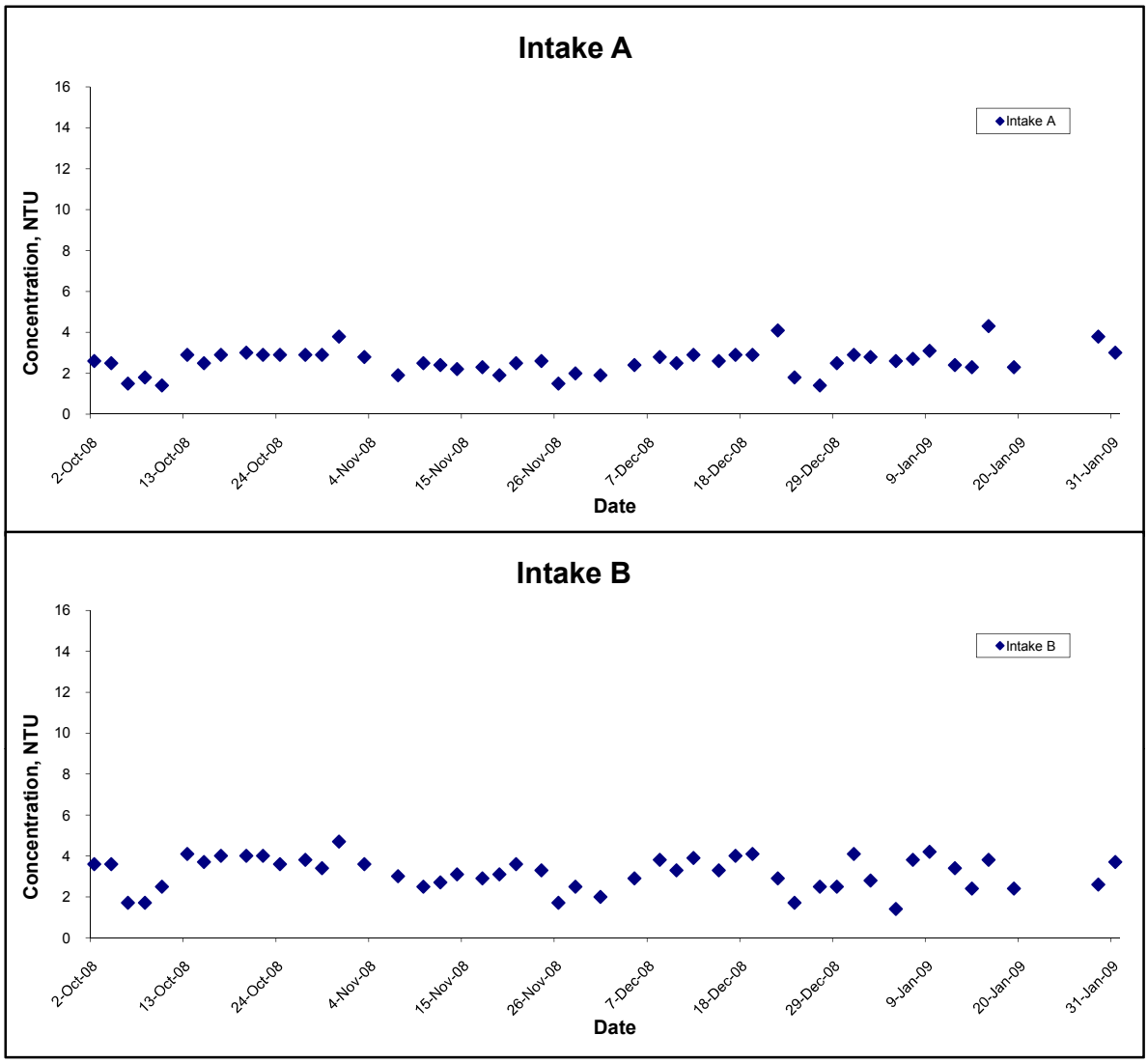
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Turbidity (Depth-averaged) at Mid-Ebb Tide



Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA8001	CINOTECH
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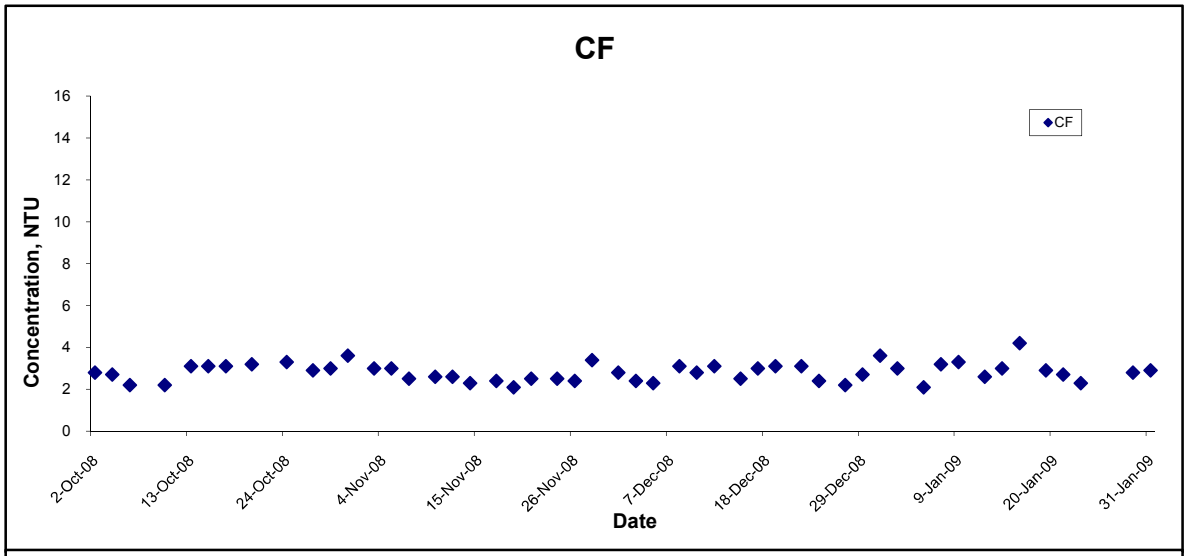
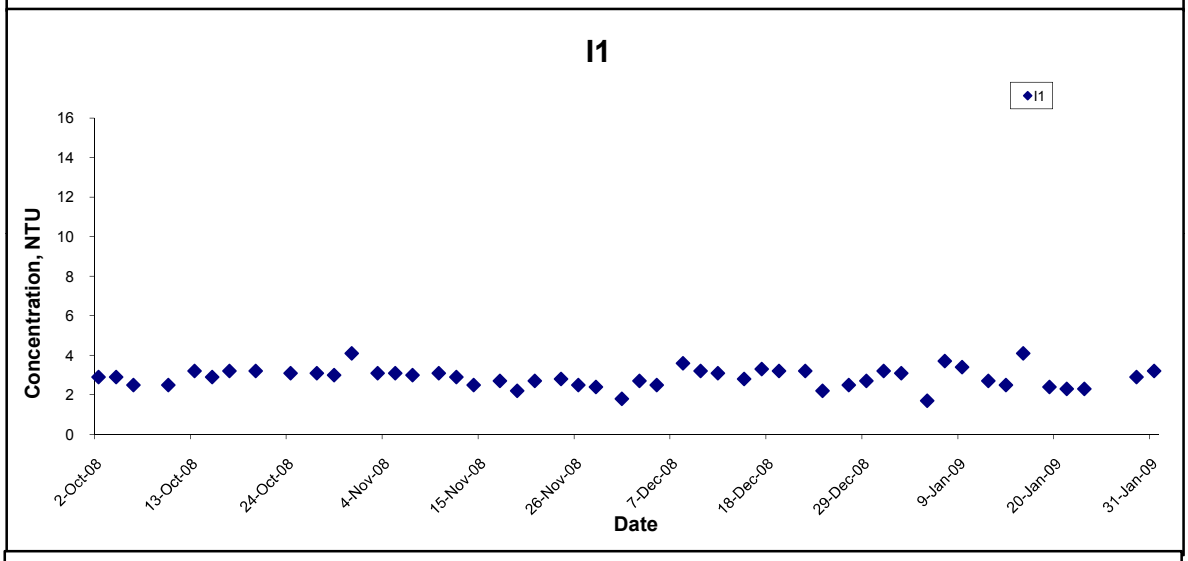
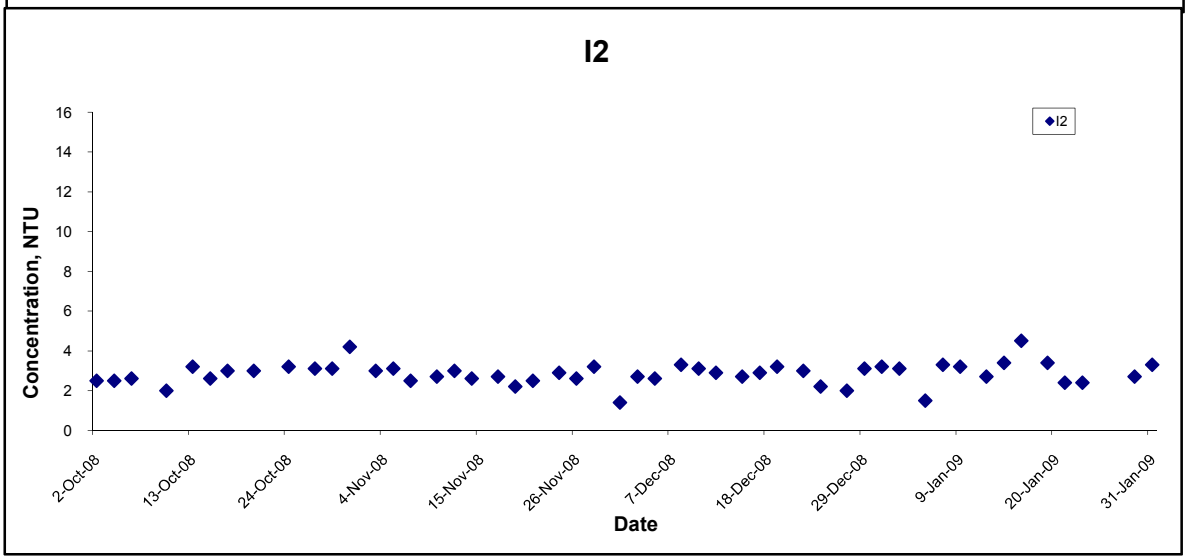
Turbidity (Depth-averaged) at Mid-Flood Tide

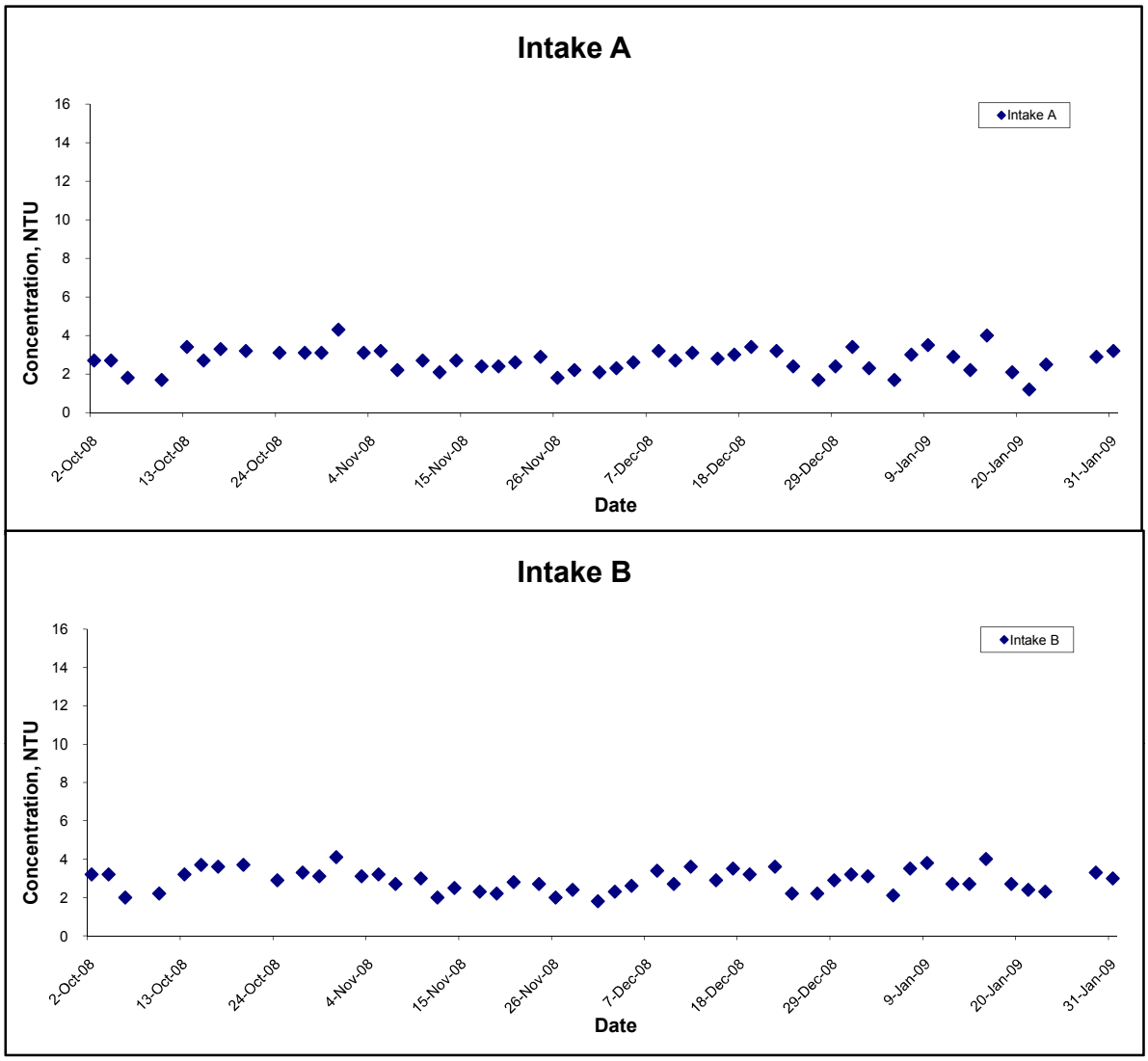






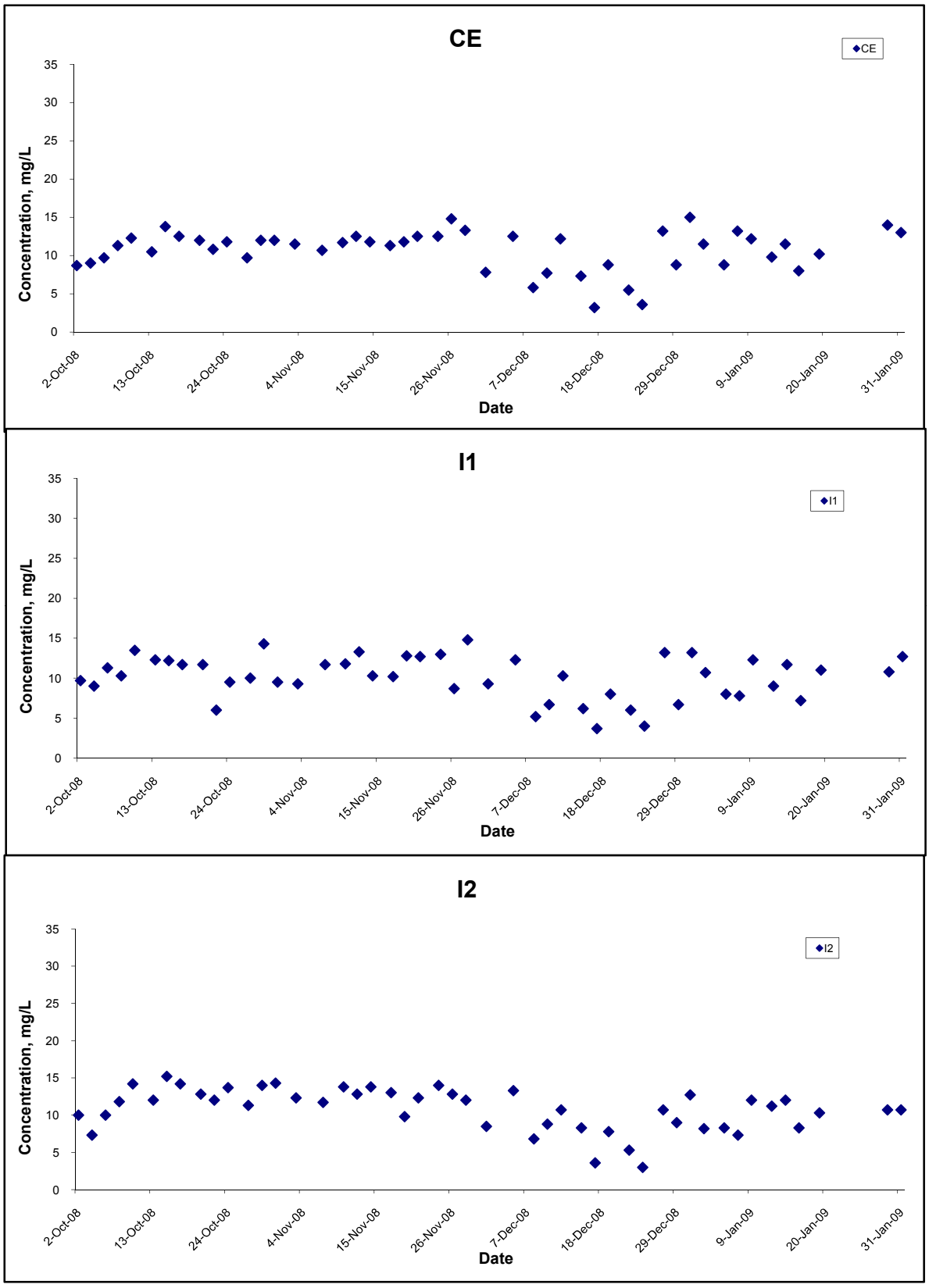
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jan 09	Appendix: H	

Turbidity (Depth-averaged) at Mid-Flood Tide



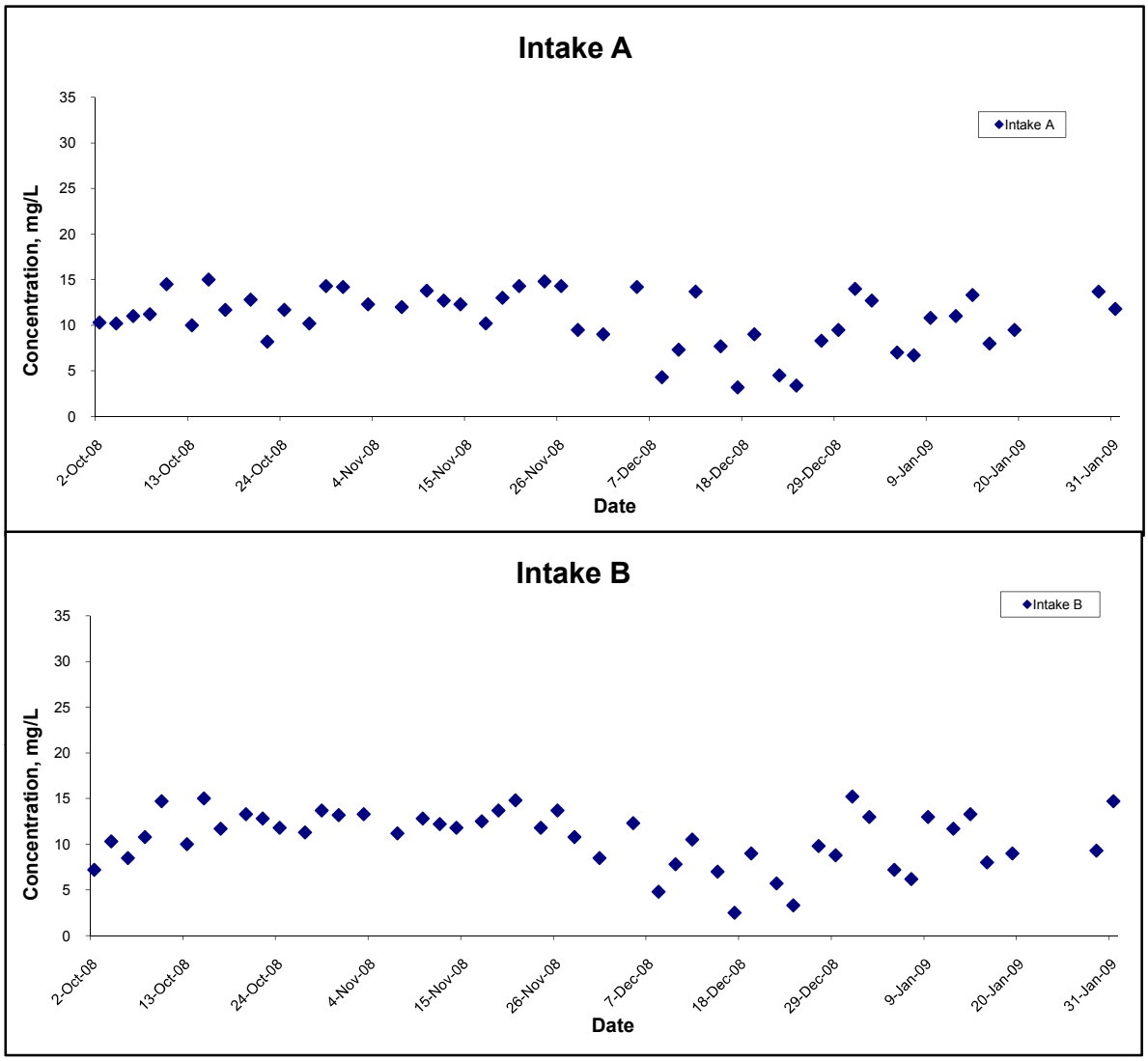
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



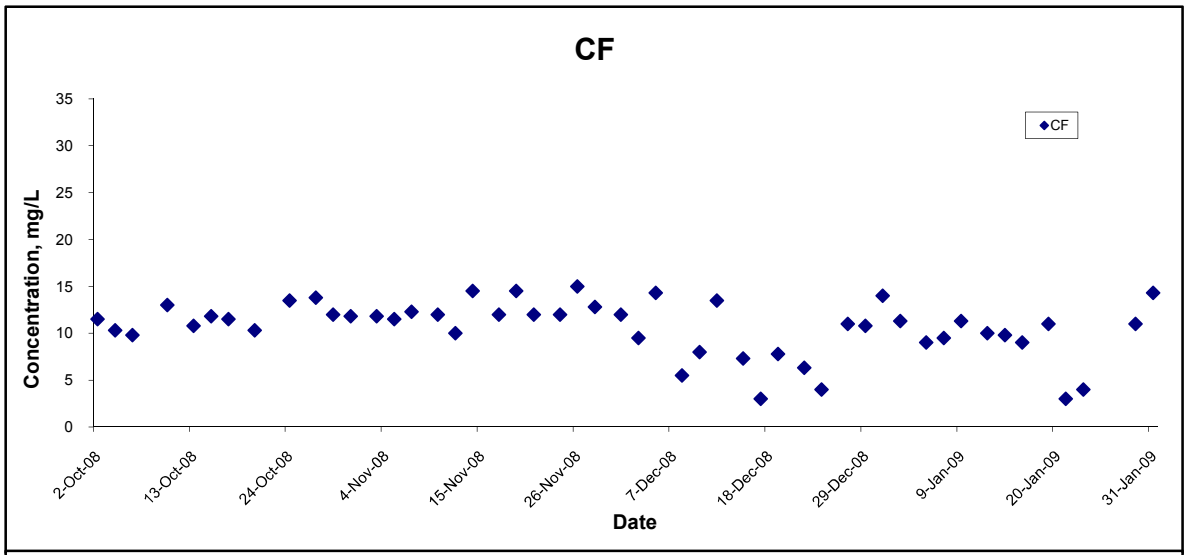
Title		Scale	Project No.	
	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	N.T.S	MA8001	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results	Date: Jan 09	Appendix: H	

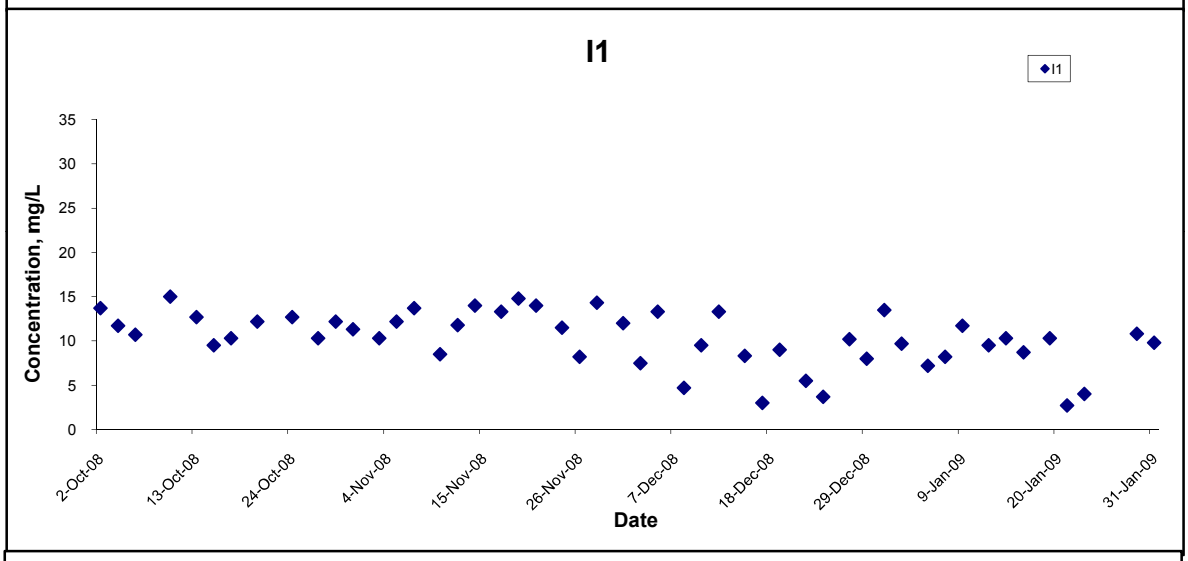
Suspended Solids (Depth-averaged) at Mid-Ebb Tide

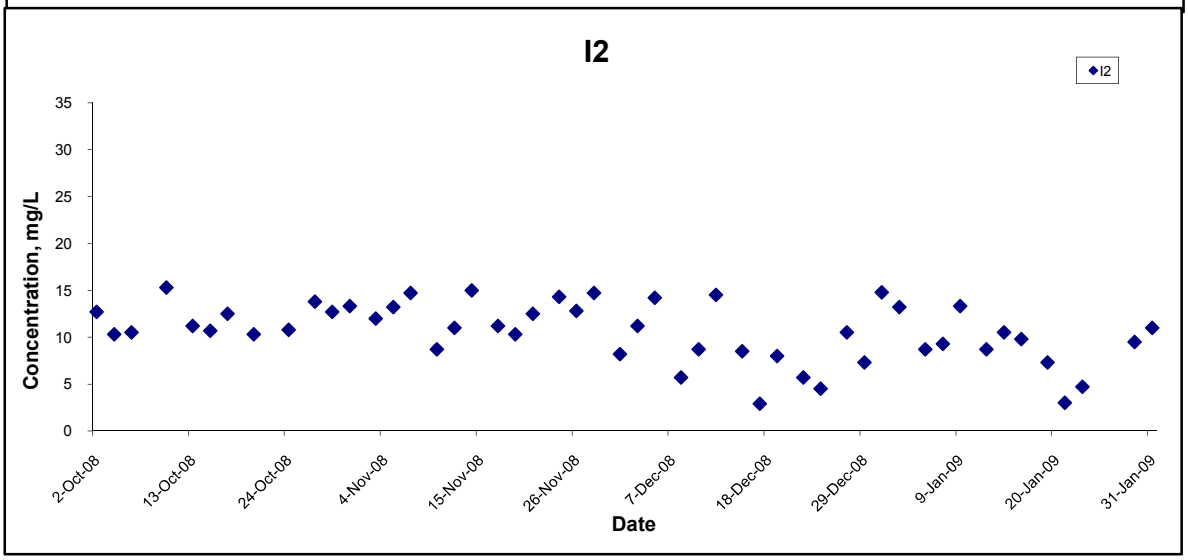


Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jan 09	Project No.: MA8001 Appendix: H	CINOTECH

Suspended Solids (Depth-averaged) at Mid-Flood Tide







Title		Scale	Project No.
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel		N.T.S	MA8001
Graphical Presentation of Water Quality Monitoring Results		Date: Jan 09	Appendix: H

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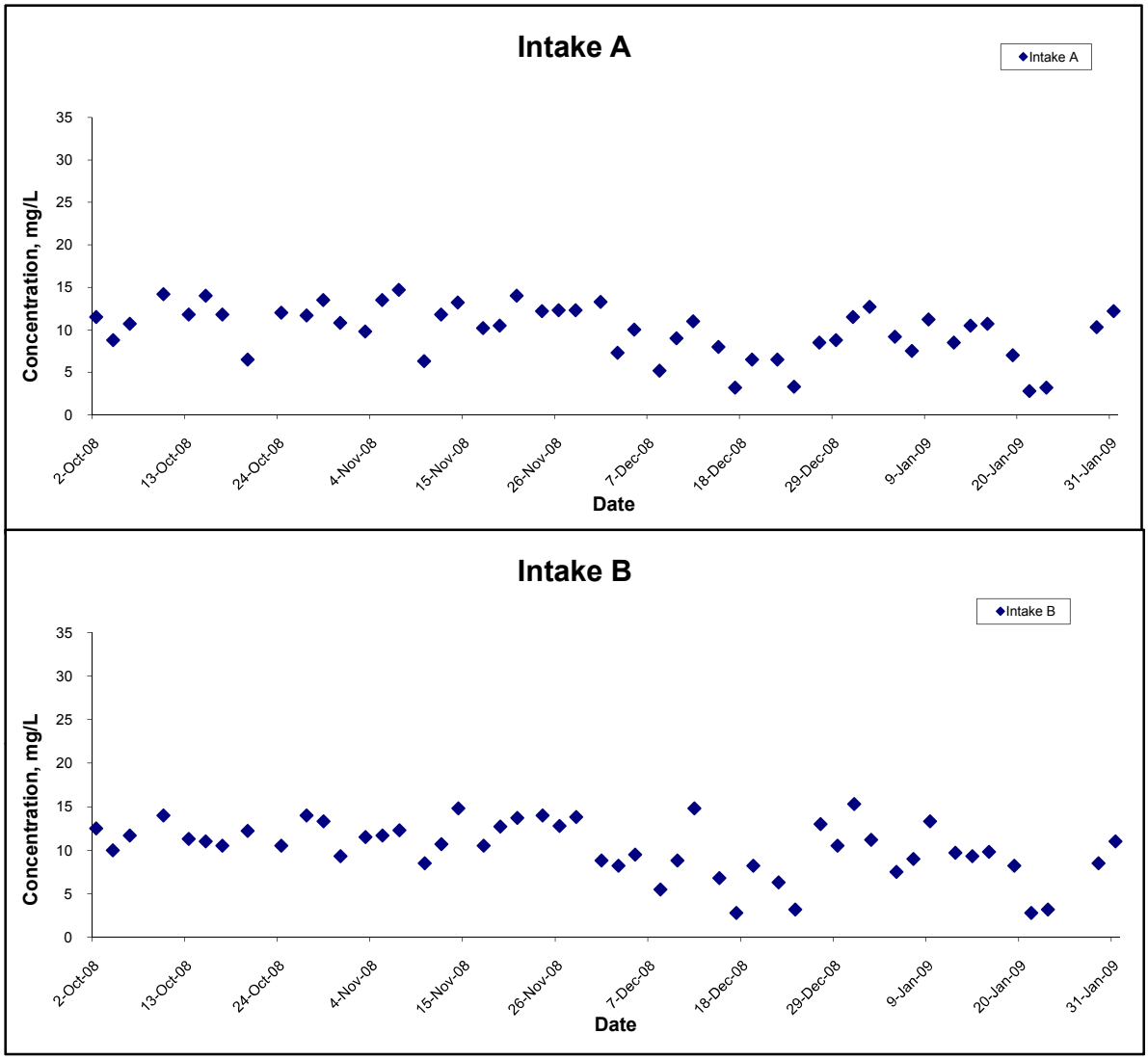
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jan 09	Appendix: H	

APPENDIX I
SUMMARY OF EXCEEDANCE

Contract No. DC/2007/10 – Design and Construction of Hong Kong West Drainage Tunnel

Exceedance Report

Eastern Portal

(A) Exceedance Report for Air Quality (1 hour TSP)
(NIL in the reporting month)

(B) Exceedance Report for Air Quality (24 hours TSP)
(NIL in the reporting month)

(C) Exceedance Report for Construction Noise
(NIL in the reporting month)

Western Portal

(D) Exceedance Report for Air Quality (1 hour TSP)
(NIL in the reporting month)

(E) Exceedance Report for Air Quality (24 hours TSP)
(NIL in the reporting month)

(F) Exceedance Report for Construction Noise
(NIL in the reporting month)

(G) Exceedance Report for Water Quality
(NIL in the reporting month)

APPENDIX J
WIND DATA

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
1-Jan-2009	00:00	1.8	NE
1-Jan-2009	01:00	1.2	NNE
1-Jan-2009	02:00	1.0	NNE
1-Jan-2009	03:00	1.0	NNE
1-Jan-2009	04:00	1.3	NNE
1-Jan-2009	05:00	1.5	NNE
1-Jan-2009	06:00	1.2	NNE
1-Jan-2009	07:00	1.3	NNE
1-Jan-2009	08:00	1.6	NNE
1-Jan-2009	09:00	2.1	NNE
1-Jan-2009	10:00	2.1	NNE
1-Jan-2009	11:00	2.7	NNE
1-Jan-2009	12:00	3.1	NNE
1-Jan-2009	13:00	2.7	NNE
1-Jan-2009	14:00	2.5	NNE
1-Jan-2009	15:00	2.8	NNE
1-Jan-2009	16:00	2.7	NE
1-Jan-2009	17:00	2.8	NNE
1-Jan-2009	18:00	2.4	NNE
1-Jan-2009	19:00	1.5	NE
1-Jan-2009	20:00	0.9	NNE
1-Jan-2009	21:00	1.0	ENE
1-Jan-2009	22:00	0.9	NE
1-Jan-2009	23:00	0.6	ENE
2-Jan-2009	00:00	1.2	NE
2-Jan-2009	01:00	1.3	NE
2-Jan-2009	02:00	1.5	NE
2-Jan-2009	03:00	1.5	NE
2-Jan-2009	04:00	1.9	NE
2-Jan-2009	05:00	2.1	ENE
2-Jan-2009	06:00	1.9	ENE
2-Jan-2009	07:00	2.2	NE
2-Jan-2009	08:00	2.1	E
2-Jan-2009	09:00	2.2	ENE
2-Jan-2009	10:00	2.7	E
2-Jan-2009	11:00	3.0	NE
2-Jan-2009	12:00	3.3	NE
2-Jan-2009	13:00	3.0	NE
2-Jan-2009	14:00	2.7	NNE
2-Jan-2009	15:00	2.2	NNE
2-Jan-2009	16:00	2.4	NNE
2-Jan-2009	17:00	2.7	NE
2-Jan-2009	18:00	1.6	NE
2-Jan-2009	19:00	1.5	NE
2-Jan-2009	20:00	1.0	ENE
2-Jan-2009	21:00	0.9	ENE
2-Jan-2009	22:00	0.6	NE
2-Jan-2009	23:00	0.9	NNE
3-Jan-2009	00:00	0.9	ESE
3-Jan-2009	01:00	1.0	NE
3-Jan-2009	02:00	1.6	SE
3-Jan-2009	03:00	1.2	SE
3-Jan-2009	04:00	2.2	SE
3-Jan-2009	05:00	2.4	SE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
3-Jan-2009	06:00	1.9	NNE
3-Jan-2009	07:00	1.6	NE
3-Jan-2009	08:00	1.6	NNE
3-Jan-2009	09:00	1.8	NNE
3-Jan-2009	10:00	1.9	NNE
3-Jan-2009	11:00	2.8	NE
3-Jan-2009	12:00	2.8	NE
3-Jan-2009	13:00	3.1	ENE
3-Jan-2009	14:00	1.5	ENE
3-Jan-2009	15:00	1.5	ENE
3-Jan-2009	16:00	1.2	ENE
3-Jan-2009	17:00	1.0	ENE
3-Jan-2009	18:00	0.4	NE
3-Jan-2009	19:00	0.4	NE
3-Jan-2009	20:00	0.3	NE
3-Jan-2009	21:00	0.6	NE
3-Jan-2009	22:00	0.9	NE
3-Jan-2009	23:00	0.7	NE
4-Jan-2009	00:00	0.3	NNE
4-Jan-2009	01:00	0.1	NNE
4-Jan-2009	02:00	0.1	NE
4-Jan-2009	03:00	0.3	ESE
4-Jan-2009	04:00	0.9	ENE
4-Jan-2009	05:00	1.2	NE
4-Jan-2009	06:00	1.2	ENE
4-Jan-2009	07:00	0.3	ENE
4-Jan-2009	08:00	0.3	ENE
4-Jan-2009	09:00	0.7	E
4-Jan-2009	10:00	1.0	E
4-Jan-2009	11:00	1.2	ENE
4-Jan-2009	12:00	1.3	ENE
4-Jan-2009	13:00	1.8	ENE
4-Jan-2009	14:00	1.8	ENE
4-Jan-2009	15:00	1.9	ENE
4-Jan-2009	16:00	1.9	ENE
4-Jan-2009	17:00	1.5	NNE
4-Jan-2009	18:00	1.0	NNE
4-Jan-2009	19:00	1.3	NNE
4-Jan-2009	20:00	1.0	NNE
4-Jan-2009	21:00	0.4	NNE
4-Jan-2009	22:00	1.0	NE
4-Jan-2009	23:00	0.9	NE
5-Jan-2009	00:00	0.9	NE
5-Jan-2009	01:00	1.0	NE
5-Jan-2009	02:00	0.9	NE
5-Jan-2009	03:00	0.9	NE
5-Jan-2009	04:00	0.9	NE
5-Jan-2009	05:00	0.3	NE
5-Jan-2009	06:00	0.2	NE
5-Jan-2009	07:00	0.6	NE
5-Jan-2009	08:00	0.6	NE
5-Jan-2009	09:00	1.0	NNE
5-Jan-2009	10:00	1.5	NE
5-Jan-2009	11:00	2.2	NE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
5-Jan-2009	12:00	2.2	NE
5-Jan-2009	13:00	2.2	NE
5-Jan-2009	14:00	2.7	NNE
5-Jan-2009	15:00	2.7	NNE
5-Jan-2009	16:00	1.2	NE
5-Jan-2009	17:00	1.6	NNE
5-Jan-2009	18:00	0.9	NNE
5-Jan-2009	19:00	1.0	NNE
5-Jan-2009	20:00	1.0	NE
5-Jan-2009	21:00	0.9	N
5-Jan-2009	22:00	1.0	NE
5-Jan-2009	23:00	1.5	NNE
6-Jan-2009	00:00	1.3	NNE
6-Jan-2009	01:00	0.9	N
6-Jan-2009	02:00	1.6	NNE
6-Jan-2009	03:00	1.3	NE
6-Jan-2009	04:00	1.2	NE
6-Jan-2009	05:00	0.6	NNE
6-Jan-2009	06:00	0.4	NNE
6-Jan-2009	07:00	0.7	NNE
6-Jan-2009	08:00	0.9	NNE
6-Jan-2009	09:00	1.0	NNE
6-Jan-2009	10:00	1.5	NNE
6-Jan-2009	11:00	1.9	NE
6-Jan-2009	12:00	2.4	NE
6-Jan-2009	13:00	2.8	NE
6-Jan-2009	14:00	3.1	ENE
6-Jan-2009	15:00	3.3	NE
6-Jan-2009	16:00	3.0	ENE
6-Jan-2009	17:00	2.8	NNE
6-Jan-2009	18:00	2.1	NE
6-Jan-2009	19:00	1.9	NE
6-Jan-2009	20:00	1.5	ENE
6-Jan-2009	21:00	1.3	ENE
6-Jan-2009	22:00	1.6	ENE
6-Jan-2009	23:00	1.3	ENE
7-Jan-2009	00:00	1.8	ENE
7-Jan-2009	01:00	1.5	ENE
7-Jan-2009	02:00	1.2	NE
7-Jan-2009	03:00	1.0	ENE
7-Jan-2009	04:00	1.0	E
7-Jan-2009	05:00	1.5	E
7-Jan-2009	06:00	1.3	NE
7-Jan-2009	07:00	1.6	ENE
7-Jan-2009	08:00	0.6	ESE
7-Jan-2009	09:00	1.0	NE
7-Jan-2009	10:00	1.3	ENE
7-Jan-2009	11:00	1.5	NE
7-Jan-2009	12:00	2.8	NE
7-Jan-2009	13:00	3.0	NE
7-Jan-2009	14:00	3.0	NE
7-Jan-2009	15:00	2.5	NE
7-Jan-2009	16:00	2.1	NE
7-Jan-2009	17:00	1.8	NE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
7-Jan-2009	18:00	1.8	NE
7-Jan-2009	19:00	1.2	ENE
7-Jan-2009	20:00	0.9	ENE
7-Jan-2009	21:00	1.2	E
7-Jan-2009	22:00	1.2	ENE
7-Jan-2009	23:00	1.2	ENE
8-Jan-2009	00:00	1.3	E
8-Jan-2009	01:00	1.3	E
8-Jan-2009	02:00	1.5	E
8-Jan-2009	03:00	1.9	E
8-Jan-2009	04:00	2.1	ENE
8-Jan-2009	05:00	2.5	E
8-Jan-2009	06:00	2.7	ENE
8-Jan-2009	07:00	1.9	ENE
8-Jan-2009	08:00	2.7	ENE
8-Jan-2009	09:00	2.5	NE
8-Jan-2009	10:00	2.4	NE
8-Jan-2009	11:00	2.1	NE
8-Jan-2009	12:00	2.2	NNE
8-Jan-2009	13:00	1.5	N
8-Jan-2009	14:00	1.2	NNE
8-Jan-2009	15:00	1.3	NNE
8-Jan-2009	16:00	1.3	NE
8-Jan-2009	17:00	1.6	NE
8-Jan-2009	18:00	1.3	ENE
8-Jan-2009	19:00	1.2	ENE
8-Jan-2009	20:00	1.6	ENE
8-Jan-2009	21:00	1.2	E
8-Jan-2009	22:00	1.6	E
8-Jan-2009	23:00	1.6	E
9-Jan-2009	00:00	1.8	ENE
9-Jan-2009	01:00	1.5	E
9-Jan-2009	02:00	1.8	E
9-Jan-2009	03:00	2.4	E
9-Jan-2009	04:00	2.7	E
9-Jan-2009	05:00	2.5	E
9-Jan-2009	06:00	2.5	E
9-Jan-2009	07:00	2.4	E
9-Jan-2009	08:00	2.4	E
9-Jan-2009	09:00	3.1	NNE
9-Jan-2009	10:00	3.3	ENE
9-Jan-2009	11:00	3.1	ENE
9-Jan-2009	12:00	3.4	ENE
9-Jan-2009	13:00	3.3	ENE
9-Jan-2009	14:00	3.7	ENE
9-Jan-2009	15:00	3.0	ENE
9-Jan-2009	16:00	3.0	ENE
9-Jan-2009	17:00	2.7	ENE
9-Jan-2009	18:00	2.4	NE
9-Jan-2009	19:00	2.1	ENE
9-Jan-2009	20:00	2.7	ENE
9-Jan-2009	21:00	2.8	ENE
9-Jan-2009	22:00	2.5	NE
9-Jan-2009	23:00	2.2	NE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
10-Jan-2009	00:00	2.4	N
10-Jan-2009	01:00	3.3	NNE
10-Jan-2009	02:00	3.1	NE
10-Jan-2009	03:00	3.3	NE
10-Jan-2009	04:00	2.8	NE
10-Jan-2009	05:00	3.1	NE
10-Jan-2009	06:00	3.0	NE
10-Jan-2009	07:00	2.8	ENE
10-Jan-2009	08:00	3.0	NE
10-Jan-2009	09:00	3.1	ENE
10-Jan-2009	10:00	3.6	ENE
10-Jan-2009	11:00	3.6	NE
10-Jan-2009	12:00	4.0	NE
10-Jan-2009	13:00	3.9	ENE
10-Jan-2009	14:00	3.7	ENE
10-Jan-2009	15:00	3.7	ENE
10-Jan-2009	16:00	3.7	ENE
10-Jan-2009	17:00	3.0	E
10-Jan-2009	18:00	2.2	E
10-Jan-2009	19:00	1.9	ENE
10-Jan-2009	20:00	2.1	ENE
10-Jan-2009	21:00	2.2	ENE
10-Jan-2009	22:00	2.5	E
10-Jan-2009	23:00	3.3	NNE
11-Jan-2009	00:00	3.1	NNE
11-Jan-2009	01:00	3.3	NNE
11-Jan-2009	02:00	3.3	NNE
11-Jan-2009	03:00	2.7	NNE
11-Jan-2009	04:00	3.0	NNE
11-Jan-2009	05:00	2.2	NNE
11-Jan-2009	06:00	3.0	NNE
11-Jan-2009	07:00	3.3	NNE
11-Jan-2009	08:00	3.4	NNE
11-Jan-2009	09:00	4.0	NNE
11-Jan-2009	10:00	3.7	NNE
11-Jan-2009	11:00	3.1	NNE
11-Jan-2009	12:00	3.3	NNE
11-Jan-2009	13:00	3.7	NNE
11-Jan-2009	14:00	3.3	NE
11-Jan-2009	15:00	2.7	NNE
11-Jan-2009	16:00	3.1	NNE
11-Jan-2009	17:00	3.3	NE
11-Jan-2009	18:00	2.5	NNE
11-Jan-2009	19:00	2.5	ENE
11-Jan-2009	20:00	1.6	NE
11-Jan-2009	21:00	1.6	ENE
11-Jan-2009	22:00	2.2	NE
11-Jan-2009	23:00	2.4	NE
12-Jan-2009	00:00	2.1	NE
12-Jan-2009	01:00	2.2	NE
12-Jan-2009	02:00	1.9	NE
12-Jan-2009	03:00	2.5	ENE
12-Jan-2009	04:00	2.5	ENE
12-Jan-2009	05:00	2.7	NE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
12-Jan-2009	06:00	3.1	E
12-Jan-2009	07:00	2.7	ENE
12-Jan-2009	08:00	2.8	E
12-Jan-2009	09:00	3.1	NE
12-Jan-2009	10:00	3.1	NE
12-Jan-2009	11:00	3.3	NE
12-Jan-2009	12:00	3.4	NNE
12-Jan-2009	13:00	2.7	NNE
12-Jan-2009	14:00	3.0	NNE
12-Jan-2009	15:00	3.3	NE
12-Jan-2009	16:00	2.2	NE
12-Jan-2009	17:00	2.5	NE
12-Jan-2009	18:00	1.9	ENE
12-Jan-2009	19:00	1.9	NNE
12-Jan-2009	20:00	1.3	NE
12-Jan-2009	21:00	1.2	NE
12-Jan-2009	22:00	1.2	NE
12-Jan-2009	23:00	1.2	NE
13-Jan-2009	00:00	1.2	NE
13-Jan-2009	01:00	1.3	NE
13-Jan-2009	02:00	1.3	NNE
13-Jan-2009	03:00	1.2	NE
13-Jan-2009	04:00	1.6	NE
13-Jan-2009	05:00	1.8	NE
13-Jan-2009	06:00	1.9	NE
13-Jan-2009	07:00	1.6	NNE
13-Jan-2009	08:00	2.1	NE
13-Jan-2009	09:00	1.9	NNE
13-Jan-2009	10:00	2.7	NNE
13-Jan-2009	11:00	2.8	N
13-Jan-2009	12:00	3.3	N
13-Jan-2009	13:00	3.1	N
13-Jan-2009	14:00	1.9	NE
13-Jan-2009	15:00	1.9	NNE
13-Jan-2009	16:00	2.2	N
13-Jan-2009	17:00	2.4	N
13-Jan-2009	18:00	2.2	N
13-Jan-2009	19:00	1.9	NNE
13-Jan-2009	20:00	1.9	NNE
13-Jan-2009	21:00	1.9	N
13-Jan-2009	22:00	2.1	NNE
13-Jan-2009	23:00	2.7	NE
14-Jan-2009	00:00	2.8	ESE
14-Jan-2009	01:00	3.0	NE
14-Jan-2009	02:00	3.1	NE
14-Jan-2009	03:00	3.0	NE
14-Jan-2009	04:00	3.1	ESE
14-Jan-2009	05:00	3.0	E
14-Jan-2009	06:00	2.8	ESE
14-Jan-2009	07:00	3.3	NNE
14-Jan-2009	08:00	3.4	NNE
14-Jan-2009	09:00	3.3	N
14-Jan-2009	10:00	2.4	NNE
14-Jan-2009	11:00	3.0	N

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
14-Jan-2009	12:00	3.3	N
14-Jan-2009	13:00	3.0	NNE
14-Jan-2009	14:00	2.7	NNE
14-Jan-2009	15:00	2.8	NNE
14-Jan-2009	16:00	2.5	N
14-Jan-2009	17:00	2.7	NNE
14-Jan-2009	18:00	1.8	N
14-Jan-2009	19:00	1.5	N
14-Jan-2009	20:00	0.9	N
14-Jan-2009	21:00	0.4	NNE
14-Jan-2009	22:00	0.6	NE
14-Jan-2009	23:00	0.7	NNE
15-Jan-2009	00:00	1.0	NNE
15-Jan-2009	01:00	1.2	NNE
15-Jan-2009	02:00	1.2	NNE
15-Jan-2009	03:00	2.2	NNE
15-Jan-2009	04:00	1.9	NNE
15-Jan-2009	05:00	1.8	NNE
15-Jan-2009	06:00	1.3	NNE
15-Jan-2009	07:00	1.5	NNE
15-Jan-2009	08:00	1.6	NNE
15-Jan-2009	09:00	1.5	NNE
15-Jan-2009	10:00	1.9	E
15-Jan-2009	11:00	1.6	ENE
15-Jan-2009	12:00	2.2	NE
15-Jan-2009	13:00	1.8	NNE
15-Jan-2009	14:00	2.2	NNE
15-Jan-2009	15:00	1.8	NE
15-Jan-2009	16:00	2.1	NE
15-Jan-2009	17:00	1.0	NE
15-Jan-2009	18:00	0.9	NE
15-Jan-2009	19:00	0.4	E
15-Jan-2009	20:00	0.4	E
15-Jan-2009	21:00	0.9	E
15-Jan-2009	22:00	0.9	E
15-Jan-2009	23:00	0.4	E
16-Jan-2009	00:00	0.6	E
16-Jan-2009	01:00	0.7	ENE
16-Jan-2009	02:00	0.1	ENE
16-Jan-2009	03:00	0.1	ENE
16-Jan-2009	04:00	0.4	ENE
16-Jan-2009	05:00	0.6	ENE
16-Jan-2009	06:00	0.4	E
16-Jan-2009	07:00	0.3	ENE
16-Jan-2009	08:00	0.6	N
16-Jan-2009	09:00	0.9	ENE
16-Jan-2009	10:00	1.9	NE
16-Jan-2009	11:00	2.7	NE
16-Jan-2009	12:00	2.4	ENE
16-Jan-2009	13:00	2.2	NE
16-Jan-2009	14:00	2.7	NE
16-Jan-2009	15:00	1.8	ESE
16-Jan-2009	16:00	2.1	ESE
16-Jan-2009	17:00	1.9	ENE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
16-Jan-2009	18:00	2.1	NNE
16-Jan-2009	19:00	1.9	NE
16-Jan-2009	20:00	0.7	NNE
16-Jan-2009	21:00	0.6	ESE
16-Jan-2009	22:00	0.6	NE
16-Jan-2009	23:00	0.7	NE
17-Jan-2009	00:00	0.9	NE
17-Jan-2009	01:00	1.3	E
17-Jan-2009	02:00	1.0	E
17-Jan-2009	03:00	1.0	E
17-Jan-2009	04:00	0.7	ENE
17-Jan-2009	05:00	0.6	E
17-Jan-2009	06:00	1.2	E
17-Jan-2009	07:00	1.0	E
17-Jan-2009	08:00	1.3	E
17-Jan-2009	09:00	1.8	E
17-Jan-2009	10:00	2.4	E
17-Jan-2009	11:00	2.8	E
17-Jan-2009	12:00	2.5	E
17-Jan-2009	13:00	2.7	NNE
17-Jan-2009	14:00	3.0	NE
17-Jan-2009	15:00	2.5	NE
17-Jan-2009	16:00	2.8	E
17-Jan-2009	17:00	3.3	ENE
17-Jan-2009	18:00	2.8	E
17-Jan-2009	19:00	2.8	ENE
17-Jan-2009	20:00	3.1	E
17-Jan-2009	21:00	3.1	E
17-Jan-2009	22:00	3.1	E
17-Jan-2009	23:00	2.8	ENE
18-Jan-2009	00:00	2.7	ENE
18-Jan-2009	01:00	1.8	ENE
18-Jan-2009	02:00	2.1	ENE
18-Jan-2009	03:00	1.5	ENE
18-Jan-2009	04:00	0.0	---
18-Jan-2009	05:00	0.0	---
18-Jan-2009	06:00	0.0	---
18-Jan-2009	07:00	0.0	---
18-Jan-2009	08:00	0.0	---
18-Jan-2009	09:00	0.0	---
18-Jan-2009	10:00	0.0	---
18-Jan-2009	11:00	2.1	SSW
18-Jan-2009	12:00	2.2	SSW
18-Jan-2009	13:00	1.9	WSW
18-Jan-2009	14:00	1.8	WSW
18-Jan-2009	15:00	1.9	WSW
18-Jan-2009	16:00	2.1	WSW
18-Jan-2009	17:00	2.2	W
18-Jan-2009	18:00	1.9	SSW
18-Jan-2009	19:00	1.5	SSW
18-Jan-2009	20:00	0.9	SSW
18-Jan-2009	21:00	0.0	---
18-Jan-2009	22:00	0.0	---
18-Jan-2009	23:00	1.2	ENE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
19-Jan-2009	00:00	1.0	ENE
19-Jan-2009	01:00	1.0	ENE
19-Jan-2009	02:00	0.0	---
19-Jan-2009	03:00	0.0	---
19-Jan-2009	04:00	0.0	---
19-Jan-2009	05:00	0.0	---
19-Jan-2009	06:00	0.9	NE
19-Jan-2009	07:00	0.7	ENE
19-Jan-2009	08:00	1.0	ENE
19-Jan-2009	09:00	2.5	ENE
19-Jan-2009	10:00	2.5	ENE
19-Jan-2009	11:00	1.2	NNE
19-Jan-2009	12:00	1.8	N
19-Jan-2009	13:00	1.4	N
19-Jan-2009	14:00	2.5	N
19-Jan-2009	15:00	0.0	---
19-Jan-2009	16:00	0.8	NNE
19-Jan-2009	17:00	0.0	---
19-Jan-2009	18:00	2.5	ENE
19-Jan-2009	19:00	3.0	ENE
19-Jan-2009	20:00	2.1	ENE
19-Jan-2009	21:00	1.5	N
19-Jan-2009	22:00	1.8	NNE
19-Jan-2009	23:00	1.8	E
20-Jan-2009	00:00	2.1	E
20-Jan-2009	01:00	2.1	E
20-Jan-2009	02:00	2.1	ENE
20-Jan-2009	03:00	2.1	E
20-Jan-2009	04:00	3.0	E
20-Jan-2009	05:00	2.8	E
20-Jan-2009	06:00	2.2	E
20-Jan-2009	07:00	2.2	NNE
20-Jan-2009	08:00	2.1	E
20-Jan-2009	09:00	2.2	E
20-Jan-2009	10:00	3.1	E
20-Jan-2009	11:00	3.3	E
20-Jan-2009	12:00	3.4	NE
20-Jan-2009	13:00	3.6	NNE
20-Jan-2009	14:00	3.9	NNE
20-Jan-2009	15:00	3.7	NE
20-Jan-2009	16:00	3.4	NE
20-Jan-2009	17:00	2.2	ENE
20-Jan-2009	18:00	2.1	E
20-Jan-2009	19:00	1.8	ENE
20-Jan-2009	20:00	1.8	E
20-Jan-2009	21:00	1.3	E
20-Jan-2009	22:00	0.9	E
20-Jan-2009	23:00	0.7	E
21-Jan-2009	00:00	1.2	E
21-Jan-2009	01:00	1.8	NE
21-Jan-2009	02:00	1.9	NNE
21-Jan-2009	03:00	1.3	NNE
21-Jan-2009	04:00	2.1	NE
21-Jan-2009	05:00	2.2	NE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
21-Jan-2009	06:00	1.9	ENE
21-Jan-2009	07:00	2.2	E
21-Jan-2009	08:00	1.9	ENE
21-Jan-2009	09:00	2.7	E
21-Jan-2009	10:00	2.8	NNE
21-Jan-2009	11:00	2.5	ENE
21-Jan-2009	12:00	2.5	NNE
21-Jan-2009	13:00	2.5	E
21-Jan-2009	14:00	2.7	ESE
21-Jan-2009	15:00	2.7	WSW
21-Jan-2009	16:00	2.1	WSW
21-Jan-2009	17:00	1.8	WNW
21-Jan-2009	18:00	1.8	WSW
21-Jan-2009	19:00	1.3	WNW
21-Jan-2009	20:00	1.5	WSW
21-Jan-2009	21:00	1.6	WSW
21-Jan-2009	22:00	2.1	W
21-Jan-2009	23:00	1.9	WNW
22-Jan-2009	00:00	1.8	WNW
22-Jan-2009	01:00	1.5	WNW
22-Jan-2009	02:00	1.9	WNW
22-Jan-2009	03:00	2.1	WNW
22-Jan-2009	04:00	2.5	SW
22-Jan-2009	05:00	2.4	WSW
22-Jan-2009	06:00	2.8	WSW
22-Jan-2009	07:00	2.7	SW
22-Jan-2009	08:00	2.2	W
22-Jan-2009	09:00	2.5	W
22-Jan-2009	10:00	2.7	SW
22-Jan-2009	11:00	2.8	SSW
22-Jan-2009	12:00	2.5	SSW
22-Jan-2009	13:00	3.0	WNW
22-Jan-2009	14:00	3.1	W
22-Jan-2009	15:00	3.3	WNW
22-Jan-2009	16:00	3.6	W
22-Jan-2009	17:00	2.7	W
22-Jan-2009	18:00	2.4	W
22-Jan-2009	19:00	1.8	WNW
22-Jan-2009	20:00	1.5	W
22-Jan-2009	21:00	1.3	WNW
22-Jan-2009	22:00	1.0	WNW
22-Jan-2009	23:00	1.2	ENE
23-Jan-2009	00:00	1.0	ENE
23-Jan-2009	01:00	1.0	ENE
23-Jan-2009	02:00	1.2	NNE
23-Jan-2009	03:00	1.2	ENE
23-Jan-2009	04:00	1.5	ENE
23-Jan-2009	05:00	0.6	ENE
23-Jan-2009	06:00	0.7	ENE
23-Jan-2009	07:00	1.2	ENE
23-Jan-2009	08:00	1.6	ENE
23-Jan-2009	09:00	2.5	NNE
23-Jan-2009	10:00	2.8	NNE
23-Jan-2009	11:00	2.2	NNE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
23-Jan-2009	12:00	2.8	NE
23-Jan-2009	13:00	3.0	NNE
23-Jan-2009	14:00	2.5	NNE
23-Jan-2009	15:00	2.4	NE
23-Jan-2009	16:00	2.2	NNE
23-Jan-2009	17:00	1.5	ENE
23-Jan-2009	18:00	1.6	ESE
23-Jan-2009	19:00	1.5	ESE
23-Jan-2009	20:00	1.2	ESE
23-Jan-2009	21:00	1.0	SSE
23-Jan-2009	22:00	0.7	ENE
23-Jan-2009	23:00	0.7	ENE
24-Jan-2009	00:00	0.6	ENE
24-Jan-2009	01:00	0.1	ENE
24-Jan-2009	02:00	0.9	NE
24-Jan-2009	03:00	0.4	NNE
24-Jan-2009	04:00	0.9	ESE
24-Jan-2009	05:00	1.0	NE
24-Jan-2009	06:00	0.6	SE
24-Jan-2009	07:00	0.7	SE
24-Jan-2009	08:00	1.0	SE
24-Jan-2009	09:00	1.5	SE
24-Jan-2009	10:00	1.8	NNE
24-Jan-2009	11:00	2.2	NE
24-Jan-2009	12:00	2.2	NNE
24-Jan-2009	13:00	2.2	NNE
24-Jan-2009	14:00	2.2	NNE
24-Jan-2009	15:00	2.1	NNE
24-Jan-2009	16:00	1.9	NNE
24-Jan-2009	17:00	1.5	NNE
24-Jan-2009	18:00	1.6	NNE
24-Jan-2009	19:00	0.7	NNE
24-Jan-2009	20:00	0.7	NE
24-Jan-2009	21:00	1.0	NNE
24-Jan-2009	22:00	0.7	NE
24-Jan-2009	23:00	0.7	ENE
25-Jan-2009	00:00	0.4	NNE
25-Jan-2009	01:00	0.6	NE
25-Jan-2009	02:00	1.3	NE
25-Jan-2009	03:00	1.3	N
25-Jan-2009	04:00	1.3	N
25-Jan-2009	05:00	1.9	N
25-Jan-2009	06:00	1.6	N
25-Jan-2009	07:00	1.3	N
25-Jan-2009	08:00	2.2	N
25-Jan-2009	09:00	2.1	N
25-Jan-2009	10:00	2.4	N
25-Jan-2009	11:00	2.2	ENE
25-Jan-2009	12:00	2.1	NE
25-Jan-2009	13:00	2.2	NE
25-Jan-2009	14:00	1.9	SSE
25-Jan-2009	15:00	3.1	E
25-Jan-2009	16:00	2.5	ESE
25-Jan-2009	17:00	2.4	NNE

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
25-Jan-2009	18:00	2.2	E
25-Jan-2009	19:00	2.4	ENE
25-Jan-2009	20:00	2.1	NE
25-Jan-2009	21:00	2.2	NE
25-Jan-2009	22:00	1.5	E
25-Jan-2009	23:00	1.8	E
26-Jan-2009	00:00	1.6	E
26-Jan-2009	01:00	1.9	E
26-Jan-2009	02:00	1.9	E
26-Jan-2009	03:00	2.1	E
26-Jan-2009	04:00	1.6	E
26-Jan-2009	05:00	2.2	E
26-Jan-2009	06:00	1.9	E
26-Jan-2009	07:00	1.3	E
26-Jan-2009	08:00	1.9	ENE
26-Jan-2009	09:00	3.1	NE
26-Jan-2009	10:00	3.6	E
26-Jan-2009	11:00	3.1	E
26-Jan-2009	12:00	3.3	E
26-Jan-2009	13:00	3.1	N
26-Jan-2009	14:00	2.8	N
26-Jan-2009	15:00	2.7	ENE
26-Jan-2009	16:00	2.4	N
26-Jan-2009	17:00	2.5	NNE
26-Jan-2009	18:00	2.7	ENE
26-Jan-2009	19:00	2.8	ENE
26-Jan-2009	20:00	1.8	ENE
26-Jan-2009	21:00	2.2	ENE
26-Jan-2009	22:00	2.4	NNE
26-Jan-2009	23:00	2.1	NNE
27-Jan-2009	00:00	1.5	NNE
27-Jan-2009	01:00	1.0	NNE
27-Jan-2009	02:00	1.3	NNE
27-Jan-2009	03:00	1.3	NNE
27-Jan-2009	04:00	1.2	WSW
27-Jan-2009	05:00	1.8	W
27-Jan-2009	06:00	1.0	WNW
27-Jan-2009	07:00	1.0	WSW
27-Jan-2009	08:00	0.9	W
27-Jan-2009	09:00	1.2	W
27-Jan-2009	10:00	1.5	NNW
27-Jan-2009	11:00	2.5	NW
27-Jan-2009	12:00	3.0	WNW
27-Jan-2009	13:00	3.3	NW
27-Jan-2009	14:00	3.3	NW
27-Jan-2009	15:00	3.3	W
27-Jan-2009	16:00	2.8	N
27-Jan-2009	17:00	2.8	NNE
27-Jan-2009	18:00	1.9	NNE
27-Jan-2009	19:00	1.8	NNE
27-Jan-2009	20:00	1.6	N
27-Jan-2009	21:00	1.3	N
27-Jan-2009	22:00	1.6	N
27-Jan-2009	23:00	1.5	N

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
28-Jan-2009	00:00	1.3	N
28-Jan-2009	01:00	1.6	N
28-Jan-2009	02:00	1.5	ENE
28-Jan-2009	03:00	1.5	ENE
28-Jan-2009	04:00	1.6	ENE
28-Jan-2009	05:00	1.5	ENE
28-Jan-2009	06:00	1.6	E
28-Jan-2009	07:00	1.9	ESE
28-Jan-2009	08:00	1.5	ESE
28-Jan-2009	09:00	1.8	SE
28-Jan-2009	10:00	2.1	SE
28-Jan-2009	11:00	2.2	SE
28-Jan-2009	12:00	2.2	SE
28-Jan-2009	13:00	1.8	E
28-Jan-2009	14:00	2.4	SE
28-Jan-2009	15:00	1.9	SE
28-Jan-2009	16:00	1.3	N
28-Jan-2009	17:00	1.5	SE
28-Jan-2009	18:00	1.3	SE
28-Jan-2009	19:00	1.0	SE
28-Jan-2009	20:00	1.3	ESE
28-Jan-2009	21:00	1.3	SE
28-Jan-2009	22:00	1.2	NE
28-Jan-2009	23:00	0.9	NE
29-Jan-2009	00:00	0.9	NE
29-Jan-2009	01:00	0.9	ESE
29-Jan-2009	02:00	1.5	SE
29-Jan-2009	03:00	1.3	ESE
29-Jan-2009	04:00	1.5	ESE
29-Jan-2009	05:00	1.3	NE
29-Jan-2009	06:00	1.0	ENE
29-Jan-2009	07:00	0.9	ENE
29-Jan-2009	08:00	0.9	ESE
29-Jan-2009	09:00	0.9	ESE
29-Jan-2009	10:00	2.1	SSE
29-Jan-2009	11:00	2.8	SE
29-Jan-2009	12:00	2.7	SE
29-Jan-2009	13:00	3.4	SE
29-Jan-2009	14:00	3.1	ESE
29-Jan-2009	15:00	3.0	SSW
29-Jan-2009	16:00	3.0	SSW
29-Jan-2009	17:00	3.1	SSW
29-Jan-2009	18:00	2.7	SSW
29-Jan-2009	19:00	2.2	S
29-Jan-2009	20:00	2.4	SSW
29-Jan-2009	21:00	1.9	SSW
29-Jan-2009	22:00	1.5	SSW
29-Jan-2009	23:00	1.2	SSW
30-Jan-2009	00:00	1.0	SSW
30-Jan-2009	01:00	1.3	SSW
30-Jan-2009	02:00	1.0	S
30-Jan-2009	03:00	1.5	SSW
30-Jan-2009	04:00	1.6	S
30-Jan-2009	05:00	1.5	SSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
30-Jan-2009	06:00	1.3	S
30-Jan-2009	07:00	1.2	S
30-Jan-2009	08:00	1.6	SSW
30-Jan-2009	09:00	1.6	S
30-Jan-2009	10:00	2.2	S
30-Jan-2009	11:00	2.2	S
30-Jan-2009	12:00	2.7	S
30-Jan-2009	13:00	3.1	S
30-Jan-2009	14:00	2.7	SSE
30-Jan-2009	15:00	2.4	S
30-Jan-2009	16:00	2.1	S
30-Jan-2009	17:00	1.9	SSW
30-Jan-2009	18:00	1.6	S
30-Jan-2009	19:00	1.6	S
30-Jan-2009	20:00	1.6	NNE
30-Jan-2009	21:00	1.2	NNE
30-Jan-2009	22:00	1.8	NNE
30-Jan-2009	23:00	1.2	NNE
31-Jan-2009	00:00	1.6	NNE
31-Jan-2009	01:00	1.9	NNE
31-Jan-2009	02:00	1.2	NNE
31-Jan-2009	03:00	0.7	NNE
31-Jan-2009	04:00	0.4	WSW
31-Jan-2009	05:00	0.4	WSW
31-Jan-2009	06:00	0.3	W
31-Jan-2009	07:00	0.1	WNW
31-Jan-2009	08:00	0.4	WNW
31-Jan-2009	09:00	1.0	WNW
31-Jan-2009	10:00	1.8	WNW
31-Jan-2009	11:00	2.2	WNW
31-Jan-2009	12:00	2.5	WNW
31-Jan-2009	13:00	2.2	NNE
31-Jan-2009	14:00	1.8	NNE
31-Jan-2009	15:00	2.1	NNE
31-Jan-2009	16:00	2.5	NNE
31-Jan-2009	17:00	2.2	NNE
31-Jan-2009	18:00	1.9	NNE
31-Jan-2009	19:00	1.9	NNE
31-Jan-2009	20:00	1.8	NNE
31-Jan-2009	21:00	1.6	NE
31-Jan-2009	22:00	1.9	NE
31-Jan-2009	23:00	1.3	NE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
1-Jan-2009	00:00	2.2	N
1-Jan-2009	01:00	2.7	N
1-Jan-2009	02:00	2.7	N
1-Jan-2009	03:00	3.1	N
1-Jan-2009	04:00	2.2	N
1-Jan-2009	05:00	2.7	NNE
1-Jan-2009	06:00	0.9	NNE
1-Jan-2009	07:00	1.8	WNW
1-Jan-2009	08:00	0.9	WNW
1-Jan-2009	09:00	0.4	WNW
1-Jan-2009	10:00	0.9	NW
1-Jan-2009	11:00	0.9	SSE
1-Jan-2009	12:00	0.9	SSE
1-Jan-2009	13:00	1.3	N
1-Jan-2009	14:00	0.9	N
1-Jan-2009	15:00	0.9	N
1-Jan-2009	16:00	0.9	WSW
1-Jan-2009	17:00	0.9	S
1-Jan-2009	18:00	0.9	S
1-Jan-2009	19:00	1.3	S
1-Jan-2009	20:00	0.9	S
1-Jan-2009	21:00	0.4	SSE
1-Jan-2009	22:00	0.9	S
1-Jan-2009	23:00	1.3	SSE
2-Jan-2009	00:00	1.3	SSE
2-Jan-2009	01:00	0.0	---
2-Jan-2009	02:00	0.9	SE
2-Jan-2009	03:00	0.4	SE
2-Jan-2009	04:00	0.0	---
2-Jan-2009	05:00	0.4	SE
2-Jan-2009	06:00	0.0	---
2-Jan-2009	07:00	0.0	---
2-Jan-2009	08:00	0.4	S
2-Jan-2009	09:00	0.4	SSE
2-Jan-2009	10:00	1.3	S
2-Jan-2009	11:00	0.9	SSE
2-Jan-2009	12:00	1.3	SSE
2-Jan-2009	13:00	1.8	SSE
2-Jan-2009	14:00	2.2	SE
2-Jan-2009	15:00	1.8	SE
2-Jan-2009	16:00	2.2	SE
2-Jan-2009	17:00	2.7	SE
2-Jan-2009	18:00	2.7	SSE
2-Jan-2009	19:00	2.7	SSE
2-Jan-2009	20:00	2.2	S
2-Jan-2009	21:00	2.7	S
2-Jan-2009	22:00	2.2	SSE
2-Jan-2009	23:00	0.9	SSE
3-Jan-2009	00:00	0.9	SSE
3-Jan-2009	01:00	1.8	SSE
3-Jan-2009	02:00	0.9	SSE
3-Jan-2009	03:00	0.4	SSE
3-Jan-2009	04:00	0.0	---
3-Jan-2009	05:00	0.4	SSE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
3-Jan-2009	06:00	0.4	SSW
3-Jan-2009	07:00	0.4	SSW
3-Jan-2009	08:00	0.4	SE
3-Jan-2009	09:00	0.9	SSW
3-Jan-2009	10:00	0.4	SSW
3-Jan-2009	11:00	0.0	---
3-Jan-2009	12:00	0.4	WNW
3-Jan-2009	13:00	0	---
3-Jan-2009	14:00	0	---
3-Jan-2009	15:00	1	NW
3-Jan-2009	16:00	0	N
3-Jan-2009	17:00	0.0	---
3-Jan-2009	18:00	0.4	NNW
3-Jan-2009	19:00	0.4	NW
3-Jan-2009	20:00	0.0	---
3-Jan-2009	21:00	0.0	---
3-Jan-2009	22:00	0.4	WSW
3-Jan-2009	23:00	0.4	WSW
4-Jan-2009	00:00	0.0	---
4-Jan-2009	01:00	0	---
4-Jan-2009	02:00	0	---
4-Jan-2009	03:00	0	N
4-Jan-2009	04:00	0.4	N
4-Jan-2009	05:00	0.0	---
4-Jan-2009	06:00	0.0	---
4-Jan-2009	07:00	0.9	N
4-Jan-2009	08:00	2.7	N
4-Jan-2009	09:00	3.1	NW
4-Jan-2009	10:00	2.7	NNW
4-Jan-2009	11:00	3.1	NNW
4-Jan-2009	12:00	3.6	NNW
4-Jan-2009	13:00	4.5	N
4-Jan-2009	14:00	3.6	N
4-Jan-2009	15:00	4.0	N
4-Jan-2009	16:00	3.6	NE
4-Jan-2009	17:00	3.6	NE
4-Jan-2009	18:00	3.1	NE
4-Jan-2009	19:00	4.0	SSW
4-Jan-2009	20:00	4.0	N
4-Jan-2009	21:00	4.0	N
4-Jan-2009	22:00	4.5	N
4-Jan-2009	23:00	4.0	E
5-Jan-2009	00:00	3.1	ESE
5-Jan-2009	01:00	4.0	SE
5-Jan-2009	02:00	4.5	SE
5-Jan-2009	03:00	3.6	SE
5-Jan-2009	04:00	4.5	SE
5-Jan-2009	05:00	3.8	ESE
5-Jan-2009	06:00	3.4	ESE
5-Jan-2009	07:00	3.3	ESE
5-Jan-2009	08:00	4.5	ESE
5-Jan-2009	09:00	3.6	ESE
5-Jan-2009	10:00	2.7	E
5-Jan-2009	11:00	2.2	ESE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
5-Jan-2009	12:00	2.2	NW
5-Jan-2009	13:00	2.7	NNW
5-Jan-2009	14:00	3.6	NNW
5-Jan-2009	15:00	4.9	NNW
5-Jan-2009	16:00	4.5	N
5-Jan-2009	17:00	4.0	N
5-Jan-2009	18:00	4.0	N
5-Jan-2009	19:00	3.6	NE
5-Jan-2009	20:00	4.0	NE
5-Jan-2009	21:00	4.0	NE
5-Jan-2009	22:00	4.5	SSW
5-Jan-2009	23:00	4.0	N
6-Jan-2009	00:00	4.5	N
6-Jan-2009	01:00	3.6	N
6-Jan-2009	02:00	3.6	E
6-Jan-2009	03:00	3.6	ESE
6-Jan-2009	04:00	4.5	SE
6-Jan-2009	05:00	4.5	SE
6-Jan-2009	06:00	4.9	SE
6-Jan-2009	07:00	4.9	SE
6-Jan-2009	08:00	4.0	ESE
6-Jan-2009	09:00	4.0	ESE
6-Jan-2009	10:00	3.6	ESE
6-Jan-2009	11:00	4.0	ESE
6-Jan-2009	12:00	3.1	ESE
6-Jan-2009	13:00	3.6	E
6-Jan-2009	14:00	3.1	ESE
6-Jan-2009	15:00	3.1	NE
6-Jan-2009	16:00	4.0	SE
6-Jan-2009	17:00	4.0	SE
6-Jan-2009	18:00	4.0	SE
6-Jan-2009	19:00	3.6	E
6-Jan-2009	20:00	3.6	SE
6-Jan-2009	21:00	3.6	SE
6-Jan-2009	22:00	3.6	N
6-Jan-2009	23:00	2.7	SE
7-Jan-2009	00:00	2.2	SE
7-Jan-2009	01:00	2.7	SE
7-Jan-2009	02:00	2.7	ESE
7-Jan-2009	03:00	2.7	SE
7-Jan-2009	04:00	2.7	NE
7-Jan-2009	05:00	3.1	NE
7-Jan-2009	06:00	2.7	NE
7-Jan-2009	07:00	3.1	ESE
7-Jan-2009	08:00	2.2	NNE
7-Jan-2009	09:00	2.7	ENE
7-Jan-2009	10:00	4.0	E
7-Jan-2009	11:00	4.0	E
7-Jan-2009	12:00	4.4	NE
7-Jan-2009	13:00	3.6	NE
7-Jan-2009	14:00	3.1	NE
7-Jan-2009	15:00	2.2	NE
7-Jan-2009	16:00	1.8	NE
7-Jan-2009	17:00	1.3	NE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
7-Jan-2009	18:00	0.4	E
7-Jan-2009	19:00	0.4	E
7-Jan-2009	20:00	0.0	---
7-Jan-2009	21:00	0.4	ESE
7-Jan-2009	22:00	0.4	NE
7-Jan-2009	23:00	1.8	NE
8-Jan-2009	00:00	1.3	ESE
8-Jan-2009	01:00	0.4	SE
8-Jan-2009	02:00	0.4	NE
8-Jan-2009	03:00	0.0	---
8-Jan-2009	04:00	0.4	SE
8-Jan-2009	05:00	0.0	---
8-Jan-2009	06:00	0.0	---
8-Jan-2009	07:00	0.0	---
8-Jan-2009	08:00	0.0	---
8-Jan-2009	09:00	0.4	SE
8-Jan-2009	10:00	1.3	ESE
8-Jan-2009	11:00	2.2	ESE
8-Jan-2009	12:00	2.2	ESE
8-Jan-2009	13:00	2.7	ESE
8-Jan-2009	14:00	2.7	ESE
8-Jan-2009	15:00	3.1	SE
8-Jan-2009	16:00	2.7	SE
8-Jan-2009	17:00	2.2	SE
8-Jan-2009	18:00	2.2	NW
8-Jan-2009	19:00	1.8	NNW
8-Jan-2009	20:00	1.8	NNW
8-Jan-2009	21:00	1.3	NNW
8-Jan-2009	22:00	1.8	N
8-Jan-2009	23:00	1.8	NNE
9-Jan-2009	00:00	0.4	NE
9-Jan-2009	01:00	0.0	---
9-Jan-2009	02:00	0.4	NE
9-Jan-2009	03:00	1.8	NE
9-Jan-2009	04:00	1.3	NE
9-Jan-2009	05:00	0.4	NE
9-Jan-2009	06:00	0.9	NE
9-Jan-2009	07:00	1.3	ENE
9-Jan-2009	08:00	1.3	NE
9-Jan-2009	09:00	1.8	NE
9-Jan-2009	10:00	1.3	NE
9-Jan-2009	11:00	1.3	NE
9-Jan-2009	12:00	1.8	NE
9-Jan-2009	13:00	0.9	NE
9-Jan-2009	14:00	0.9	NE
9-Jan-2009	15:00	1.8	E
9-Jan-2009	16:00	1.8	E
9-Jan-2009	17:00	2.2	E
9-Jan-2009	18:00	1.3	NNE
9-Jan-2009	19:00	2.2	NNE
9-Jan-2009	20:00	3.1	NNE
9-Jan-2009	21:00	2.7	N
9-Jan-2009	22:00	3.1	NNE
9-Jan-2009	23:00	1.8	N

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
10-Jan-2009	00:00	1.3	N
10-Jan-2009	01:00	0.9	NNE
10-Jan-2009	02:00	0.4	NNE
10-Jan-2009	03:00	0.4	NNE
10-Jan-2009	04:00	0.9	N
10-Jan-2009	05:00	0.4	NNE
10-Jan-2009	06:00	0.9	N
10-Jan-2009	07:00	1.3	N
10-Jan-2009	08:00	1.8	N
10-Jan-2009	09:00	2.2	N
10-Jan-2009	10:00	1.3	N
10-Jan-2009	11:00	1.3	N
10-Jan-2009	12:00	0.9	N
10-Jan-2009	13:00	2.2	W
10-Jan-2009	14:00	3.1	WNW
10-Jan-2009	15:00	2.2	NNW
10-Jan-2009	16:00	3.1	N
10-Jan-2009	17:00	3.1	NNW
10-Jan-2009	18:00	2.7	N
10-Jan-2009	19:00	2.2	N
10-Jan-2009	20:00	2.2	N
10-Jan-2009	21:00	1.8	N
10-Jan-2009	22:00	1.3	N
10-Jan-2009	23:00	0.9	NNW
11-Jan-2009	00:00	1.8	N
11-Jan-2009	01:00	1.8	N
11-Jan-2009	02:00	2.2	N
11-Jan-2009	03:00	1.3	N
11-Jan-2009	04:00	0.4	N
11-Jan-2009	05:00	0.4	N
11-Jan-2009	06:00	0.0	---
11-Jan-2009	07:00	0.9	N
11-Jan-2009	08:00	0.0	---
11-Jan-2009	09:00	0.0	---
11-Jan-2009	10:00	0.4	N
11-Jan-2009	11:00	0.4	NNW
11-Jan-2009	12:00	0.9	NNW
11-Jan-2009	13:00	0.9	NNW
11-Jan-2009	14:00	0.4	N
11-Jan-2009	15:00	0.0	---
11-Jan-2009	16:00	0.4	N
11-Jan-2009	17:00	0.9	N
11-Jan-2009	18:00	0.9	N
11-Jan-2009	19:00	0.4	N
11-Jan-2009	20:00	0.9	N
11-Jan-2009	21:00	0.4	NW
11-Jan-2009	22:00	0.9	NNW
11-Jan-2009	23:00	1.8	NNW
12-Jan-2009	00:00	1.8	NNW
12-Jan-2009	01:00	1.8	ESE
12-Jan-2009	02:00	2.7	E
12-Jan-2009	03:00	2.7	E
12-Jan-2009	04:00	3.1	SE
12-Jan-2009	05:00	4.0	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
12-Jan-2009	06:00	4.0	W
12-Jan-2009	07:00	2.2	WSW
12-Jan-2009	08:00	2.2	NW
12-Jan-2009	09:00	1.3	WNW
12-Jan-2009	10:00	3.6	WNW
12-Jan-2009	11:00	4.9	WNW
12-Jan-2009	12:00	4.4	WNW
12-Jan-2009	13:00	4.9	WNW
12-Jan-2009	14:00	3.8	N
12-Jan-2009	15:00	4.9	NNW
12-Jan-2009	16:00	3.6	NNW
12-Jan-2009	17:00	3.6	NNW
12-Jan-2009	18:00	3.1	NNW
12-Jan-2009	19:00	3.1	NNW
12-Jan-2009	20:00	3.1	NNW
12-Jan-2009	21:00	3.1	W
12-Jan-2009	22:00	2.2	WNW
12-Jan-2009	23:00	4.5	ESE
13-Jan-2009	00:00	3.1	S
13-Jan-2009	01:00	3.6	ENE
13-Jan-2009	02:00	4.0	SE
13-Jan-2009	03:00	3.1	ENE
13-Jan-2009	04:00	1.8	ESE
13-Jan-2009	05:00	1.3	E
13-Jan-2009	06:00	1.3	E
13-Jan-2009	07:00	1.8	SE
13-Jan-2009	08:00	2.7	SE
13-Jan-2009	09:00	2.7	SE
13-Jan-2009	10:00	2.2	SE
13-Jan-2009	11:00	2.2	SSE
13-Jan-2009	12:00	2.2	SSE
13-Jan-2009	13:00	1.8	SSE
13-Jan-2009	14:00	1.8	SSE
13-Jan-2009	15:00	2.2	SSE
13-Jan-2009	16:00	2.7	SE
13-Jan-2009	17:00	2.7	SE
13-Jan-2009	18:00	2.7	SE
13-Jan-2009	19:00	3.1	SE
13-Jan-2009	20:00	2.2	SE
13-Jan-2009	21:00	2.7	SSE
13-Jan-2009	22:00	2.2	SE
13-Jan-2009	23:00	2.2	S
14-Jan-2009	00:00	2.2	SSW
14-Jan-2009	01:00	2.7	SSW
14-Jan-2009	02:00	3.1	SSW
14-Jan-2009	03:00	3.6	SSW
14-Jan-2009	04:00	3.1	S
14-Jan-2009	05:00	3.1	S
14-Jan-2009	06:00	2.7	S
14-Jan-2009	07:00	2.2	SSE
14-Jan-2009	08:00	2.2	SE
14-Jan-2009	09:00	2.2	SE
14-Jan-2009	10:00	1.8	SSE
14-Jan-2009	11:00	1.8	SE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
14-Jan-2009	12:00	2.7	SE
14-Jan-2009	13:00	3.1	SE
14-Jan-2009	14:00	3.1	SSE
14-Jan-2009	15:00	2.2	SE
14-Jan-2009	16:00	2.7	SE
14-Jan-2009	17:00	3.1	SE
14-Jan-2009	18:00	3.1	SSE
14-Jan-2009	19:00	3.1	SE
14-Jan-2009	20:00	4.0	SSE
14-Jan-2009	21:00	3.6	SE
14-Jan-2009	22:00	4.0	SE
14-Jan-2009	23:00	2.2	SE
15-Jan-2009	00:00	2.7	SE
15-Jan-2009	01:00	1.8	SE
15-Jan-2009	02:00	2.2	ESE
15-Jan-2009	03:00	2.2	SE
15-Jan-2009	04:00	2.7	SE
15-Jan-2009	05:00	3.1	ESE
15-Jan-2009	06:00	2.7	ESE
15-Jan-2009	07:00	2.2	ESE
15-Jan-2009	08:00	2.2	SE
15-Jan-2009	09:00	1.8	ESE
15-Jan-2009	10:00	1.3	SE
15-Jan-2009	11:00	2.2	ESE
15-Jan-2009	12:00	1.3	SE
15-Jan-2009	13:00	1.3	SSE
15-Jan-2009	14:00	1.3	S
15-Jan-2009	15:00	1.8	SSW
15-Jan-2009	16:00	1.8	SSW
15-Jan-2009	17:00	2.2	SSW
15-Jan-2009	18:00	1.8	SSW
15-Jan-2009	19:00	1.3	SSW
15-Jan-2009	20:00	2.2	SSW
15-Jan-2009	21:00	1.8	SSW
15-Jan-2009	22:00	1.8	SSW
15-Jan-2009	23:00	1.8	SSW
16-Jan-2009	00:00	0.9	SSW
16-Jan-2009	01:00	1.3	S
16-Jan-2009	02:00	2.7	SSW
16-Jan-2009	03:00	2.2	S
16-Jan-2009	04:00	2.7	SSW
16-Jan-2009	05:00	3.1	S
16-Jan-2009	06:00	2.7	SSE
16-Jan-2009	07:00	3.1	S
16-Jan-2009	08:00	3.6	SSW
16-Jan-2009	09:00	3.1	S
16-Jan-2009	10:00	3.1	S
16-Jan-2009	11:00	3.1	S
16-Jan-2009	12:00	4.5	S
16-Jan-2009	13:00	4.9	SSE
16-Jan-2009	14:00	4.9	S
16-Jan-2009	15:00	4.5	S
16-Jan-2009	16:00	4.0	SSW
16-Jan-2009	17:00	3.1	SE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
16-Jan-2009	18:00	2.2	SSE
16-Jan-2009	19:00	2.7	SSW
16-Jan-2009	20:00	2.7	S
16-Jan-2009	21:00	2.7	SSE
16-Jan-2009	22:00	3.6	SSE
16-Jan-2009	23:00	2.7	SSW
17-Jan-2009	00:00	4.0	S
17-Jan-2009	01:00	4.0	S
17-Jan-2009	02:00	4.9	SSW
17-Jan-2009	03:00	4.9	S
17-Jan-2009	04:00	4.0	SSW
17-Jan-2009	05:00	4.5	S
17-Jan-2009	06:00	4.5	ESE
17-Jan-2009	07:00	4.5	ESE
17-Jan-2009	08:00	4.9	ESE
17-Jan-2009	09:00	4.9	SE
17-Jan-2009	10:00	4.5	SE
17-Jan-2009	11:00	4.9	SE
17-Jan-2009	12:00	4.5	NNW
17-Jan-2009	13:00	3.6	E
17-Jan-2009	14:00	3.1	SSE
17-Jan-2009	15:00	4.0	N
17-Jan-2009	16:00	4.9	NW
17-Jan-2009	17:00	4.0	W
17-Jan-2009	18:00	4.5	W
17-Jan-2009	19:00	3.1	W
17-Jan-2009	20:00	3.6	WSW
17-Jan-2009	21:00	4.5	SSW
17-Jan-2009	22:00	4.9	SSW
17-Jan-2009	23:00	4.5	SSW
18-Jan-2009	00:00	3.1	SSW
18-Jan-2009	01:00	4.5	SSW
18-Jan-2009	02:00	3.6	SE
18-Jan-2009	03:00	4.0	SSE
18-Jan-2009	04:00	3.6	SE
18-Jan-2009	05:00	4.0	SE
18-Jan-2009	06:00	4.5	SE
18-Jan-2009	07:00	3.1	SE
18-Jan-2009	08:00	2.7	SE
18-Jan-2009	09:00	2.2	SE
18-Jan-2009	10:00	2.7	SE
18-Jan-2009	11:00	3.1	SE
18-Jan-2009	12:00	2.2	SE
18-Jan-2009	13:00	1.8	SE
18-Jan-2009	14:00	2.2	SE
18-Jan-2009	15:00	3.1	ESE
18-Jan-2009	16:00	2.2	ESE
18-Jan-2009	17:00	0.9	ESE
18-Jan-2009	18:00	1.3	SE
18-Jan-2009	19:00	0.9	ESE
18-Jan-2009	20:00	1.3	SE
18-Jan-2009	21:00	2.2	S
18-Jan-2009	22:00	2.7	S
18-Jan-2009	23:00	2.2	SSW

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
19-Jan-2009	00:00	1.8	SSW
19-Jan-2009	01:00	2.2	SSW
19-Jan-2009	02:00	2.2	S
19-Jan-2009	03:00	2.2	S
19-Jan-2009	04:00	2.2	S
19-Jan-2009	05:00	2.2	SSE
19-Jan-2009	06:00	2.2	S
19-Jan-2009	07:00	2.7	S
19-Jan-2009	08:00	2.7	SSE
19-Jan-2009	09:00	3.1	SE
19-Jan-2009	10:00	3.1	SE
19-Jan-2009	11:00	3.1	SE
19-Jan-2009	12:00	2.7	SE
19-Jan-2009	13:00	2.2	SE
19-Jan-2009	14:00	2.2	SE
19-Jan-2009	15:00	2.7	SE
19-Jan-2009	16:00	2.7	SE
19-Jan-2009	17:00	2.2	SE
19-Jan-2009	18:00	3.1	SE
19-Jan-2009	19:00	1.8	SE
19-Jan-2009	20:00	2.2	NE
19-Jan-2009	21:00	1.3	E
19-Jan-2009	22:00	2.2	E
19-Jan-2009	23:00	1.8	E
20-Jan-2009	00:00	0.9	NE
20-Jan-2009	01:00	0.9	ENE
20-Jan-2009	02:00	1.3	NE
20-Jan-2009	03:00	1.3	NE
20-Jan-2009	04:00	1.3	NE
20-Jan-2009	05:00	1.3	NE
20-Jan-2009	06:00	1.3	SSE
20-Jan-2009	07:00	1.8	NE
20-Jan-2009	08:00	3.1	E
20-Jan-2009	09:00	2.2	NE
20-Jan-2009	10:00	0.9	SSE
20-Jan-2009	11:00	0.9	SSE
20-Jan-2009	12:00	1.3	SE
20-Jan-2009	13:00	1.3	SSE
20-Jan-2009	14:00	1.8	SE
20-Jan-2009	15:00	1.8	SSE
20-Jan-2009	16:00	2.2	SE
20-Jan-2009	17:00	1.8	SSE
20-Jan-2009	18:00	2.2	SSW
20-Jan-2009	19:00	1.8	ESE
20-Jan-2009	20:00	2.2	ESE
20-Jan-2009	21:00	2.2	ESE
20-Jan-2009	22:00	2.2	SE
20-Jan-2009	23:00	1.8	N
21-Jan-2009	00:00	1.3	N
21-Jan-2009	01:00	1.3	NNE
21-Jan-2009	02:00	0.9	ENE
21-Jan-2009	03:00	2.2	E
21-Jan-2009	04:00	1.8	E
21-Jan-2009	05:00	1.3	NE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
21-Jan-2009	06:00	0.4	NE
21-Jan-2009	07:00	0.9	NE
21-Jan-2009	08:00	0.9	NE
21-Jan-2009	09:00	1.3	ESE
21-Jan-2009	10:00	0.9	ENE
21-Jan-2009	11:00	0.9	SSE
21-Jan-2009	12:00	0.9	SE
21-Jan-2009	13:00	0.9	NE
21-Jan-2009	14:00	0.4	SE
21-Jan-2009	15:00	0.9	SE
21-Jan-2009	16:00	1.3	SE
21-Jan-2009	17:00	0.9	SE
21-Jan-2009	18:00	0.9	SE
21-Jan-2009	19:00	0.9	SE
21-Jan-2009	20:00	0.4	NE
21-Jan-2009	21:00	0.9	NE
21-Jan-2009	22:00	0.9	NE
21-Jan-2009	23:00	0.9	NE
22-Jan-2009	00:00	1.8	NE
22-Jan-2009	01:00	2.2	E
22-Jan-2009	02:00	1.8	ENE
22-Jan-2009	03:00	1.8	E
22-Jan-2009	04:00	1.8	E
22-Jan-2009	05:00	3.1	ENE
22-Jan-2009	06:00	3.1	NE
22-Jan-2009	07:00	4.0	ENE
22-Jan-2009	08:00	3.6	NE
22-Jan-2009	09:00	3.1	NE
22-Jan-2009	10:00	2.7	NE
22-Jan-2009	11:00	1.3	NE
22-Jan-2009	12:00	1.8	ENE
22-Jan-2009	13:00	2.2	E
22-Jan-2009	14:00	3.6	E
22-Jan-2009	15:00	3.6	NE
22-Jan-2009	16:00	3.6	NE
22-Jan-2009	17:00	3.1	E
22-Jan-2009	18:00	2.7	SE
22-Jan-2009	19:00	2.7	SE
22-Jan-2009	20:00	2.2	SE
22-Jan-2009	21:00	2.2	ESE
22-Jan-2009	22:00	1.8	ESE
22-Jan-2009	23:00	2.2	E
23-Jan-2009	00:00	1.8	E
23-Jan-2009	01:00	1.8	ESE
23-Jan-2009	02:00	1.3	E
23-Jan-2009	03:00	1.3	ESE
23-Jan-2009	04:00	1.3	ESE
23-Jan-2009	05:00	1.8	SE
23-Jan-2009	06:00	1.8	SE
23-Jan-2009	07:00	1.8	ESE
23-Jan-2009	08:00	2.2	ESE
23-Jan-2009	09:00	1.8	E
23-Jan-2009	10:00	3.1	E
23-Jan-2009	11:00	2.7	ESE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
23-Jan-2009	12:00	2.7	SE
23-Jan-2009	13:00	1.8	SSW
23-Jan-2009	14:00	1.3	SSW
23-Jan-2009	15:00	3.6	SE
23-Jan-2009	16:00	2.7	S
23-Jan-2009	17:00	1.3	S
23-Jan-2009	18:00	1.8	SSW
23-Jan-2009	19:00	2.2	W
23-Jan-2009	20:00	3.6	WNW
23-Jan-2009	21:00	4.0	W
23-Jan-2009	22:00	4.5	NW
23-Jan-2009	23:00	3.6	N
24-Jan-2009	00:00	4.0	N
24-Jan-2009	01:00	3.6	N
24-Jan-2009	02:00	2.2	N
24-Jan-2009	03:00	2.7	NNE
24-Jan-2009	04:00	1.8	ESE
24-Jan-2009	05:00	0.4	ESE
24-Jan-2009	06:00	0.9	ESE
24-Jan-2009	07:00	2.2	E
24-Jan-2009	08:00	1.3	ENE
24-Jan-2009	09:00	1.3	NE
24-Jan-2009	10:00	1.3	NNE
24-Jan-2009	11:00	1.8	NNE
24-Jan-2009	12:00	1.8	NE
24-Jan-2009	13:00	2.2	NE
24-Jan-2009	14:00	2.7	NE
24-Jan-2009	15:00	2.2	NE
24-Jan-2009	16:00	1.8	N
24-Jan-2009	17:00	2.2	NE
24-Jan-2009	18:00	2.2	SE
24-Jan-2009	19:00	2.2	SE
24-Jan-2009	20:00	2.2	SE
24-Jan-2009	21:00	3.1	SE
24-Jan-2009	22:00	3.1	SE
24-Jan-2009	23:00	3.6	NNW
25-Jan-2009	00:00	4.0	SE
25-Jan-2009	01:00	3.1	SE
25-Jan-2009	02:00	2.2	E
25-Jan-2009	03:00	1.8	ESE
25-Jan-2009	04:00	3.1	ESE
25-Jan-2009	05:00	3.1	SE
25-Jan-2009	06:00	2.7	SE
25-Jan-2009	07:00	2.7	ESE
25-Jan-2009	08:00	3.1	ESE
25-Jan-2009	09:00	2.2	E
25-Jan-2009	10:00	2.7	E
25-Jan-2009	11:00	1.8	ESE
25-Jan-2009	12:00	2.2	SE
25-Jan-2009	13:00	2.7	SSW
25-Jan-2009	14:00	3.1	SSW
25-Jan-2009	15:00	3.1	SE
25-Jan-2009	16:00	2.7	S
25-Jan-2009	17:00	3.1	S

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
25-Jan-2009	18:00	2.2	SSW
25-Jan-2009	19:00	1.8	W
25-Jan-2009	20:00	2.2	WNW
25-Jan-2009	21:00	2.2	W
25-Jan-2009	22:00	1.8	NW
25-Jan-2009	23:00	1.3	N
26-Jan-2009	00:00	0.9	N
26-Jan-2009	01:00	1.3	N
26-Jan-2009	02:00	1.8	N
26-Jan-2009	03:00	2.2	NNE
26-Jan-2009	04:00	2.2	ESE
26-Jan-2009	05:00	2.2	ESE
26-Jan-2009	06:00	2.2	ESE
26-Jan-2009	07:00	1.8	E
26-Jan-2009	08:00	2.2	ENE
26-Jan-2009	09:00	1.3	NE
26-Jan-2009	10:00	1.8	NNE
26-Jan-2009	11:00	2.2	NNE
26-Jan-2009	12:00	2.7	NE
26-Jan-2009	13:00	3.6	NE
26-Jan-2009	14:00	2.7	NE
26-Jan-2009	15:00	3.1	NE
26-Jan-2009	16:00	4.0	N
26-Jan-2009	17:00	4.0	NE
26-Jan-2009	18:00	2.7	SE
26-Jan-2009	19:00	3.1	SE
26-Jan-2009	20:00	2.2	SE
26-Jan-2009	21:00	2.2	SE
26-Jan-2009	22:00	2.2	SE
26-Jan-2009	23:00	1.8	NNW
27-Jan-2009	00:00	1.8	SE
27-Jan-2009	01:00	0.9	SE
27-Jan-2009	02:00	0.4	E
27-Jan-2009	03:00	0.0	---
27-Jan-2009	04:00	0.4	ENE
27-Jan-2009	05:00	0.0	---
27-Jan-2009	06:00	0.9	ESE
27-Jan-2009	07:00	0.4	E
27-Jan-2009	08:00	0.9	E
27-Jan-2009	09:00	1.3	E
27-Jan-2009	10:00	0.4	ENE
27-Jan-2009	11:00	0.4	E
27-Jan-2009	12:00	0.9	WNW
27-Jan-2009	13:00	2.2	WNW
27-Jan-2009	14:00	1.3	N
27-Jan-2009	15:00	2.7	E
27-Jan-2009	16:00	2.7	E
27-Jan-2009	17:00	2.2	SE
27-Jan-2009	18:00	3.6	ESE
27-Jan-2009	19:00	3.1	ESE
27-Jan-2009	20:00	3.6	E
27-Jan-2009	21:00	4.5	SSE
27-Jan-2009	22:00	4.9	WNW
27-Jan-2009	23:00	4.5	SE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
28-Jan-2009	00:00	4.9	SE
28-Jan-2009	01:00	4.0	SE
28-Jan-2009	02:00	2.4	W
28-Jan-2009	03:00	4.9	NW
28-Jan-2009	04:00	3.6	ESE
28-Jan-2009	05:00	4.5	E
28-Jan-2009	06:00	3.6	ENE
28-Jan-2009	07:00	3.6	NE
28-Jan-2009	08:00	4.9	NE
28-Jan-2009	09:00	3.7	ENE
28-Jan-2009	10:00	3.7	NE
28-Jan-2009	11:00	3.7	NE
28-Jan-2009	12:00	3.8	SE
28-Jan-2009	13:00	3.7	SE
28-Jan-2009	14:00	4.0	W
28-Jan-2009	15:00	2.4	NW
28-Jan-2009	16:00	3.1	W
28-Jan-2009	17:00	4.5	WNW
28-Jan-2009	18:00	4.0	WNW
28-Jan-2009	19:00	3.6	W
28-Jan-2009	20:00	3.6	SSW
28-Jan-2009	21:00	3.6	SW
28-Jan-2009	22:00	2.7	SW
28-Jan-2009	23:00	3.1	W
29-Jan-2009	00:00	3.1	SSW
29-Jan-2009	01:00	4.0	SW
29-Jan-2009	02:00	4.9	SSW
29-Jan-2009	03:00	3.6	ESE
29-Jan-2009	04:00	4.5	E
29-Jan-2009	05:00	4.0	E
29-Jan-2009	06:00	4.0	NE
29-Jan-2009	07:00	2.7	NE
29-Jan-2009	08:00	3.1	NE
29-Jan-2009	09:00	2.7	NE
29-Jan-2009	10:00	4.0	ESE
29-Jan-2009	11:00	4.0	SE
29-Jan-2009	12:00	4.0	NE
29-Jan-2009	13:00	3.6	ESE
29-Jan-2009	14:00	4.0	NE
29-Jan-2009	15:00	4.0	NE
29-Jan-2009	16:00	3.6	ESE
29-Jan-2009	17:00	2.7	SE
29-Jan-2009	18:00	1.8	ESE
29-Jan-2009	19:00	2.2	E
29-Jan-2009	20:00	2.7	SE
29-Jan-2009	21:00	3.6	SE
29-Jan-2009	22:00	3.1	NNE
29-Jan-2009	23:00	4.0	NNE
30-Jan-2009	00:00	3.6	ENE
30-Jan-2009	01:00	2.2	ESE
30-Jan-2009	02:00	3.6	ESE
30-Jan-2009	03:00	2.2	ESE
30-Jan-2009	04:00	2.2	ESE
30-Jan-2009	05:00	0.9	SE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
30-Jan-2009	06:00	1.3	ESE
30-Jan-2009	07:00	2.2	ESE
30-Jan-2009	08:00	2.2	ESE
30-Jan-2009	09:00	2.2	E
30-Jan-2009	10:00	2.2	ESE
30-Jan-2009	11:00	3.1	E
30-Jan-2009	12:00	3.6	E
30-Jan-2009	13:00	3.1	NE
30-Jan-2009	14:00	4.0	NE
30-Jan-2009	15:00	3.1	NE
30-Jan-2009	16:00	2.7	ESE
30-Jan-2009	17:00	2.7	S
30-Jan-2009	18:00	2.7	SE
30-Jan-2009	19:00	2.7	S
30-Jan-2009	20:00	3.1	SSW
30-Jan-2009	21:00	1.8	SSW
30-Jan-2009	22:00	1.3	SSW
30-Jan-2009	23:00	2.7	SSW
31-Jan-2009	00:00	2.7	SSW
31-Jan-2009	01:00	3.1	SSW
31-Jan-2009	02:00	2.7	S
31-Jan-2009	03:00	2.7	SE
31-Jan-2009	04:00	2.7	SE
31-Jan-2009	05:00	3.6	SE
31-Jan-2009	06:00	3.6	SE
31-Jan-2009	07:00	4.5	SE
31-Jan-2009	08:00	3.6	SE
31-Jan-2009	09:00	2.2	SE
31-Jan-2009	10:00	3.6	ESE
31-Jan-2009	11:00	2.7	ESE
31-Jan-2009	12:00	1.8	N
31-Jan-2009	13:00	2.7	N
31-Jan-2009	14:00	3.1	N
31-Jan-2009	15:00	2.2	SE
31-Jan-2009	16:00	1.3	SE
31-Jan-2009	17:00	3.1	SE
31-Jan-2009	18:00	2.7	ESE
31-Jan-2009	19:00	1.8	ESE
31-Jan-2009	20:00	3.1	ESE
31-Jan-2009	21:00	2.2	ESE
31-Jan-2009	22:00	2.2	ENE
31-Jan-2009	23:00	2.2	NE

APPENDIX K
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	90107
Date	7 January 2009 (Wednesday)
Time	14:00 – 18:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
90107-O02	• Standing water with oil was observed at the drip tray at Western Portal. The Contractor was reminded to clear them properly.	B15
90107-O04	• Silty water was observed discharging at the existing stream at Eastern Portal. The Contractor rectified the item immediately. However, The Contractor was reminded that all wastewater should be treated before discharging out and the wastewater treatment unit should be checked regularly to ensure these facilities can function properly at all time.	B9
90107-O05	• Muddy water and sediment was observed accumulate at the paved area at Eastern Portal. The Contractor was reminded to provide sand bag bund to surround the open channels to direct the silty runoff for treatment before discharging out.	B5
	B. Air Quality	
90107-O03	• Opened cement bags were observed at Western Portal. The Contractor was reminded to cover it with tarpaulin to control dust emission.	D6
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
90107-O01	• Oil drums were observed standing on the bare ground at Western Portal. The Contractor was reminded to provide drip tray or store it properly.	F3i.
90107-O02	• Standing water with oil was observed at the drip tray at Western Portal. The Contractor was reminded to clear them properly.	F8
	E. Ecology	
90107-O04	• Silty water was observed discharging at the existing stream at Eastern Portal. The Contractor rectified the item immediately. However, The Contractor was reminded that all wastewater should be treated before discharging out and the wastewater treatment unit should be checked regularly to ensure these facilities can function properly at all time.	G1
	F. Marine Ecology	
	• No environmental deficiency was identified during site inspection.	
	G. Reminders	
90107-R06	• Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream.	G1
90107-R07	• Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals and Intake sites.	B15
	H. Others	
	• Follow-up on previous audit section (Ref. No.:81229), follow-up action is needed for the items (81229-O03, O05, O08, O09 and R10, R11)	

Weekly Site Inspection Record Summary

	Name	Signature	Date
Recorded by	Ivy Tam		7 January 2009
Checked by	Dr. Priscilla Choy		7 January 2009

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	90114
Date	14 January 2009 (Wednesday)
Time	14:30 – 17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
90114-O01	• Standing water at the pit area was observed at Eastern Portal. The Contractor was reminded to pump it out and treated before discharging.	B15
90114-O03	• Milky water was observed at the U-Channel at Eastern Portal. The Contractor was reminded to provide mitigation measures to prevent any wastewater from discharging out.	B7i.
90114-O05	• Standing water was observed at the drip tray at Western Portal. The Contractor was reminded to dry it out.	B15
90114-O06	• General refuse with standing water was observed at nullah at Western Portal. The Contractor was reminded to clear the waste and spray with larvicide to prevent mosquito breed.	B15
	B. Air Quality	
90114-O04	• Cement bags (>20 bags) were observed without cover at Western Portal. The Contractor was reminded to cover them with tarpaulin to prevent dust emission.	D6
90114-O07	• Dry unpaved area was observed at Western Portal. The Contractor was reminded to provide water-spray to prevent dust generation.	D4 & 5
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
90114-O02	• Oil leakage was observed at underneath of plant equipment at Eastern Portal. The Contractor was reminded to clear the oil stains and well-maintained the plants to prevent further oil leakage.	F8
90114-O06	• General refuse with standing water was observed at nullah at Western Portal. The Contractor was reminded to clear the waste and spray with larvicide to prevent mosquito breed.	F1iii.
90114-O08	• Chemical oil drum was observed without chemical label at Western Portal. The Contractor was reminded to provide appropriate label and attach at the oil drum.	F4
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Marine Ecology	
	• No environmental deficiency was identified during site inspection.	
	G. Reminders	
90114-R09	• Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream.	G1
90114-R10	• Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals and Intake sites.	B15
	H. Others	
	• Follow-up on previous audit section (Ref. No.:90107), follow-up action is needed for the items (90107-O02, O05and R06, R07)	

Weekly Site Inspection Record Summary

	Name	Signature	Date
Recorded by	Ivy Tam		14 January 2009
Checked by	Dr. Priscilla Choy		14 January 2009

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	90122
Date	22 January 2009 (Thursday)
Time	14:00 – 17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
90122-O05	• Mud and sediment were observed accumulate near the U-Channel at Eastern Portal. The Contractor was reminded to clear them and erect sand bag bund for protecting the open channel to prevent any silt from getting to the channel and discharging out.	B2
	B. Air Quality	
90122-O02	• Cement bags (>20 bags) were observed without cover at Eastern Portal. The Contractor was reminded to cover them with tarpaulin to prevent dust emission. Cement bags were then covered with tarpaulin immediately.	D6
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
90122-O01	• Generator was observed to be placed outside the site and without drip tray at Intake W0. The Contractor was reminded to provide it with drip tray to prevent oil leakage. Generator was then placed within the site immediately.	F3i.
90122-O03	• C&D waste were observed accumulate in the material skip at Eastern Portal. The Contractor was reminded to clear the waste regularly.	F5ii.
90122-O04	• Chemical oil drums were observed without chemical label and not stored properly at Eastern Portal. The Contractor was reminded to attach it with appropriate labels and stored properly.	F3i. & 4
90122-O07	• C&D waste was observed not stored properly at Intake W0. The Contractor was reminded to provide material skip for temporary storage of C&D waste before disposing them.	F5ii.
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Marine Ecology	
90122-O06	• Silty water was observed within the silt curtain at Western Portal. The Contractor was reminded to provide mitigation measures and well-maintained the silt curtain to prevent any silty water from getting out.	C2
	G. Reminders	
90122-R08	• Construction works at near the existing stream at Eastern Portal should be carried out carefully to prevent any disturbance / damage to the stream and causing sitly water discharging out.	G1
90122-R09	• Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals especially the Intake sites.	B15
	H. Others	
	• Follow-up on previous audit section (Ref. No.:90114), follow-up action is needed for the items (90114-R09 and R10)	

Weekly Site Inspection Record Summary

	Name	Signature	Date
Recorded by	Ivy Tam		22 January 2009
Checked by	Dr. Priscilla Choy		22 January 2009

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	90129
Date	29 January 2009 (Thursday)
Time	15:00 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Air Quality	
90129-O01	• Dry unpaved area was observed at Western Portal. The Contractor was reminded to provide water spray regularly to prevent dust emission.	D4&5
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
90129-O02	• Empty chemical containers were observed accumulate at Western Portal. The Contractor was reminded to clear them regularly.	F2ii.
90129-O03	• Material skip was still observed not provided at Intake W0. The Contractor was reminded to provide it as soon as possible.	F5ii.
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Marine Ecology	
	• No environmental deficiency was identified during site inspection.	
	G. Reminders	
90129-R04	• Silt curtain should be fully enclosed the work area to prevent any silty water from discharging out.	C1&2
90129-R05	• Keep clear the standing water in the label bags that secure around the trees at Eastern, Western Portals especially the Intake sites.	B15
	H. Others	
	• Follow-up on previous audit section (Ref. No.:90122), follow-up action is needed for the items (90122-O06, O07 and R09)	

	Name	Signature	Date
Recorded by	Ivy Tam		29 January 2009
Checked by	Dr. Priscilla Choy		29 January 2009

APPENDIX L
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix L - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	*Dust Mitigation Measures*	
	• The Contractor shall undertake at all times to prevent dust nuisance as a result of his activities. Effective dust suppression measures should be installed to minimize air quality impacts, at the boundary of the site and at any sensitive receivers.	^
	• No blasting shall be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted (unless prior permission of the Commissioner of Mines is obtained).	^
	• Effective water sprays shall be used during the delivery and handling of all raw sand, aggregate and other similar materials, when dust is likely to be created, to dampen all stored materials during dry and windy weather. Watering of exposed surfaces shall be conducted as often as possible depending on the circumstances.	*
	• A watering programme of once every 2 hours in normal weather conditions, and hourly in dry/windy conditions.	^
	• Any stockpile of dusty material cannot be immediately transported out of the Site shall be either: a) covered entirely by impervious sheeting; b) placed in an area sheltered on the top and the three sides; or c) sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.	*
	• Should a conveyor system be used, the Contractor shall implement the following precautionary measures. Conveyor belts shall be fitted within windboards. Conveyor transfer points and hopper discharge areas shall be enclosed to minimize dust emission. All conveyors under control of the Contractor, and carrying materials which have the potential to create dust, shall be totally enclosed and fitted with belt cleaners.	N/A
	• Any dusty materials being discharged to vehicle from a conveying system at fixed transfer point, three-sided roofed enclosed with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented via a suitable fabric filter system.	N/A
	• The heights from excavated spoils are dropped should be minimise to reduce the fugitive dust arising from unloading/loading.	^
	• The Contractor shall confine haulage and delivery vehicles to designated roadways inside the site. If in the opinion of the Engineer, any motorising vehicle is causing dust nuisance, the Engineer may require that the vehicle be restricted to a maximum speed of 15km per hour while within the site area.	^
	• Areas within the site where there is a regular movement of vehicles shall have an approved hard surface, be kept clear of loose surface materials and / or be regularly watered.	^
	• Wheel cleaning facilities shall be installed for both portals and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel cleaning facilities shall be usable prior to any earthwork excavation activity on site. The Contractor shall provide a hard-surfaced road between any cleaning facility and the public road.	^
	• Chemical wetting agents shall only be used on completed cuts and fills to reduce wind erosion.	N/A

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	• No vehicle exhausts shall be directed towards the ground or downwards to minimize dust nuisance.	^
	• Ventilation system, equipped with proprietary filters, should be provided to ensure the safe working environment inside the tunnel. Particular attention should be paid to the location and direction of the ventilation exhausts. The exhausts should not be allowed to face any sensitive receivers directly. Consideration should also be given to the location of windows, doors and direction of prevailing winds in relation to the nearby sensitive receivers.	^
	• In the event of any spoil or debris from construction works being deposited on adjacent land, or stream, or any silt being washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Engineers.	*
	In addition, based on the *Air Pollution Control (Construction Dust) Regulation*, any works involved regulatory and notifiable works, such as stockpiling, loading and unloading of dusty materials, shall take precautions to suppress dust nuisance.	
	• The working area of any excavation or earthmoving operation shall spray with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet;	^
	• Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies; and	^
	• Any stockpile of dusty materials (greater than $20m^3$) shall be either covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides; and sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.	^
	• Other suitable dust control measures as stipulated in Air Pollution Control (Construction Dust). Regulation, where appropriate, should be adopted.	^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
Construction Noise	*Air borne noise* In general, potential construction noise impact can be minimized or avoided by imposing a combination of the following mitigation measures: • Noisy equipment and activities should be sited by the Contractor as far from close-proximity sensitive receivers as practical. Prolonged operation of noisy equipment close to dwellings should be avoided. • The Contractor should minimise construction noise exposure to the schools (especially during examination periods). The Contractor should liaise with the school and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the works contract and to avoid noisy activities during these periods. • Noisy plant or processes should be replaced by quieter alternatives. Silenced diesel and gasoline generators and power units, as well as silenced and super-silenced air compressor, can be readily obtained. • Noisy activities should be scheduled to minimise exposure of nearby sensitive receivers to high levels of construction noise. For example, noisy activities can be scheduled for midday, or at times coinciding with periods of high background noise (such as during peak traffic hours). • Idle equipment should be turned off of throttled down. Noisy equipment should be properly maintained and used no more often than is necessary. • The power units of non-electric stationary plant and earth-moving plant should be quietened by vibration isolation and partial or full acoustic enclosures for individual noise-generating components. • Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided, thus reducing the cumulative impacts between operations. The numbers of operating items of powered mechanical equipment should be minimised. Noise can be reduced by increasing the distance between the operating equipment and the NSRs or by reducing the number of items of equipment and/or construction activity in the area at any one time. • The use of quiet plant working methods can further reduce noise level. Quiet plant is defined as Powered Mechanical Equipment (PME) whose actual sound power level is less than the value specified in the TMs for the same piece of equipment. To allow the Contractor some flexibility to select equipment to suit his needs, it is considered too restrictive to specify which specific items of silenced equipment to be used for the construction operations. It should be noted that various types of silenced equipment can be found in Hong Kong and are readily available on the market. BS 5228 also provides examples of quiet construction plant and their SWL. • Construction plant should be properly maintained (well-greased, damage and worn parts promptly replaced) and operated. Construction equipment often has silencing measures built in or added on, e.g. bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilised. Rubber or damping materials should be introduced between metal panels to avoid rattle and reverberation of noise. • Equipment known to emit sound strongly in one direction should be oriented so that the noise is directed away from nearby NSRs. • Materials stockpile and other structures (such as site offices) should be effectively utilised to shield construction noise. Noise	^ ^ N/A ^ ^ ^ ^ ^ ^ ^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	can also be reduced by construction of temporary noise barriers which screen the lower floors from viewing the sites. Temporary noise barriers should be installed at active parts of construction areas where construction equipment is being operated in close proximity to NSRs. • It is noted that under the WBTC No. 19/2001, all construction sites are required to use metallic site hoarding can be slightly modified (with the addition of steel backings) into temporary noise barriers. These barriers should be gap free and have a surface mass density of at least 7kg/m^2. • All hand-held percussive breakers and air compressors should comply the Noise Control (Hand-held Percussive Breakers) Regulations respectively under the NCO (Ordinance No. 75/88, NCO Amendment 1992 No.6). The Contractor shall devise, arrange methods of working and carry out the works in such manner as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these measures are implemented properly. <u>Level 2 Use of Barriers</u> Level 2 mitigation measures include providing movable barriers for sites which have sufficient space for installation, full enclosures during the drilling activities at Eastern Portal and at muck pit areas for Eastern portals and cantilever-typed high rise noise barrier for intake W5 (P) and W8. Before construction of the full enclosure at muck pit area, the use of full enclosure noise barrier (Stage A) for the drilling activities at the Eastern Portal area is required. A full enclosure for the muck pit area will then be constructed at this later stage (Stage B). The full enclosure shall be gap free apart from necessary entrance/exits, which shall face towards the entrance of eastern portal to minimize the amount of noise generated from affecting the nearest RNSRs especially school (True Light Middle School of Hong Kong). 5m high cantilever-typed hoarding barrier to be built at W5 (P) and W8. These enclosures/barriers should have no gaps and have a superficial surface density of at least 10kg/m^2. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. To schedule the noise barrier erection and dismantling to the non sensitive periods of school to avoid adverse impact to W8/3. Movable barriers of 3 to 5m height with a small cantilevered upper portion and skid footing to be located within about 5 m or more for mobile equipment such that the line of sight is blocked. To provide purposes-built noise barriers or screens constructed of appropriate materials (minimum superficial density of 10kg/m^2) located close to the operating PME. Pre-drilling following by chemical splitting instead of using large excavator mounted breaker should be used as mitigation measure for rock breaking and rock drilling.	^ ^ ^ ^ N/A ^ ^ ^

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	No construction activity is recommended during the examination period. <u>*Ground borne noise*</u> The noise level should be measured on the ground floor inside the nearest building during the TBM construction work in the daytime. If the daytime monitored ground borne noise exceeds the relevant evening/night ground borne noise criteria, evening/night construction work would not be carried out for the concerned tunnel section. Evening/night time construction work is subject to CNP application under the control of NCO. Public relationship strategy with 24-hour hotline system.	^ N/A

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
Water Quality	<u>Precautionary measures for construction work near natural streams</u> The government provides guidelines (ETWB TCW NO. 5/2005 and DSD TC 2/2004) are providing guidelines to minimize impacts when there is construction work carried out at near natural streams course. Relevant mitigation measures for the intakes are summarised as follows: • Temporary site access to the work sites should be carefully planned and located to minimize disturbance caused to the substrates of streams/rivers and riparian vegetation by construction plant. • Locations well away from the rivers/streams for temporary storage of materials (e.g equipment, filling materials, chemicals and fuel) and temporary stockpile of construction debris and spoil should be identified before commencement of works. • Proposed works site areas inside, or in the proximity of, natural rivers and streams should be temporarily isolated to prevent adverse impacts on the stream water qualities. • Stockpiling of construction materials, if necessary, should be completely properly covered and located away from any natural stream/river. • Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby rivers/streams by rain and local runoff. <u>Construction of temporary berthing point at the Western Portal</u> A refuse collection vessel shall be provided to collect refuse or materials lost into the sea. The respective areas of the marine works will be completely enclosed by the silt curtain. The curtain shall be extended from water surface down to the seabed where it is anchored using sinker blocks. The Contractor shall inspect the silt curtain on regular basis to ensure its integrity and it is serviceable for all times.	* * * * * ^ *

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	Transfer of armour rock onto the seabed from barge at the temporary pier location should be conducted by careful grabbing and unloading to the seabed (to minimize sediment migration).	^
	The conveyor belt should be completely covered and muddy effluent from the temporary barge should be contained, treated and disposed. Where there is transfer of excavated wastes, the Contractor should provide appropriate measures to ensure that the waste is free from floatables, putrescibes, organic wastes and toxic materials and when required a refuse collection vessel be provided to collect float refuse.	N/A
	<u>Construction of stilling basin at Western Portal outfall</u>	
	All construction for the basin should be carried out inside the temporary cofferdam which is a temporary watertight enclosure built in the water and pumped dry to expose the bottom so that construction of stilling basin can be undertaken.	*
	During the dewatering process, appropriate desilting/sedimentation devices should be provided on site for treatment before discharge. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge.	^
	The cofferdam will remain on site until after the construction of stilling basin has been completed. The coffer dam shall be regularly inspected and maintained to ensure no spillage of waste or wastewater into the sea. Conveyance of dredged materials from the coffer dam shall be carried out cautiously to avoid spillage into the sea.	*
	The filled material for the stilling basin should be contained inside the temporary cofferdam. The top level of the cofferdam shall be constructed higher than the final backfilled level.	*
	The Contractor shall be responsible for the design, installation and maintenance of the silt curtains to minimize the impacts on the water quality and the protection of water quality. The design and specification of the silt curtains shall be submitted by the Contractor to the Engineer for approval.	^
	Silt curtains shall be formed from tough, abrasion resistant, permeable membranes, suitable for the purpose, supported on floating booms in such a way as to ensure that the sediment plume shall be restricted to within the limit of the works area. The silt curtain shall be formed and installed in such a way that tidal rise and fall are accommodated, with the silt curtains always extending from the surface to the bottom of the water column and held with anchor blocks. The removal and reinstallation of such curtains during typhoon conditions shall be as agreed with the Director of Marine Department. The contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. Any damage to the silt curtain shall be repaired by the Contractor promptly and the works shall be stopped until the repair is fixed to the satisfaction of the Engineer.	*

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N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
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# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

Types of Impacts	Mitigation Measures	Status
	Transfer of rock fill material (armour rock) from the barge onto the site location should be conducted by grabbing and placement on the seabed to minimize sediment migration. No free dropping of the material will be allowed.	^
	Prior to the construction of armor rock based panel, a silt curtain shall also be installed prior to carry out any marine works as a preventive mitigation measure.	^
	<u>Construction of TBM tunnel at both portals and intakes</u>	
	Recycled water will be used at the cutter face for cooling purposes. Used water will be collected and discharged to a settling tank for settlement. Excess water from the settling tank will be transferred to the water treatment plant on site where the addition of flocculants will assist in settlement of solids. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge.	N/A
	During the drilling process, all flushing water will be recycled for use. Discharge of the treated water to nearby drainage system shall be allowed provided that it has been treated to a level meeting with statutory requirements.	^
	Water flow at streams should be maintained by a temporary diversion system during the construction phase of intakes and manhole drop shafts.	N/A
	<u>General Construction Activities and Workforce</u>	
	A. Surface runoff	
	Effluent produced from construction activities are subjected to WPCO control. Effluent produced from sites should be diverted away from stream courses. Construction works near stream course should be scheduled in the dry season as far as practical to avoid excessive site runoff discharge.	*
	Under the *Water Pollution Control Ordinance* (WPCO), turbid water from construction sites must be treated to minimize the solids content before being discharged into storm drains. The suspended solids load can be reduced by directing the runoff into temporary sand traps or other silt-removal facilities, and other good and appropriate site management practices. Advice on the handling and disposal of construction site discharge is provided in the ProPECC Paper (PN 1/94) on Construction Site Drainage.	*
	A drainage system layout should be prepared by the Contractor for each of the works areas (portals and intakes), detailing the facilities and measures to manage pollution arising from surface runoff from those works areas. The drainage layout and an associated drainage management plan to reduce surface runoff sediments and pollutants entering watercourses, should be submitted to the Engineer for approval and to EPD for agreement.	*

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Types of Impacts	Mitigation Measures	Status
	The system should be capable of handling stormwater from the site and directing it to sediment removal facilities before discharge. If oil and grease is used on the site or brought to the site, the stormwater should pass through oil interceptors before discharge. The interceptors should have a bypass to prevent washout in heavy storms.	^
	A temporary channel system or earth bunds or sand barriers should be provided in works areas on site to direct stormwater to silt-removal facilities. Stockpiled materials, if susceptible to erosion of rain or wind, should be covered with tarpaulins (or/similar fabric0 or hydroseedings as far as practicable especially during the wet season.	*
	Silt removal facilities should be checked and the deposited silt and grit should be removed regularly to ensure these facilities are in good working condition and to prevent blockages.	^
	Vehicle washing areas should be drained into a settlement into a settlement basin to settle out the suspended solid before discharge to storm water drains. The water should be recycled on site whenever possible. It is suggested that the wash water from the wheel wash basin is either reused for road watering or pumped to the on-site settling tanks for treatment. Water used for dust depression purposes should be minimized and an alternative soil holding agent should be considered.	^
	B. Spillage, Oil and Solvents Any contractor generating waste oil or other chemicals as a result of his activities should register as a chemical waste producer and provide a safe storage area for chemicals on site. Oil interceptors need to be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity.	^
	Any spillage should be cleaned up immediately and the resulting contaminated absorbent material should be properly managed according to Waste Disposal Regulations. Spills should be contained to avoid spreading and contaminating the water resources.	*
	Oil and fuels should be used and stored properly in designated area. All fuel tanks and storage areas should be provided with locks and be sited on within sealed areas within surrounded by bunds of with a capacity equal to 110% of the storage capacity of the largest tank.	*
	Good housekeeping practices are required to minimize careless spillage and keep the work space in a tidy and clean condition. Appropriate training, including safety codes and relevant manuals, should be given to the personnel who regularly handle the chemicals on site.	*

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Types of Impacts	Mitigation Measures	Status
	C. On-Site Effluent Generation	
	Sewage arising from the additional population of workers on site should be collected in a suitable storage facility (chemical mobile toilets). Most of the work site locations are close to the public sewerage system, and therefore the use of septic tanks isare, therefore, not encouraged. Portable toilets should be used coupled with tickering away services provided by a licensed collector. They should be positioned at appropriate locations across the site to ensure no direct discharge of foul water off-site.	^
	D. Protection of Existing Flora and Fauna	
	The Contractor should provide details of the plant and operation plans at each site for approval by the Engineer before commencing construction. The plans should include how the existing flora and fauna will be protected. Locations required for groundwater levels monitoring are Eastern Portal, PFLR1(P), THR2(P), TP5, TP789 and W12.	^
	The construction and demolition of the temporary pier may create short term impacts on the local marine water quality. The situation will be restored once the work is finished by proper phasing of the works programme and implementation of the adequate mitigation measures (e.g. silt curtain) the impacts will be minimized.	^
	<u>Maintaining Baseflow in Downstream Watercourses</u>	
	The final design will be developed during the detailed design stage. The exact base flow rates to be maintained at each of the intakes will be subject to detailed site investigation at design stage.	
	• Purpose of the by-pass device is to maintain the base-flow of the affected stream course.	N/A
	• The by-pass system comprises an approach link and a trapezoidal channel.	N/A
	• The approach link is section with inclined profiled surface at a gradient of 1 in 100. It is used to direct the base flow to the bypass trapezoidal channel at its down stream end during the normal days.	N/A
	• The trapezoidal channel is sized such that it could handle the base flow in the affected stream course which is estimated to be no more than 20 l/s.	N/A
	• Whenever the flow in the stream course exceeding the base flow rate, the excessive flow will overflow into the intake structure via the bottom rack structure. The bottom rack structure has bar screen on the top and inclined channel at the bottom. The top level of the bar screen is level with the by-pass channel with an aim to receive the overflow from the by-pass channel.	N/A
	• The by-pass channel is designed requiring minimum maintenance. However, it is recommended that the maintenance authority carry out regular maintenance inspection prior to onset of seasons and after significant rainstorm event to prevent blockage of the by-pass and bottom rack structure.	N/A

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Types of Impacts	Mitigation Measures	Status
Waste/Chemical	<u>General</u> A proper waste management plan should be implemented to promote waste minimisation at source. Where waste generation is unavoidable then the potential for recycling or reuse should be explored and opportunities taken. If wastes cannot be recycled then the recommended disposal routes should be followed. All waste materials shall be segregated into categories covering: • Excavated material or construction waste suitable for reuse on-site • Excavated material or construction waste suitable for public filling areas • Remaining C&D waste for landfill • Chemical waste, and • General refuse Proper segregation and disposal of construction waste should be implemented. Separate containers for inert and non-inert wastes should be provided. The inert waste should be taken to public filling area and the non-inert waste should be transported to strategic landfills. A trip-ticket system on the solid waste transfer/disposal operations should be included as one of the contractual requirements (ETWB TCW No. 31/2004). The Independent Environmental Checker (IEC) should responsible for auditing this system. IEC should also responsible for auditing the well-documented record system which includes: (i) quantity of waste generation, (ii) quantity of recycled material, (iii) quantity of disposed material, (iv) disposal methods and (v) sites should be implemented during construction phase. Regular cleaning and maintenance of the waste storage area should be conducted throughout the construction stage. <u>Excavated spoil</u> Control measures for soil temporarily stockpiled on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. Key impacts include:	* ^ ^ ^ ^ ^ ^ ^ ^ ^

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Types of Impacts	Mitigation Measures	Status
	• Surface of stockpiled soil should be wetted with water when necessary especially during dry season	^
	• Disturbance of stockpiled soil should be minimized	^
	• Stockpiled soil should be properly covered with tarpaulins especially heavy rain storms	^
	• Stockpiling areas should be enclosed if possible	^
	• Stockpiling location should be away from the shoreline	^
	• An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area	^
	<u>Chemical wastes</u>	
	For those processes that generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.	^
	Construction processes produce chemical waste, the contractor must register with EPD as a Chemical Waste Producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation (CWR). It should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste published by the EPD. A producer of chemical wastes should be registered as chemical waste producer and registered with EPD.	^
	The chemical waste generated shall be properly labelled, stored and disposed of according to the CWR. Proper storage area shall be allocated on site for storage of chemical waste. The chemical waste should only be collected by a licensed collector. An updated list of licensed chemical waste collector can be obtained from EPD.	*
	In case of spillage, spill absorbent material and emulsifiers should be available on site. This material should be replaced on a regular basis and the contaminated material stored in a designated, secure place.	*
	<u>General refuse</u> A reputable waste collector should be employed by the contractor to remove general refuse from the site, separate from C&DM and chemical wastes, and on regular basis in order to minimize odour, pest and litter impacts. The burning of refuse at site is not permitted under the Air Pollution Control Ordinance (Cap 311).	^
	Office waste can be reduced through recycling of paper if volumes are large enough to warrant collection.	^
	Good management practices should be implemented to ensure that refuse is properly stored and is transported for disposal of at licensed landfills.	*

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Types of Impacts	Mitigation Measures	Status
Terrestrial Ecology	During the detailed design stage, the following issues should also be considered as possible to further minimise the impacts: • Adjustment of site boundary to minimise temporary loss of natural stream habitat during construction. • Adjustment of site boundary to minimise use of mixed woodland as temporary works area. In particular, the woodland habitat in temporary works area of the Eastern Portal will be avoided, thereby greatly reducing the area of temporary loss of woodland habitat. • Minimizing felling of large trees. • About 20% of trees within the works area will be transplanted. The individual of Artocarpus hypargyreus recorded within the temporary works area of HKU1, if to be encroached, would also be transplanted. Standard site practices including the following, should be enforced to minimise the disturbance to the surroundings: • Treat any damage that may occur to large individual trees in the adjacent area using materials and methods appropriate for tree surgery. • Reinstate work sites/disturbed areas immediately after completion of the construction works, in particular, through on-site tree/shrub planting along the woodland and shrubland section within the temporary works area. Tree/shrub species used should make reference from those in the surrounding area. • Regularly check the work site boundaries to ensure that they are not exceeded and that no damage occurs to surrounding areas. A total of 1.02 ha would be replanted with woodland species, reaching almost a 1.5:1 ratio for compensatory planting. Tree/shrub species used should be based on those in the surrounding areas, including those which are commonly recorded during the baseline surveys. A low-flow channel would be provided within the channelised section to maintain a deeper water depth in the expanded channel, in particular during dry season as well as a basin at the end of the channelised section to provide living space for aquatic life. Step chute in the form of a series of descending water pools would be constructed between the low flow channel and the undisturbed stream course. There would also be openings for aquatic fauna between each chute step (pool). These could work like a "ladder" to help avoid isolating the aquatic fauna in the channelised section from natural habitats. Measures are also needed to maintain the flow of all affected streams/nullahs during the construction stages. Temporary bypass should be provided if the stream/nullah flows will be cut off by the construction works. After the construction works are finished, sections of temporary loss should be reinstated. Construction materials, wastes, and equipment should be cleared from the sites.	^ ^ ^ ^ ^ ^ ^ ^ ^

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Types of Impacts	Mitigation Measures	Status
	Surveys of amphibians at E4(P), PFLR1(P), W12(P), MB16, E5(B)(P), TP789(P) and P5(P) prior to commencement of construction is recommended. Frogs, including Hong Kong Cascade Frog and Lesser Spiny Frog, and tadpoles found at work areas of these proposed intake points will be collected and translocated to nearby streams that will not be affected by the project. These procedures should be performed by experienced herpetologists. A detailed translocation proposal will be submitted during the detailed design stage. Measures should also be taken to avoid runoff to streams and marine habitats. Stream/channel which could potentially be affected during construction should be prevented from sedimentation by erection of sediment barriers. Site runoff should be desilted by siltation traps in streams/channels or diverted, to reduce the potential for suspended sediments, organics and other contaminants to enter the local stream environment.	^ ^
Marine Ecology	Silt curtains will be deployed during the construction and demolition of the temporary berthing point. Deployment of silt curtains around the berthing point area would effectively avoid adverse water quality impacts due to barge filling. No significant ecological impact is anticipated. The invert of the stilling basin would be at -5.4 mPD. A cofferdam in the form of pipe-pile wall is to be constructed outside the stilling basin prior to the construction of basin. The cofferdam will be dewatered to provide a working area for construction of the stilling basin. The boulders from the seawall will then be removed by landbased grabs. Although the speed of the working vessels to be used in the Project (mainly barges) would not be high, a speed limit for marine traffic is proposed as a precautionary measure. A speed limit of 10 knots should be strictly enforced in the works area, in particular in the waters between the outfall location and the navigation channel in East Lamma Channel.	^ N/A ^

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Types of Impacts	Mitigation Measures	Status
Landscape and Visual	The proposed landscape and visual mitigation measures during the construction phase include: CM1 - Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. CM2 - Existing trees to be retained on site should be carefully protected during construction. The detailed proposal for any trees felling and transplantation is subject to Lands Department's approval on tree felling application at the detailed design stage. CM3 - Trees unavoidably affected by the works should be transplanted where practical. CM4 - Compensatory tree planting should be provided to compensate for felled trees. CM5 - The extent of disturbance on the existing stream course should be minimized. Any temporary works areas within the stream course shall be reinstated after construction. CM7 – Control of night-time lighting CM8 – Erection of decorative screen hoarding	 ^ ^ ^ ^ ^ ^ ^

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Types of Impacts	Mitigation Measures	Status
Cultural Heritage	The Cultural Heritage Impact Assessment has identified the following resources which will require mitigation measures during the construction stage; <u>Haw Par Mansion (including boundary wall and gate)</u> A condition survey must be undertaken by a qualified professional prior to the commencement of construction works for the tunnel portal in order to assess the structural integrity of the mansion, wall and gate (with special attention paid to any fragile architectural features). A report containing description of the types of construction, identification of fragile elements, an appraisal of the condition and a photographic record must be prepared. The report must also provide an assessment indicating whether further precautionary measures will be necessary during the construction phase, and if so provide details for sufficient protective measures, including monitoring for vibration control to ensure that no damage to the structure and fabric of the house, wall and gate results from the construction works. The report must be submitted to AMO for approval before construction activities commence. Upon approval the appropriate monitoring and precautionary measures shall be put into place. A buffer zone with a minimum width of 3 metres and an obstruction free access point must be maintained between the boundary wall/gate and the temporary works area (during construction works associated for both the tunnel portal and the permanent vehicle access ramp). This is to enable access for routine maintenance works on the wall and to ensure that the wall is not damaged by machinery operation or related construction activities. The temporary works area will be enclosed by standard DSD site hoarding. <u>Former Explosive Magazine of Victoria Barracks</u> A condition survey must be undertaken by a qualified professional prior to the commencement of construction works in order to assess the structural integrity of the retaining wall and the extent of damage from cracks and vegetation growth. A report containing a description of the wall's construction materials, identification of fragile and/or endangered elements, an appraisal of the condition and a photographic record of the retaining wall must be prepared. The report must also provide an assessment indicating whether further precautionary measures will be necessary during the construction phase, and if so provide details for sufficient protective measures, such as monitoring for vibration control, to ensure that no damage to the retaining wall results from the construction works. The report must be submitted to AMO for approval before construction activities commence. Upon approval the appropriate monitoring and precautionary measures shall be put into place. A buffer zone with a minimum width of 3 metres and an obstruction free access point must be maintained between the retaining wall and the temporary works area (for the duration of the construction phase). The works area will be enclosed by standard DSD site hoarding.	^ ^ ^ ^

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Types of Impacts	Mitigation Measures	Status
Fisheries	Silt curtain will be deployed during the construction and demolition of the temporary berthing point. With the deployment of silt curtains around the berthing point area, adverse water quality impact associated with the filling would not be anticipated. No significant fisheries impact is anticipated. The invert of stilling basin will be found at -5.4 mPD. A cofferdam in the form of pipe-pipe wall is to be constructed outside the stilling basin prior to the construction of basin. The cofferdam will be dewatered to provide a working space for the construction of stilling basin. The boulders from the seawall will then be removed by landbased grabs.	^ N/A
Hazard to Life	There will be no overnight storage of explosives for this project. Transportation of explosives to site for the construction of adit will be undertaken on a daily basis. The contractor is required to destroy any unused explosives before nightfall. If contractor wishes to set up magazines for overnight storage of explosives, it is necessary to carry out risk assessment and seek the relevant approval following the EIAO process.	^

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APPENDIX M
EVENT ACTION PLANS

Appendix M - Event Action Plans

Event/Action Plan for Air Quality

	ACTION			
EVENT	**ET**	**IEC**	**SUPERVISING OFFICER'S REPRESENTATIVE**	**CONTRACTOR**
ACTION LEVEL				
1.Exceedance for one sample	1. Identify the source and investigate the causes and propose remedial measures 2. Inform Supervising Officer's Representative & IEC 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET 2.Check Contractor's working methods	1.Notify Contractor	1.Rectify any unacceptable practice 2.Amend working methods if appropriate
2.Exceedance for two or more consecutive samples	1. Identify the source 2. Inform Supervising Officer's Representative & IEC 3. Repeat measurements to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with Supervising Officer's Representative & IEC for remedial actions required 6. If exceedance continues, arrange meeting with Supervising Officer's Representative & IEC 7. If exceedance stops, cease additional monitoring	1.Checking monitoring data submitted by ET 2. Check Contractor's working methods 3. Discuss with ET, IEC and Contractor on proposed remedial actions 4. Advise the Supervising Officer's Representative & ET on the effectiveness of the proposed remedial measures 5.Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Ensure remedial actions properly implemented	1.Submit proposals for remedial actions to Supervising Officer's Representative within 3 working days of notification 2.Implement the agreed proposals 3.Amend proposal if appropriate
LIMIT LEVEL				
1.Exceedance for one sample	1. Identify source,,investigate the causes and propose remedial measures 2. Inform Supervising Officer's Representative & IEC and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and keep EPD and Supervising Officer's Representative & IEC informed of the results	1.Check monitoring data submitted by ET 2. Check Contractor's working methods 3. Discuss with ET and Contractor on proposed remedial actions 4. Advise the Supervising Officer's Representative on the effectiveness of the proposed remedial measures 5.Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Ensure remedial actions properly implemented	1.Take immediate action to avoid further exceedance 2.Submit proposals for remedial actions to Supervising Officer's Representative within 3 working days of notification 3.Implement the agreed proposals 4.Amend proposal if appropriate
2.Exceedance for two or more consecutive samples	1. Identify source 2. Inform Supervising Officer's Representative, IEC and EPD the causes & actions taken for the exceedances 3. Repeat measurement to confirm findings	1.Discuss amongst Supervising Officer's Representative, ET and Contractor on the potential remedial actions 2.Review Contractor's remedial actions to assure their effectiveness and advise the	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.In consultation with the IEC, agree with the Contractor on the remedial measures to be	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to Supervising Officer's Representative within 3 working

	ACTION			
EVENT	**ET**	**IEC**	**SUPERVISING OFFICER'S REPRESENTATIVE**	**CONTRACTOR**
ACTION LEVEL				
	4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Arrange meeting with & IEC and Supervising Officer's Representative to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep ER, IEC and EPD informed of the results 8. If exceedance stops, cease additional monitoring	Supervising Officer's Representative accordingly 3.Supervise the implementation of the remedial measures	implemented 4.Ensure remedial measure are 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	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

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	**IEC**	**SUPERVISING OFFICER'S REPRESENTATIVE**	**Contractor**
Action Level	1. Notify IEC, Supervising Officer's Representative and Contractor 2. carry our investigation by reviewing all the relevant monitoring data and the corresponding construction activities. Exceedances should also be confirmed by immediate verification in the field as far as practical. 3. Report the results of investigation to the IEC, Supervising Officer's Representative and Contractor 4. Discuss with the Contractor and formulate remedial measures 5. increase monitoring frequency to check mitigation effectiveness	1.Review the analysed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the Supervising Officer's Representative & ET accordingly 3.Supervise the implementation of remedial measures	1. Confirm receipt of notification of complaint in writing 2. Notify Contractor 3. require Contractor to proposed remedial measures for analyzed noise problem 4. Ensure remedial measures are properly implemented	1. Identify practicable measures to minimize the noise impact. Submit noise mitigation proposals to ET, IEC and ET. 2. Implement noise mitigation proposals
Limit Level	1. Notify IEC, Supervising Officer's Representative, EPD and Contractor 2. Identify the source(s) of impact by reviewing all the relevant monitoring data and the corresponding construction activities. Exceedances should also be confirmed by immediate verification in the field as far as practical. 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. inform IEC, Supervising Officer's Representative and EPD the cause & actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and Supervising Officer's Representative informed of the results 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst Supervising Officer's Representative, ET, and Contractor on the potential remedial actions 2. Review Contractor's remedial actions to assure their effectiveness and advise the Supervising Officer's Representative &ET accordingly 3.Supervise the implementation of the remedial measures	1. Confirm receipt of notification of exceedance in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continuous, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is aborted	1. Take immediate action to avoid further exceedance 2. Identify practicable measures to minimize the noise impact. Submit proposals for remedial actions to Supervising Officer's Representative within three working days of notification 3. Implement the agreed proposals 4. Resubmit proposal if problem still not under control 5. Stop the relevant portion of works as determined by the Supervising Officer's Representative until the exceedance is abated

Event/Action Plan for Water Quality

EVENT	ACTION			
	ET	**IEC**	**SUPERVISING OFFICER'S REPRESENTATIVE**	**CONTRACTOR**
ACTION LEVEL				
Action level being exceeded by one sampling day	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and Supervising Officer's Representative; 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; and 2. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; and 2. Make agreement on the mitigation measures to be implemented.	1. Inform the Supervising Officer's Representative and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and Supervising Officer's Representative; 6. Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; and 2. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; and 2. Make agreement on the mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Supervising Officer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and Supervising Officer's Representative within 3 working days; 6. Implement the agreed mitigation measures.
LIMIT LEVEL				
Limit level being exceeded by one sampling day	1. Repeat measurement on next of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, Supervising Officer's Representative and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor.	1. Check monitoring data submitted by ET and Contractor's working methods. 2. Discuss with ET and Contractor on possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly;	1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation. 3. Request Contractor to view the working methods. 4. Ensure mitigation measures are properly implemented.	1. Inform the Supervising Officer's Representative and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3 Check all plant and equipment and consider changes of working methods; 4. Discuss with ET, IEC and Supervising Officer's Representative and propose mitigation measures to Supervising Officer's Representative and IEC within 3 working days;

EVENT	ACTION			
	ET	IEC	SUPERVISING OFFICER'S REPRESENTATIVE	CONTRACTOR
				5. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	1. Repeat measurement on next of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, Supervising Officer's Representative and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working methods. 2. Discuss with ET and Contractor on possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; 4. Supervise the implementation of mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level	1. Take immediate action to avoid further exceedance 2. Discuss with ET, IEC and Supervising Officer's Representative and propose mitigation measures to Supervising Officer's Representative and IEC within 3 working days; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

APPENDIX N
COMPLAINT LOG

APPENDIX N – COMPLAINT LOG

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
Com-2008-05-003	Construction site at Eastern Portal	22 May 2008	The complaint was lodged by Ms. Ng on 22 May 2008 regarding noise nuisance generated from the construction activities at the construction site of Eastern Portal	According to the Contractor, only one excavator and one generator were operated for the excavation works around 8 am on 22 May 2008 at the Eastern portal. No other construction activities were conducted. In response to the complaint, The Contractor agreed to reschedule their current works activities, with immediate effect from 23 May 2008, that only site preparation works without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at the Eastern Portal area. Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in May and (2) no non-compliance or observation on noise was recorded.	Closed
Com-2008-05-004	Construction site at Western Portal (Marine Works)	31 May 2008	The complaint was lodged by one of the local resident on 31 May 2008 regarding the noise nuisance generated from the marine works at Western Portal.	According to the Contractor, only two derrick barges and one tug boat were operated for the seabed formation works around 18:00 hrs on 31 May 2008 at the Western Portal. No other construction activities were conducted.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in May and (2) no non-compliance or observation on noise was recorded.	
Com-2008-07-007	Construction site at Eastern Portal	2 July 2008	The complaint was lodged by a resident of The Legend on 2 July 2008 regarding noise nuisance generated from the construction activities at the construction site of Eastern Portal	According to the Contractor, only one generator and one drilling rig (Jumbo) were operated for the preparation works around 7:30a.m on 2 July 2008 at the Eastern portal. Construction noise was found from other construction site (Gammon Construction Limitied) adjacent to Eastern Portal area. In response to the complaint, The Contractor review his forthcoming operations within the Eastern Portal site as previous they agreed, reschedule their current works activities, with immediate effect from 23 May 2008, that only site preparation works without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at the Eastern Portal area. Additional noise monitoring was conducted on 16 and 17 July 2008 during the drilling rig (Jumbo), excavator and wheel loader were operated for drilling works.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in June and July 2008 and additional noise monitoring (2) no non-compliance or observation on noise was recorded.	
COM-2008-10-011	Construction site at Western Portal	11 October 2008	The complaint was lodged by one of the resident of Victoria Road, Ms Cheung on 11 October regarding about the noise nuisance generated from the construction works at Western Portal	According to the Contractor, excavation works and marine works including sheet piling works were also conducted at the time of complaint at Western Portal Additional noise monitoring was conducted on 15 October 2008, drilling works, excavation works and marine works including sheet piling works were also conducted. The construction noise levels measured during the construction works were well below the construction noise limit of 75 dB(A) The Contractor agreed to reschedule the starting time of the construction works to 8:15am on every Saturday that without noise nuisance from the construction works to the nearby residents will be carried out from 7:00 am to 8:15 am at the Western Portal area.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				Base on the information collected, the noise level measured at outside Aegean Terrace during the construction works at Western Portal site were well below the construction noise limit of 75 dB(A). Also, the Contractor has implemented the remedial measure that reschedule the starting time of the construction works to 8:15am on every Saturday immediately after receiving the complaint to minimize the noise nuisance to the nearby residents.	
COM-2008-10-012	Construction site at Intake TP5	15 October 2008	The complaint was lodged by Mr Choi on 15 October 2008 regarding about the noise generated from the GI works, which starts from 8:30 hrs to 17:30 hrs next to Aigburth at May Road.	According to the information provided by the Contractor, only rotary type drill rigs and water pumps were operated for the GI works at the time of complaint at Intake TP5. Additional site inspection and noise monitoring at the podium of the Valverde at May Road were conducted on 3 Nov 2008 and 24 Oct, 5 Nov, 7 Nov 2008 respectively. The Contractor agreed to reschedule the starting time of the construction works to 9:30am on every Saturday and 8:00 on normal weekdays that without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at Intake TP5. Acoustic insulating materials	Closed
COM-2008-10-013	Construction site at Intake TP5	31 October 2008	The complaint was lodged by Mr Lai on 31 October 2008 regarding the black smoke is emitted and noise is generated from the machine at the site (Intake TP5), he needed to close the windows to prevent the black smoke from entering his flat and to attenuate the noise.		

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				have been applied for enclosing water pump and rotary type drill rigs to minimize the noise nuisance to the nearest residents.	
COM-2008-11-015	Construction site at Intake TP5	4 November 2008	The complaint was lodged by Ms Lee on 4 November regarding the noise nuisance generated from the construction works at Intake TP5.	Base on the information collected, the noise level measured at the podium of the Valverde at May Road were well below the construction noise limit of 75 dB(A) after the Contractor has implemented the remedial measure.	
COM-2008-11-016	Construction site at Western Portal	17 November 2008	The complaint was lodged by Mr Cheng on 17 November 2008 regarding dust nuisance arising from the soil nailing works at the roadside slope of Cyberport Road.	According to the information provided by the Contractor, soil nailing works were conducted and some plant equipments i.e air compressor and generator were operated at the time of complaint at Western Portal. Base on the regular air quality monitoring in November 2008 at Outside Aegean Terrace (AQ2) and Outside The Site Office at Western Portal (AQ3), the dust levels measured at AQ2 for 1 hour TSP and at AQ3 for 24 hour TSP were well below the Action Level (321µg/m3 for 1 hour TSP and 156µg/m3 for 24 hour TSP). Also, the Contractor has implemented the dust suppression measures to prevent dust nuisance from the construction activities including soil nailing works.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2008-11-019	Construction site at Western Portal	29 November 2008	The complaint was lodged by Ms Cheung on 1 December 2008 regarding noise nuisance at Western Portal at 08:30 hrs approx on 29 November 2008 and 00:30 on 1 December 2008.	According to the information provided by The Contractor, no construction works was carried out at the temporary jetty at the time of complaint (00:30 on 1 December 2008) at Western Portal. However, base on the regular noise monitoring at Outside Aegean Terrace (NC3), the noise level measured during the construction works at Western Portal site were well below the construction noise limit of 75 dB(A).	Closed
COM-2008-12-020	Construction site at Western Portal	28 December 2008	The complaint was lodged by Ms Cheung on 28 December 2008 regarding the excavator was found working within Western Portal works area on Sunday.	The complaint was considered not justifiable as Construction Noise Permit (CNP) – CNP No. GW-RS0827-08 has been granted from EPD for carrying out the construction works at Hong Kong West Drainage Tunnel (Western Portal), Cyberport Road, Cyberport, Hong Kong (DSD Contract No. DC/2007/10) between 1 December 2008 at 1900 hours and 28 February 2009 at 2400 hours. The powered mechanical equipment can be operated during the hours as below: a) Any day not being a general holiday between 1900 – 2300 hours b) General holiday (**including Sundays**) between 0700 – 1900 hours	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
COM-2009-01-021	Muddy Water Discharged into Sea at Western Portal	21 January 2009	Muddy water was observed from discharging into the sea at Western Portal Site	Base on the information collected, the muddy water discharged into the sea is considered due to the operations of excavation of stilling basin and poor condition of the silt curtain. The Contractor agreed to review their current provisions to prevent any muddy water from discharging into the sea again and close check the condition of the silt curtain.	Under reviewed by IEC (Investigation report was submitted)

APPENDIX O
CONSTRUCTION PROGRAMME

HK West Drainage Tunnel

CC01 - PRELIMINARIES & GENERAL REQUIREMENTS

Milestone

General

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
M1-1110	1.11-Complete of All Obligat's From 361to420d	0	0		31JAN09*	0	0	0
M1-1120	1.12-Complete of All Obligat's From 421to480d	0	0		31MAR09*	0	0	0
M1-1400	1.40-Acceptance of Monthly Report on TDMS(11M)	0	0		29DEC08A		-7	-59
M1-1410	1.41-Acceptance of Monthly Report on TDMS(12M)	0	0		29DEC08A		-7	-29
M1-1420	1.42-Acceptance of Monthly Report on TDMS(13M)	0	0		29DEC08A		1	2
M1-1430	1.43-Acceptance of Monthly Report on TDMS(14M)	0	0		31JAN09*	0	0	0
M1-1440	1.44-Acceptance of Monthly Report on TDMS(15M)	0	0		28FEB09*	0	0	0
M1-1450	1.45-Acceptance of Monthly Report on TDMS(16M)	0	0		31MAR09*	0	0	0

CC02 - DESIGN & DESIGN CHECKING OF THE WORKS

Design Stage

Secton 1 (Eastern Portal)

D00245	APP East P Temp Drainage Divrsn Main Stream AIP	90	10	26SEP08A	29JAN09	61	0	-227
D00250	P&S East P Temp Drainage Divrsn Main Stream DDA	61	0	08OCT08A	28NOV08A		0	-81
D00255	APP East P Temp Drainage Divrsn Main Stream DDA	90	50	29NOV08A	10MAR09	21	0	-141
D00275	APP Cofferdam for Intake Shaft DDA	42	7	21MAY08A	26JAN09	-297	-28	-318
D00278	P&S Reinst Perm Slope at Coff Intake Shaft DDA	63	63	01APR09*	02JUN09	29	0	0
D00282	APP Temp&Perm Line EP Non-TBM Tunl to ch250 AIP	42	7	13SEP08A	26JAN09	-112	-28	-322
D00283	P&S Temp Supt EP Non-TBM Tunnel to Ch250 - DDA	15	0	16SEP08A	04NOV08A		0	-249
D00284	APP Temp Supt EP Non-TBM Tunnel to Ch250 - DDA	30	7	05NOV08A	26JAN09	-108	-28	-304
D00286	P&S Perm Supt EP Non-TBM Tunnel to Ch250 - DDA	62	62	20JAN09*	22MAR09	422	-28	-335
D00287	APP Perm Supt EP Non-TBM Tunnel to Ch250 - DDA	92	92	23MAR09	22JUN09	422	-28	-399
D00292	APP EP Intake Tunnel&Intake Chamber Temp Sup AIP	21	0	01OCT08A	28OCT08A		0	-141
D00294	APP EP Intake Tunnel&Intake Chamber Temp Sup DDA	20	0	01OCT08A	26NOV08A		0	-149
D00317	APP Boulder Assess Rep(EP)-inside Bound Stage 1	23	0	06FEB08A	12NOV08A		0	-258
D00319	APP Boulder Assess Rep(EP)-outside Bound Stage 2	24	0	10APR08A	13NOV08A		-1	-259
D02334	APP East P Temp Drainage Divn Side Stream-DDA	76	7	28MAR08A	26JAN09	-263	-28	-263
D02354	APP Temp Drain Divsn Main Stream ELS - AIP	42	7	10OCT08A	26JAN09	-108	-28	0
D02364	P&S Temp Drain Divsn Main Stream ELS - DDA	24	0	21OCT08A	28NOV08A		0	0
D02374	APP Temp Drain Divsn Main Stream ELS - DDA	52	27	29NOV08A	15FEB09	-85	-28	0

Section 1 (Western Portal)

D00375	APP Temp Supp West Portal Soft Grd Tunnel DDA	42	7	12JUN08A	26JAN09	-55	-28	-313
D00414	APP Temp ELS WP Deep Struct (Basin)Single SP DDA	21	0	27AUG08A	02DEC08A		0	-205
D00421	P&S Temp Suppt WP Hard Rd Tunnel(Arch shape)-AIP	15	0	29AUG08A	06NOV08A		0	-160
D00422	APP Temp Suppt WP Hard Rd Tunnel(Arch shape)-AIP	27	0	07NOV08A	22NOV08A		0	-134
D00423	P&S Temp Suppt WP Hard Rd Tunnel(Arch shape)-DDA	15	0	11SEP08A	04DEC08A		0	0
D00424	APP Temp Suppt WP Hard Rd Tunnel(Arch shape)-DDA	22	3	05DEC08A	22JAN09	-98	-28	0

Section 1 (Portion W0) - Dropshaft

D00600	P&S Softground Excav for Dropshaft W5 AIP	63	63	01APR09*	02JUN09	251	0	-214
D00612	P&S Softground Excav for Dropshaft RR1 AIP	63	63	01APR09*	02JUN09	175	0	0
D00630	P&S Dropshaft Temp Rock Supt (Excl. W0) AIP	70	7	23OCT08A	26JAN09	62	-36	35
D00633	APP Dropshaft Temp Rock Supt (Excl. W0) AIP	91	90	22DEC08A	26APR09	62	-35	0
D00636	P&S Dropshaft Temp Rock Supt (Excl. W0) DDA	60	60	22JAN09*	22MAR09	279	0	0
D00639	APP Dropshaft Temp Rock Supt (Excl. W0) DDA	92	92	23MAR09	22JUN09	279	0	0
D00642	P&S Dropshaft Permanent Lining (Excl W0) AIP	45	25	31DEC08A	13FEB09	72	-8	0
D00645	APP Dropshaft Permanent Lining (Excl W0) AIP	47	47	14FEB09	01APR09	72	-8	-198
D00648	P&S Dropshaft Permanent Lining(Excl W0) DDA	62	62	01APR09*	01JUN09	602	0	0
D00654	P&S Dropshaft & SC at W0 Temp Rock Supt AIP	88	0	04JUL08A	07NOV08A		0	0
D00657	APP Dropshaft & SC at W0 Temp Rock Supt AIP	42	0	08NOV08A	22NOV08A		0	0
D00660	P&S Dropshaft & SC at W0 Temp Rock Supt DDA	46	25	10OCT08A	13FEB09	1,077	-28	-226
D00663	APP Dropshaft & SC at W0 Temp Rock Supt DDA	42	42	14FEB09	27MAR09	1,077	-28	0

Section 1 (Portion W0)

D01145	APP W0-Permanent Works Intake AIP	64	0	18JUL08A	13NOV08A		0	-133
D01150	P&S W0-Permanent Works Intake DDA	62	7	23AUG08A	26JAN09	728	-28	-209
D01155	APP W0-Permanent Works Intake DDA	92	92	27JAN09	28APR09	728	-28	-259
D01157	APP W0-Temp Works & Drainage Diversion AIP	92	0	30AUG08A	25NOV08A		0	-113
D01158	P&S W0-Temp Works & Drainage Diversion DDA	62	7	27AUG08A	26JAN09	-32	-28	-175
D01159	APP W0-Temp Works & Drainage Diversion DDA	92	92	27JAN09	28APR09	-32	-28	-225

Section 7 (Portion THR2)

D00945	APP THR2-Permanent Works Intake AIP	92	0	08AUG08A	13NOV08A		0	-32
D00950	P&S THR2-Permanent Works Intake DDA	62	62	01FEB09*	03APR09	247	0	-153
D00955	APP THR2-Permanent Works Intake DDA	92	92	04APR09	04JUL09	247	0	-203
D00957	APP THR2-Temp Works & Drainage Diversion AIP	92	0	24SEP08A	28NOV08A		0	2
D00958	P&S THR2-Temp Works & Drainage Diversion DDA	62	62	01FEB09*	03APR09	58	0	-90
D00959	APP THR2-Temp Works & Drainage Diversion DDA	92	92	04APR09	04JUL09	58	0	-140

Section 4 (Portion MB16)

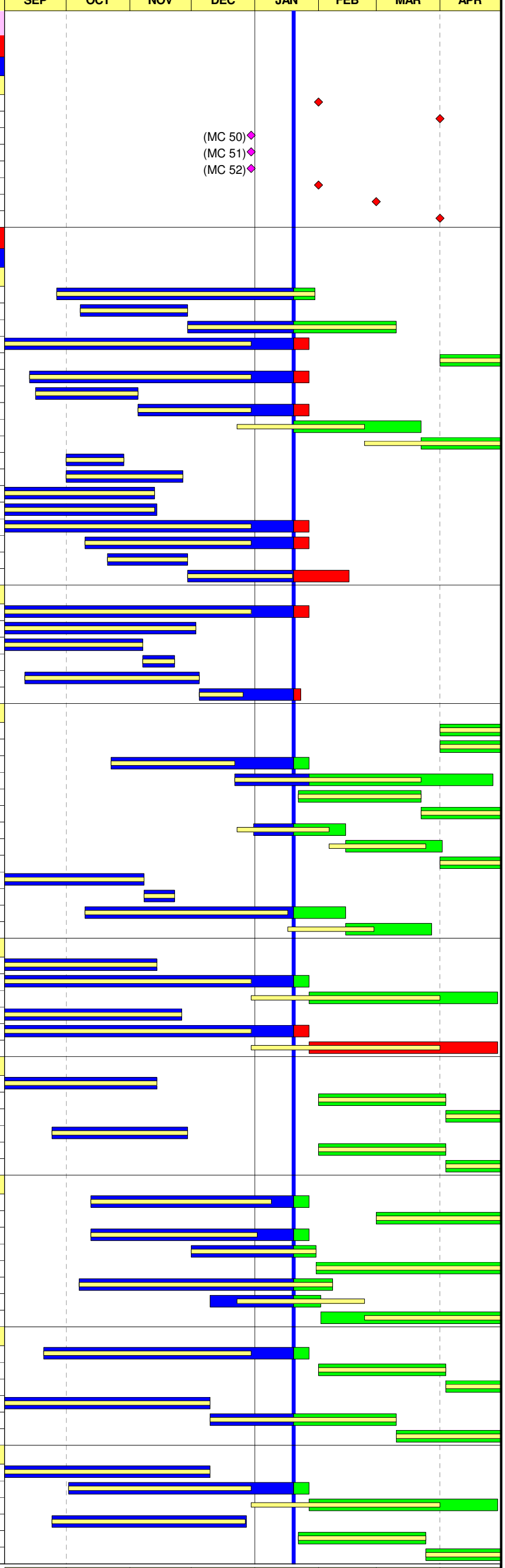
D00785	APP MB16-Permanent Works Intake AIP	92	7	13OCT08A	26JAN09	251	-18	-72
D00790	P&S MB16-Permanent Works Intake DDA	62	62	01MAR09*	01MAY09	156	0	-148
D00797	APP MB16-Temp Works & Drainage Diversion - AIP	92	7	13OCT08A	26JAN09	135	-25	-23
D00798	P&S MB16-Temp Works & Drainage Diversion - DDA	62	11	01DEC08A	30JAN09	131	0	-13
D00799	APP MB16-Temp Works & Drainage Diversion - DDA	92	92	31JAN09	02MAY09	131	0	-63
D00825	APP MB16-Permanent Slopeworks AIP	122	19	07OCT08A	07FEB09	139	0	-38
D00826	P&S MB16-Permanent Slopeworks DDA	62	13	10DEC08A	01FEB09	553	21	13
D00828	APP MB16-Permanent Slopeworks DDA	122	122	02FEB09	03JUN09	553	21	-67

Section 31 (Portion PFLR1)

D02255	APP PFLR1-Permanent Works Intake AIP	92	7	20SEP08A	26JAN09	238	-28	-54
D02260	P&S PFLR1-Permanent Works Intake DDA	62	62	01FEB09*	03APR09	233	0	-102
D02265	APP PFLR1-Permanent Works Intake DDA	92	92	04APR09	04JUL09	233	0	-152
D02266	P&S PFLR1-Temp Works & Drainage Diversion AIP	62	0	14AUG08A	09DEC08A		0	1
D02267	APP PFLR1-Temp Works & Drainage Diversion AIP	92	50	10DEC08A	10MAR09	9	0	-48
D02268	P&S PFLR1-Temp Works & Drainage Diversion DDA	62	62	11MAR09*	11MAY09	9	0	-96

Section30 (Portion HKU1)

D02205	APP HKU1-Permanent Works Intake AIP	92	0	08AUG08A	09DEC08A		0	5
D02210	P&S HKU1-Permanent Works Intake DDA	62	7	02OCT08A	26JAN09	366	-28	-24
D02215	APP HKU1-Permanent Works Intake DDA	92	92	27JAN09	28APR09	366	-28	-74
D02217	APP HKU1-Temp Works & Drainage Diversion AIP	122	0	24SEP08A	27DEC08A		-1	36
D02218	P&S HKU1-Temp Works & Drainage Diversion DDA	62	62	22JAN09*	24MAR09	21	0	-17
D02219	APP HKU1-Temp Works & Drainage Diversion DDA	122	122	25MAR09	24JUL09	21	0	-97



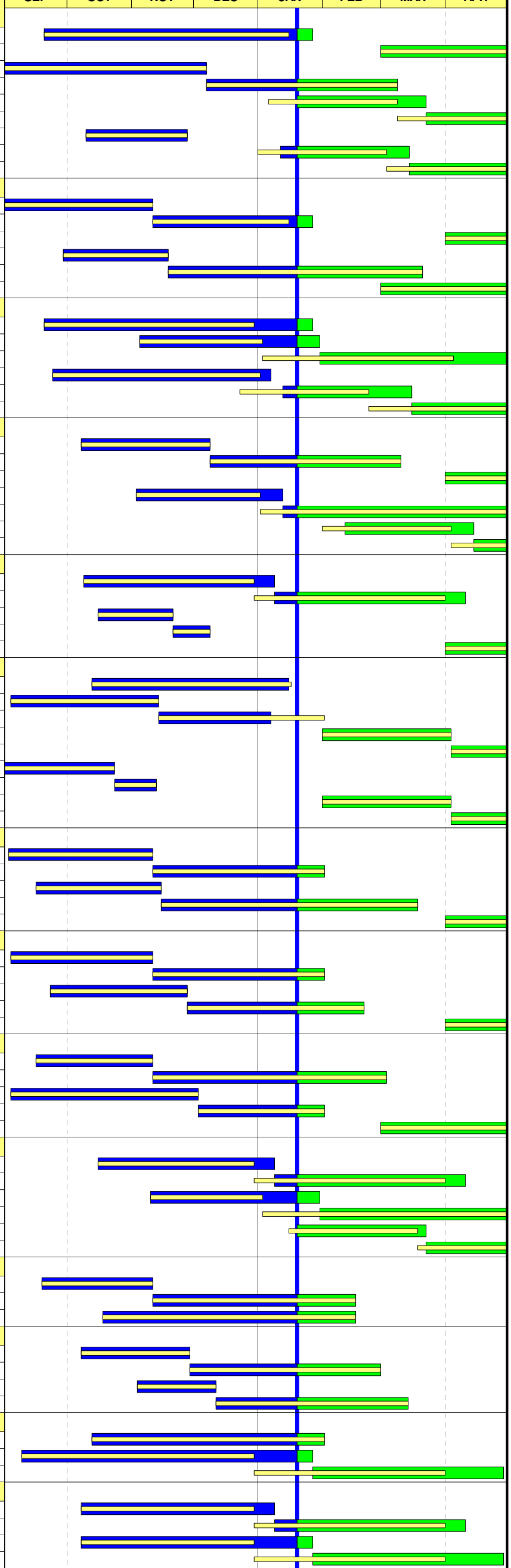
Start Date	23NOV07
Finish Date	08MAR12
Data Date	20JAN09
Run Date	30JAN09 09:25

Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
Section 6 (Portion E7)								
D00885	APP E7 - Permanent Works Intake AIP	92	7	20SEP08A	26JAN09	197	-11	-5
D00890	P&S E7 - Permanent Works Intake DDA	62	62	01MAR09*	01MAY09	102	0	-88
D00896	P&S E7 - Temp Works & Drainage Diversion - AIP	62	0	01AUG08A	06DEC08A		0	46
D00897	APP E7 - Temp Works & Drainage Diversion - AIP	92	48	07DEC08A	08MAR09	156	0	-4
D00898	P&S E7 - Temp Works & Drainage Diversion - DDA	62	62	20JAN09*	22MAR09	142	-14	-4
D00899	APP E7 - Temp Works & Drainage Diversion - DDA	92	92	23MAR09	22JUN09	142	-14	-54
D00925	APP E7 - Permanent Slopeworks AIP	122	0	10OCT08A	27NOV08A		0	79
D00930	P&S E7 - Permanent Slopeworks DDA	62	54	12JAN09A	14MAR09	580	-11	21
D00935	APP E7 - Permanent Slopeworks DDA	122	122	15MAR09	14JUL09	580	-11	-59
Section 29 (Portion W10)								
D02150	P&S W10-Permanent Works Intake AIP	62	0	23AUG08A	10NOV08A		0	46
D02155	APP W10-Permanent Works Intake AIP	92	7	11NOV08A	26JAN09	419	-11	11
D02160	P&S W10-Permanent Works Intake DDA	62	62	01APR09*	01JUN09	293	0	-96
D02166	P&S W10-Temp Works & Drainage Diversion AIP	62	0	29SEP08A	18NOV08A		0	87
D02167	APP W10-Temp Works & Drainage Diversion AIP	122	60	19NOV08A	20MAR09	91	0	7
D02168	P&S W10-Temp Works & Drainage Diversion DDA	62	62	01MAR09*	01MAY09	49	0	-1
Section 32 (Portion SM1)								
D02305	APP SM1-Permanent Works Intake AIP	92	7	20SEP08A	26JAN09	216	-28	-101
D02310	P&S SM1-Permanent Works Intake DDA	63	11	05NOV08A	30JAN09	212	-28	-86
D02315	APP SM1-Permanent Works Intake DDA	92	92	31JAN09	02MAY09	212	-28	-136
D02317	APP SM1-Temp Works & Drainage Diversion AIP	92	0	24SEP08A	06JAN09A		-5	-32
D02318	P&S SM1-Temp Works & Drainage Diversion DDA	62	55	13JAN09A	15MAR09	168	-21	-86
D02319	APP SM1-Temp Works & Drainage Diversion DDA	92	92	16MAR09	15JUN09	168	-21	-136
Section 26 (Portion RR1)								
D02000	P&S RR1-Permanent Works Intake AIP	62	0	08OCT08A	08DEC08A		0	32
D02005	APP RR1-Permanent Works Intake AIP	92	50	09DEC08A	10MAR09	637	0	-18
D02010	P&S RR1-Permanent Works Intake DDA	62	62	01APR09*	01JUN09	554	0	-82
D02016	P&S RR1-Temp Works & Drainage Diversion AIP	62	0	03NOV08A	12JAN09A		-11	46
D02017	APP RR1-Temp Works & Drainage Diversion AIP	122	115	13JAN09A	14MAY09	195	-11	-34
D02018	P&S RR1-Temp Works & Drainage Diversion DDA	62	62	12FEB09*	14APR09	103	-11	30
D02019	APP RR1-Temp Works & Drainage Diversion DDA	122	122	15APR09	14AUG09	103	-11	-50
Section 5 (Portion MBD2)								
D00830	P&S MBD2-Permanent Works Intake AIP	62	0	09OCT08A	08JAN09A		-10	16
D00835	APP MBD2-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	239	-10	-34
D00850	P&S MBD2-Temp Works & Drainage Diversion AIP	62	0	16OCT08A	20NOV08A		0	142
D00855	APP MBD2-Temp Works & Drainage Diversion AIP	92	0	21NOV08A	08DEC08A		0	166
D00860	P&S MBD2-Temp Works & Drainage Diversion DDA	62	62	01APR09*	01JUN09	127	0	25
Section 23 (Portion TP4)								
D01845	APP TP4-Permanent Works Intake AIP	92	0	13OCT08A	15JAN09A		1	57
D01856	P&S TP4-Temp Works & Drainage Diversion AIP	62	0	04SEP08A	13NOV08A		0	127
D01857	APP TP4-Temp Works & Drainage Diversion AIP	92	0	14NOV08A	06JAN09A		26	115
D01858	P&S TP4-Temp Works & Drainage Diversion DDA	62	62	01FEB09*	03APR09	131	0	42
D01859	APP TP4-Temp Works & Drainage Diversion DDA	92	92	04APR09	04JUL09	131	0	-8
D01880	P&S TP4-Permanent Slopeworks AIP	62	0	30AUG08A	23OCT08A		0	135
D01885	APP TP4-Permanent Slopeworks AIP	122	0	24OCT08A	12NOV08A		0	157
D01890	P&S TP4-Permanent Slopeworks DDA	62	62	01FEB09*	03APR09	101	0	65
D01895	APP TP4-Permanent Slopeworks DDA	122	122	04APR09	03AUG09	101	0	-15
Section 28 (Portion P5)								
D02100	P&S P5-Permanent Works Intake AIP	62	0	03SEP08A	10NOV08A		0	97
D02105	APP P5-Permanent Works Intake AIP	92	13	11NOV08A	01FEB09	325	0	56
D02116	P&S P5-Temp Works & Drainage Diversion AIP	62	0	16SEP08A	14NOV08A		0	142
D02117	APP P5-Temp Works & Drainage Diversion AIP	122	58	15NOV08A	18MAR09	250	0	60
D02118	P&S P5-Temp Works & Drainage Diversion DDA	62	62	01APR09*	01JUN09	175	0	19
Section 22 (Portion TP5)								
D01790	P&S TP5-Permanent Works Intake AIP	62	0	04SEP08A	10NOV08A		0	98
D01795	APP TP5-Permanent Works Intake AIP	92	13	11NOV08A	01FEB09	426	0	57
D01806	P&S TP5-Temp Works & Drainage Diversion AIP	62	0	23SEP08A	27NOV08A		0	130
D01807	APP TP5-Temp Works & Drainage Diversion AIP	92	32	28NOV08A	20FEB09	208	0	87
D01808	P&S TP5-Temp Works & Drainage Diversion DDA	62	62	01APR09*	01JUN09	107	0	10
Section 21 (Portion TP789)								
D01730	P&S TP789-Permanent Works Intake AIP	62	0	16SEP08A	10NOV08A		0	103
D01735	APP TP789-Permanent Works Intake AIP	92	43	11NOV08A	03MAR09	298	0	32
D01746	P&S TP789-Temp Works & Drainage Diversion AIP	62	0	04SEP08A	02DEC08A		0	130
D01747	APP TP789-Temp Works & Drainage Diversion AIP	92	13	03DEC08A	01FEB09	328	0	111
D01748	P&S TP789-Temp Works & Drainage Diversion DDA	62	62	01MAR09*	01MAY09	239	0	46
Section 24 (Portion W5)								
D01904	P&S W5-Permanent Works Intake AIP	62	0	16OCT08A	08JAN09A		-10	45
D01905	APP W5-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	473	-10	-5
D01910	P&S W5-Temp Works & Drainage Diversion AIP	63	11	10NOV08A	30JAN09	186	-28	72
D01911	APP W5-Temp Works & Drainage Diversion AIP	122	122	31JAN09	01JUN09	186	-28	-8
D01912	P&S W5-Temp Works & Drainage Diversion DDA	62	62	20JAN09*	22MAR09	193	-4	97
D01913	APP W5-Temp Works & Drainage Diversion DDA	122	122	23MAR09	22JUL09	193	-4	17
Section 2 (Portion E5A)								
D00680	P&S E5A-Permanent Works Intake AIP	62	0	19SEP08A	10NOV08A		0	116
D00682	APP E5A-Permanent Works Intake AIP	92	28	11NOV08A	16FEB09	370	0	60
D00688	APP E5A-Temp Works & Drainage Diversion AIP	92	28	18OCT08A	16FEB09	245	0	109
Section 27 (Portion W8)								
D02050	P&S W8-Permanent Works Intake AIP	62	0	08OCT08A	28NOV08A		0	124
D02055	APP W8-Permanent Works Intake AIP	92	40	29NOV08A	28FEB09	608	0	74
D02066	P&S W8-Temp Works & Drainage Diversion AIP	62	0	04NOV08A	11DEC08A		0	160
D02067	APP W8-Temp Works & Drainage Diversion AIP	92	53	12DEC08A	13MAR09	249	0	110
Section 3 (Portion E5B)								
D00735	APP E5B-Permanent Works Intake AIP	92	13	13OCT08A	01FEB09	427	0	109
D00746	P&S E5B-Temp Works & Drainage Diversion AIP	62	7	09SEP08A	26JAN09	252	-28	122
D00747	APP E5B-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	252	-28	72
Section 20 (Portion M3)								
D01670	P&S M3-Permanent Works Intake AIP	62	0	08OCT08A	08JAN09A		-10	115
D01675	APP M3-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	268	-10	65
D01686	P&S M3-Temp Works & Drainage Diversion AIP	62	7	08OCT08A	26JAN09	250	-28	146
D01687	APP M3-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	250	-28	96



Start Date	23NOV07
Finish Date	08MAR12
Data Date	20JAN09
Run Date	30JAN09 09:25

Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

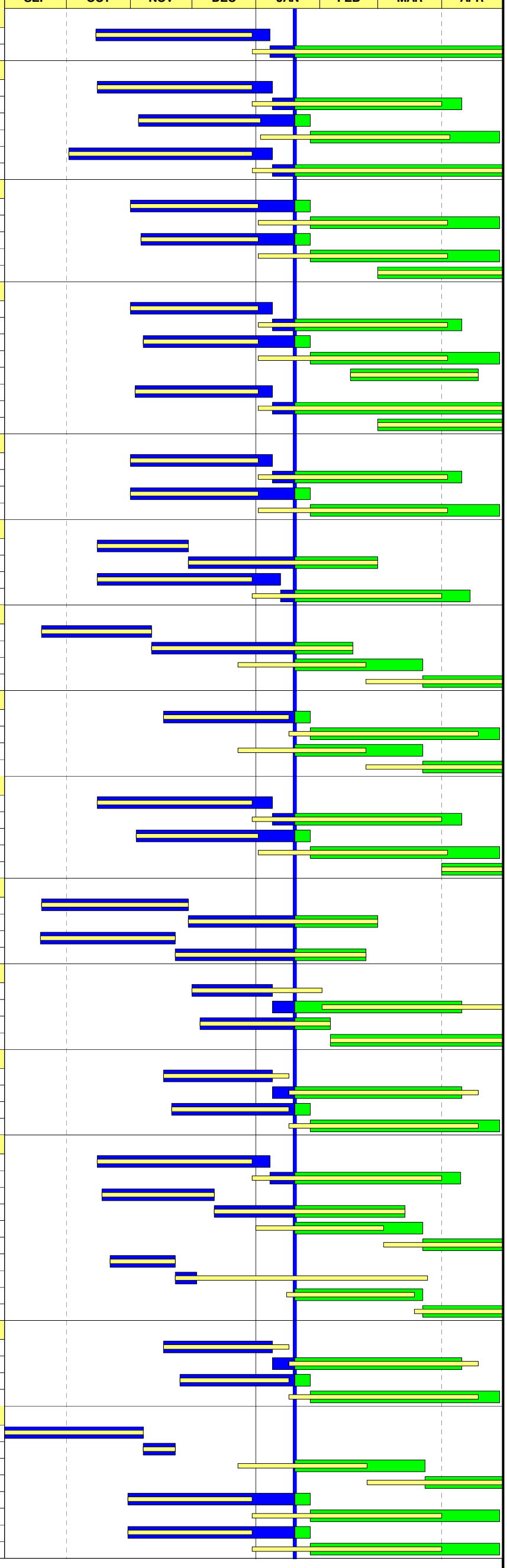
901A Sheet 2 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Dragages - Nishimatsu Joint Venture 寶嘉 - 西松建設聯營

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
Section 20 (Portion M3)								
D01710	P&S M3-Permanent Slopeworks AIP	62	0	15OCT08A	07JAN09A		-9	177
D01715	APP M3-Permanent Slopeworks AIP	122	110	08JAN09A	09MAY09	209	-9	97
Section 19 (Portion MA17)								
D01610	P&S MA17-Permanent Works Intake AIP	62	0	16OCT08A	08JAN09A		-10	129
D01615	APP MA17-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	229	-10	79
D01626	P&S MA17-Temp Works & Drainage Diversion AIP	63	7	05NOV08A	26JAN09	211	-24	160
D01627	APP MA17-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	211	-24	110
D01650	P&S MA17-Permanent Slopeworks AIP	62	0	02OCT08A	08JAN09A		-10	190
D01655	APP MA17-Permanent Slopeworks AIP	122	111	09JAN09A	10MAY09	231	-10	110
Section 15 (Portion W3)								
D01400	P&S W3-Permanent Works Intake AIP	62	7	01NOV08A	26JAN09	447	-25	111
D01405	APP W3-Permanent Works Intake AIP	92	92	27JAN09	28APR09	447	-25	61
D01416	P&S W3-Temp Works & Drainage Diversion AIP	62	7	06NOV08A	26JAN09	509	-25	160
D01417	APP W3-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	509	-25	110
D01418	P&S W3-Temp Works & Drainage Diversion DDA	62	62	01MAR09*	01MAY09	506	0	131
Section 17 (Portion MA14)								
D01500	P&S MA14-Permanent Works Intake AIP	62	0	01NOV08A	08JAN09A		-7	163
D01505	APP MA14-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	406	-7	113
D01516	P&S MA14-Temp Works & Drainage Diversion AIP	62	7	07NOV08A	26JAN09	319	-25	194
D01517	APP MA14-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	319	-25	144
D01518	P&S MA14-Temp Works & Drainage Diversion DDA	62	62	16FEB09*	18APR09	329	0	178
D01540	P&S MA14-Permanent Slopeworks AIP	62	0	03NOV08A	08JAN09A		-7	224
D01545	APP MA14-Permanent Slopeworks AIP	122	111	09JAN09A	10MAY09	316	-7	144
D01550	P&S MA14-Permanent Slopeworks DDA	62	62	01MAR09*	01MAY09	286	0	193
Section 18 (Portion MA15)								
D01560	P&S MA15-Permanent Works Intake AIP	62	0	01NOV08A	08JAN09A		-7	167
D01565	APP MA15-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	395	-7	117
D01580	P&S MA15-Temp Works & Drainage Diversion AIP	62	7	01NOV08A	26JAN09	261	-25	226
D01585	APP MA15-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	261	-25	176
Section 10 (Portion DG1)								
D01090	P&S DG1-Permanent Works Intake AIP	62	0	16OCT08A	28NOV08A		0	210
D01095	APP DG1-Permanent Works Intake AIP	92	40	29NOV08A	28FEB09	368	0	160
D01106	P&S DG1-Temp Works & Drainage Diversion AIP	62	0	16OCT08A	12JAN09A		-14	214
D01107	APP DG1-Temp Works & Drainage Diversion AIP	92	85	13JAN09A	14APR09	292	-14	164
Section 9 (Portion HR1)								
D01040	P&S HR1-Permanent Works Intake AIP	62	0	19SEP08A	10NOV08A		0	285
D01045	APP HR1-Permanent Works Intake AIP	92	28	11NOV08A	16FEB09	607	0	229
D01056	P&S HR1-Temp Works & Drainage Diversion AIP	62	62	20JAN09*	22MAR09	283	-28	202
D01057	APP HR1-Temp Works & Drainage Diversion AIP	92	92	23MAR09	22JUN09	283	-28	152
Section 14 (Portion BR6)								
D01350	P&S BR6-Permanent Works Intake AIP	62	7	17NOV08A	26JAN09	355	-10	208
D01355	APP BR6-Permanent Works Intake AIP	92	92	27JAN09	28APR09	355	-10	158
D01370	P&S BR6-Temp Works & Drainage Diversion AIP	62	62	20JAN09*	22MAR09	237	-28	230
D01375	APP BR6-Temp Works & Drainage Diversion AIP	92	92	23MAR09	22JUN09	237	-28	180
Section 12 (Portion W1)								
D01250	P&S W1-Permanent Works Intake AIP	62	0	16OCT08A	08JAN09A		-10	239
D01255	APP W1-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	381	-10	189
D01266	P&S W1-Temp Works & Drainage Diversion AIP	62	7	04NOV08A	26JAN09	371	-25	270
D01267	APP W1-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	371	-25	220
D01268	P&S W1-Temp Works & Drainage Diversion DDA	62	62	01APR09*	01JUN09	337	0	220
Section 8 (Portion GL1)								
D00990	P&S GL1-Permanent Works Intake AIP	62	0	19SEP08A	28NOV08A		0	287
D00995	APP GL1-Permanent Works Intake AIP	92	40	29NOV08A	28FEB09	408	0	237
D01006	P&S GL1-Temp Works & Drainage Diversion AIP	62	0	18SEP08A	22NOV08A		0	335
D01007	APP GL1-Temp Works & Drainage Diversion AIP	92	34	23NOV08A	22FEB09	389	0	285
Section 25 (Portion CR1)								
D01950	P&S CR1-Permanent Works Intake AIP	63	0	01DEC08A	08JAN09A		24	252
D01955	APP CR1-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	486	24	202
D01966	P&S CR1-Temp Works & Drainage Diversion AIP	63	17	05DEC08A	05FEB09	398	0	257
D01967	APP CR1-Temp Works & Drainage Diversion AIP	122	122	06FEB09	07JUN09	398	0	177
Section 13 (Portion BR5)								
D01300	P&S BR5-Permanent Works Intake AIP	62	0	17NOV08A	08JAN09A		8	252
D01305	APP BR5-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	492	8	202
D01316	P&S BR5-Temp Works & Drainage Diversion AIP	62	7	21NOV08A	26JAN09	412	-10	283
D01317	APP BR5-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	412	-10	233
Section 11 (Portion BR4)								
D01190	P&S BR4-Permanent Works Intake AIP	62	0	16OCT08A	07JAN09A		-9	254
D01195	APP BR4-Permanent Works Intake AIP	92	80	08JAN09A	09APR09	553	-9	204
D01206	P&S BR4-Temp Works & Drainage Diversion AIP	62	0	18OCT08A	11DEC08A		0	330
D01207	APP BR4-Temp Works & Drainage Diversion AIP	92	53	12DEC08A	13MAR09	604	0	280
D01208	P&S BR4-Temp Works & Drainage Diversion DDA	62	62	20JAN09*	22MAR09	503	-19	304
D01209	APP BR4-Temp Works & Drainage Diversion DDA	92	92	23MAR09	22JUN09	503	-19	254
D01230	P&S BR4-Permanent Slopeworks AIP	62	0	22OCT08A	22NOV08A		0	362
D01235	APP BR4-Permanent Slopeworks AIP	122	0	23NOV08A	02DEC08A		112	394
D01240	P&S BR4-Permanent Slopeworks DDA	62	62	20JAN09*	22MAR09	473	-4	318
D01245	APP BR4-Permanent Slopeworks DDA	122	122	23MAR09	22JUL09	473	-4	238
Section 16 (Portion B2)								
D01450	P&S B2-Permanent Works Intake AIP	62	0	17NOV08A	08JAN09A		8	397
D01455	APP B2-Permanent Works Intake AIP	92	81	09JAN09A	10APR09	532	8	347
D01466	P&S B2-Temp Works & Drainage Diversion AIP	62	7	25NOV08A	26JAN09	467	-10	428
D01467	APP B2-Temp Works & Drainage Diversion AIP	92	92	27JAN09	28APR09	467	-10	378
Adits & Stilling Chambers								
D00520	P&S Adits & Stilling Chamber Temp Support AIP	79	0	16JUL08A	06NOV08A		0	188
D00525	APP Adits & Stilling Chamber Temp Support AIP	92	0	07NOV08A	22NOV08A		0	214
D00530	P&S Adits & Stilling Chamber Temp Support DDA	63	63	20JAN09	23MAR09	102	-28	149
D00535	APP Adits & Stilling Chamber Temp Support DDA	122	122	24MAR09	23JUL09	102	-28	69
D00540	P&S Adits & SC Permanent Lining AIP	33	7	31OCT08A	26JAN09	28	-28	-223
D00545	APP Adits Permanent Lining AIP	92	92	27JAN09	28APR09	28	-28	-273
D00560	P&S SCs Permanent Lining AIP	33	7	31OCT08A	26JAN09	28	-28	-195
D00565	APP SCs Permanent Lining AIP	92	92	27JAN09	28APR09	28	-28	-245



Start Date	23NOV07
Finish Date	08MAR12
Data Date	20JAN09
Run Date	30JAN09 09:25

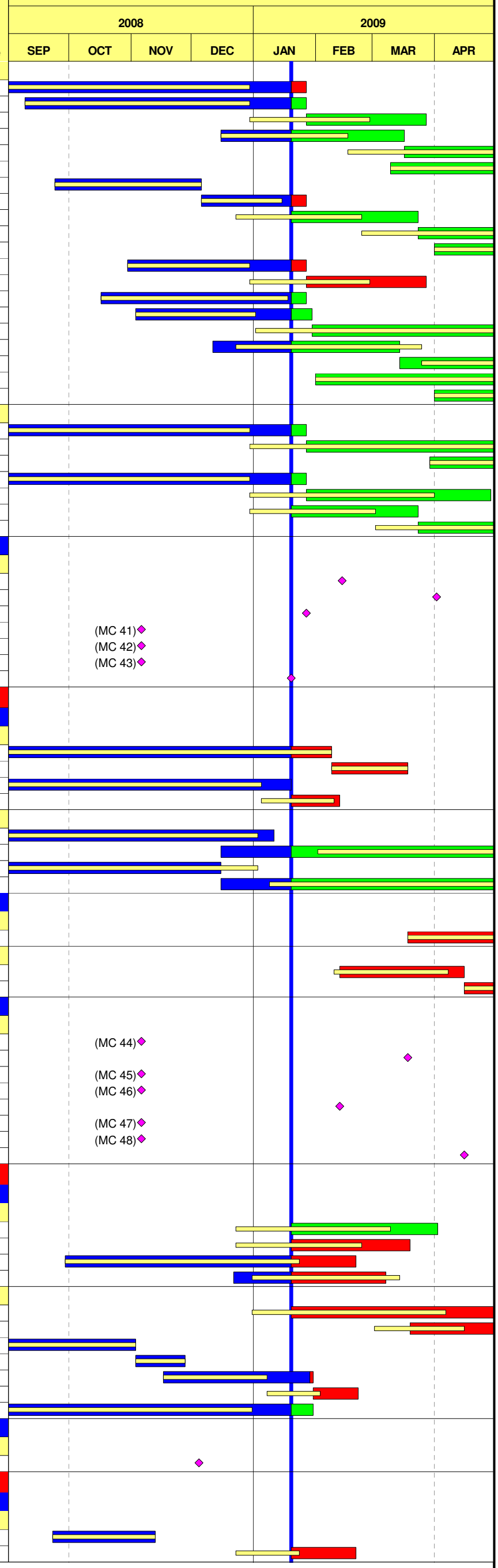
Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

901A Sheet 3 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
Project Wide								
D00145	APP Detailed Const Risk Assess(Portals) DDA	42	7	02AUG08A	26JAN09	-79	-28	-90
D00147	P&S Det Const Risk Assess Vol 1-(W0) DDA	24	7	09SEP08A	26JAN09	1,077	-28	0
D00148	APP Det Const Risk Assess Vol 1-(W0) DDA	60	60	27JAN09	27MAR09	1,077	-28	0
D00149	P&S DCRA V2-PFLR1,SM1,HKU1,E7,MBD2,MB16,etc	63	56	16DEC08A	16MAR09	11	-28	0
D00150	APP DCRA V2-PFLR1,SM1,HKU1,E7,MBD2,MB16,etc	92	92	17MAR09	16JUN09	11	-28	-511
D00151	P&S DCRA V3-W10,P5,W8,RR1,CR1,W5,TP4,TP5,etc	63	63	10MAR09*	11MAY09	58	0	0
D00160	P&S Impact Assess Rep Waterwork Fac V 1-(W0) DDA	24	0	24SEP08A	05DEC08A		0	-308
D00161	APP Impact Assess Rep Waterwork Fac V 1-(W0) DDA	40	7	06DEC08A	26JAN09	-62	-12	0
D00162	P&S Impact ARW V 2-PFLR1,SM1,HKU1,THR2,etc DDA	63	63	20JAN09*	23MAR09	123	-28	0
D00163	APP Impact ARW V 2-PFLR1,SM1,HKU1,THR2,etc DDA	92	92	24MAR09	23JUN09	123	-28	0
D00164	P&S Impact ARW V 3-W10,P5,W8,RR1,CR1,W5,etc DDA	63	63	01APR09*	02JUN09	344	0	0
D00168	P&S Water Inflow Assess Rep(Tunnel, Adit & DS)	31	7	30OCT08A	26JAN09	-4	-28	0
D00169	APP Water Inflow Assess Rep(Tunnel, Adit & DS)	60	60	27JAN09	27MAR09	-4	-28	0
D00189	APP Blasting Assessment - Volume 2B(Adit W0)	92	7	17OCT08A	26JAN09	325	-9	-56
D00190	P&S BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	93	10	03NOV08A	29JAN09	149	-28	-66
D00191	APP BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	122	122	30JAN09	31MAY09	149	-28	-146
D00192	P&S BA-Vol 3B	93	54	12DEC08A	14MAR09	102	11	0
D00193	APP BA-Vol 3B	122	122	15MAR09	14JUL09	102	11	0
D00194	P&S BA - Vol 3C (W5,CR1,RR1,W8,P5,W10)	93	93	01FEB09*	04MAY09	464	0	0
D00196	P&S BA - Vol 3D (DG1,BR4,W1)	93	93	01APR09*	02JUL09	388	0	0
Main Tunnel								
D00440	P&S Adit/main tun intrct Temp Sup(excl W0) AIP	51	7	15AUG08A	26JAN09	158	-28	79
D00445	APP Adit/main tun intrct Temp Sup(excl W0) AIP	122	122	27JAN09	28MAY09	158	-28	-1
D00480	P&S Adit/main tun intrct Perm Ling at W0 AIP	63	63	30MAR09*	31MAY09	378	0	-362
D00500	P&S TBM Dismantle Chamber Temp Supt at W0 AIP	194	7	16MAY08A	26JAN09	615	-28	-198
D00505	APP TBM Dismantle Chamber Temp Supt at W0 AIP	92	92	27JAN09	28APR09	615	-28	-248
D00510	P&S TBM Dismantle Chamber Temp Supt at W0 DDA	63	63	20JAN09*	23MAR09	650	-21	-156
D00515	APP TBM Dismantle Chamber Temp Supt at W0 DDA	92	92	24MAR09	23JUN09	650	-21	-206
Milestone								
Design Submission								
M2-1110	2.11-AIP-Dropshaft Submission	0	0		13FEB09	1,119	-8	-226
M2-1120	2.12-AIP-Dropshaft Consent	0	0		01APR09	1,072	-8	-231
M2-1150	2.15-AIP-Intakes Submission	0	0		26JAN09*	1,137	6	-249
M2-1160	2.16A-AIP-Intakes Consent (6.5%)	0	0		05NOV08A		0	-125
M2-1170	2.17A-DDA-Intakes Submission(3.75%)	0	0		05NOV08A		0	-127
M2-1190	2.19A-AIP Slope Protect(except E&W Portals)14.5%	0	0		05NOV08A		0	-150
M2-1191	2.19-AIP Slope Protect(Except E&W Portals)100%	0	0		19JAN09	1,144	-18	0
CC03-PART OF SECTION 1 OF THE WORKS(MAIN TUNNEL)								
Preliminary and General Requirements								
TBM Procurement & Delivery								
B2023	TBM Fabrication for 6.25m ID (Eastern Tunnel)	361	20	19JAN08A	08FEB09	-44	0	-45
B2026	TBM Transport & Delivery to Site(Eastern Portal)	38	38	09FEB09	18MAR09	-44	0	-45
B2030	TBM Fabrication for 7.25m ID (Western Tunnel)	336	0	19JAN08A	19JAN09A		-15	-52
B2040	TBM Transport & Delivery to Site (West Portal)	24	24	20JAN09	12FEB09	-74	-3	-46
Prefabrication Precast Segment for Main Tunnel								
B2220	Segment Mould Fabrication (E.Tunnel)	120	0	18JUN08A	10JAN09A		-8	6
B2240	Precast Segment Fabrication (E.Tunnel)	452	417	16DEC08A	12MAR10	123	48	62
B2260	Segment Mould Fabrication (W.Tunnel) - 8nos.	120	0	18JUN08A	15DEC08A		18	-11
B2280	Precast Segment Fabrication (W.Tunnel)	640	605	16DEC08A	16SEP10	53	24	19
Construction								
TBM Excavation (Eastern Tunnel)								
E1410	East TBM Assembly-(MT)	60	60	19MAR09	10JUN09	-38	0	-39
TBM Excavation (Western Tunnel)								
W1060	West TBM Assembly-(MT)	48	48	13FEB09	15APR09	-58	-3	-36
W1092	TBM Excav (CH10533 to CH10410) =123m	29	29	16APR09	14MAY09	-73	0	-48
Milestone								
Section 1 (Main Tunnel)								
M3-1030	3.03A-Delivery of TBM to Site(6.25m dia.) 50%	0	0		05NOV08A		0	88
M3-1031	3.03-Delivery of TBM to Site(6.25m dia.) 100%	0	0		18MAR09	1,086	0	0
M3-1040	3.04A-Commission&Compln 100mExcav(6.25mDia.)25%	0	0		05NOV08A		0	211
M3-1080	3.08A-Delivery of TBM to Site (7.25m dia.) 50%	0	0		05NOV08A		0	53
M3-1081	3.08-Delivery of TBM to Site (7.25m dia.) 100%	0	0		12FEB09	1,120	-3	0
M3-1090	3.09A-Commission of 100m Excav'n(7.25m dia)25%	0	0		05NOV08A		0	119
M3-1110	3.11A-Junction Bet M Tunnel& E Portal&CH250 25%	0	0		05NOV08A		0	241
M3-1520	3.52-M.Tunnel CH10250 & Junction w/ W Portal	0	0		15APR09	1,058	0	-48
CC5-PART OF SECTION 1 OF THE WORKS (EAST PORTAL)								
Construction								
Preliminary Works								
EPA0180	Noise Enclosure for Temporary Stockpile Yard	60	60	20JAN09	02APR09	28	-21	-183
EPA0190	Noise Enclosure for Wastewater Treatment PLant	48	48	20JAN09	19MAR09	-9	-21	-199
EPA0200	Noise Enclosure at Tunnel Entrance	42	25	29SEP08A	20FEB09	-16	-21	43
EPA0220	Tower Crane Installation	60	38	22DEC08A	07MAR09	-13	6	-149
Stage 1 (Before TBM Drive)								
EPA0240	Installation of Invert Segments	78	78	20JAN09	30APR09	-13	-16	0
EPA0250	Track & Spoil Tremie Installation	34	34	20MAR09	07MAY09	-13	-16	0
EPC0150	Ini Excav-Launch Tunl Non-Blast Method (0-CH43)	117	0	11JUN08A	02NOV08A		0	-59
EPC0160	Excavation for Launch Tunnel by D&B (upto CH77)	65	0	03NOV08A	27NOV08A		0	0
EPC0170	Excavation for Intake Tunnel by D&B (upto CH8)	12	2	17NOV08A	30JAN09	-17	-17	-25
EPC0180	Excav for Temporary Spoil Cavern by D&B (20m)	19	19	31JAN09	21FEB09	-17	-17	-25
EPC0190	Temp Cofferdam for Access for Segment Delivery	48	7	18AUG08A	30JAN09	2	-23	-132
Milestone								
Secton 1 (Eastern Portal)								
M5-1072	5.07-Excavation (Intake Tunnel) 100%	0	0		04DEC08A		0	0
CC6-PART OF SECTION 1 OF THE WORKS (WEST PORTAL)								
Construction								
Sea Wall & Termporary Pier Construction								
WPE0300	Construction of 10T Bollard and In-situ Coping	25	0	23SEP08A	12NOV08A		0	-64
WPE0320	Construction of Temp. Site Slab + Access	25	25	20JAN09	20FEB09	-21	-21	-126



Start Date 23NOV07
Finish Date 08MAR12
Data Date 20JAN09
Run Date 30JAN09 09:25

Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

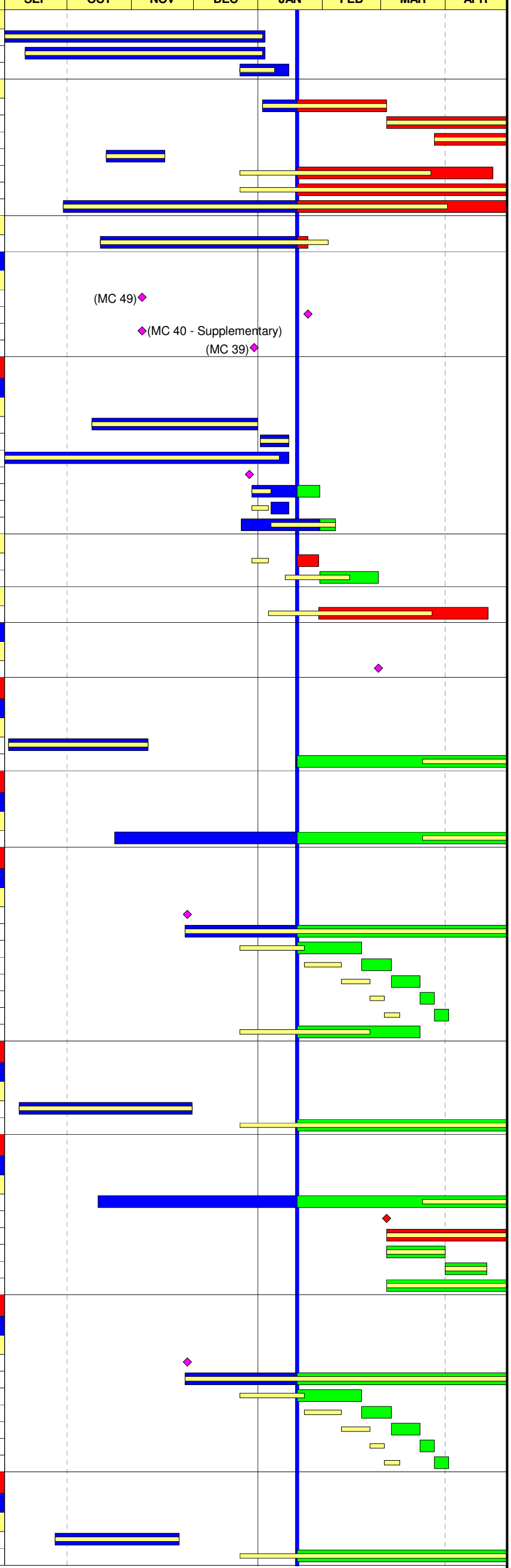
901A Sheet 4 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Dragages - Nishimatsu Joint Venture 寶嘉 - 西松建設聯營

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
Stilling Basin & TBM Launch Shaft Construction								
WPF0100	Predrill and Fill Hole for Single Sheetpile	26	0	11AUG08A	03JAN09A		-1	-121
WPF0160	Driven Pipe pile upto Exist Shore Line	26	0	11SEP08A	03JAN09A		-1	-121
WPF0400	Construct Temp. Steel Bridge	12	0	23DEC08A	15JAN09A		-6	-15
Site Installation - Phase 2								
WPC0140	Spoil Basin-(WP)	48	34	03JAN09A	03MAR09	-46	0	-158
WPC0160	Conveyor Belt-(WP)	80	80	04MAR09	19JUN09	-46	0	-164
WPC0180	Water Treatment Plant	52	52	27MAR09	09JUN09	-28	0	-135
WPC0200	Tower Crane Footing	17	0	20OCT08A	16NOV08A		0	-120
WPC0220	Gantry Crane	73	73	20JAN09	23APR09	-35	-21	-124
WPC0240	Other Temp. Facilities for TMB Operation	100	100	20JAN09	01JUN09	-52	-21	-212
WPC0260	Noise Enclosure	120	80	29SEP08A	05MAY09	-32	-21	-192
Slope Stabilization								
WPD0290	BreakOut with PowerKing RockSplitter(to CH10533)	84	5	17OCT08A	24JAN09	-55	5	-23
Milestone								
Section 1 (Western Portal)								
M6-1030	6.02A-Concrete Structure(Stilling Basin) 56.3%	0	0		05NOV08A		0	981
M6-1051	6.04A-Excavation 50% (Rectangular Trans Tunnel)	0	0		24JAN09	1,139	10	0
M6-1081	6.07A-Excavation 70% (Arch-shaped Trans Tunnel)	0	0		05NOV08A		0	0
M6-1082	6.07B-Excavation 100% (Arch-shaped Trans Tunnel)	0	0		29DEC08A		-7	0
CC7 -PART OF SECTION 1 OF THE WORKS (PORTION W0)								
Construction								
Preliminary Works								
S010114	Install ENV Instruments & start monitor-(W0)	12	0	13OCT08A	31DEC08A		0	-105
S010116	P&S Environmental Baseline Monitoring Report(W0)	12	0	02JAN09A	15JAN09A		0	-105
S010121	TMLG submission, coordination & Approval - W0	48	0	03APR08A	15JAN09A		-4	-105
S010150	Site Possession - W0	0	0	28DEC08A			0	0
S010160	Implement Traffic Divn Scheme-(W0)	7	7	29DEC08A	30JAN09	48	-18	-18
S010170	Utilities Diversion (Light Post & Cable)by Other	6	0	07JAN09A	15JAN09A		-9	-9
S010200	Site Setting up/Mobilization-(W0)	24	6	24DEC08A	06FEB09	50	0	0
Preparation Works								
S010180	Install Geotech Monitoring Instruments-(W0)	6	6	20JAN09	29JAN09	-16	-18	-18
S010220	Pre-drilling & Grouting Works-(W0)	24	24	31JAN09	27FEB09	50	-12	-12
Intakes - External Structures (Stage1)								
S010190	Cofferdam Wall Driving-(W0)	65	65	30JAN09	21APR09	-16	-18	-18
Milestone								
Section 1 (Portion W0)								
M7-1010	7.01-Pre-drilling&Grouting Works(Dropshaft)	0	0		27FEB09	1,105	-14	-14
CC8 - SECTION 2 OF THE WORKS (PORTION E5A)								
Construction								
Preliminary Works								
S020025	Conduct Utility Identification Works - E5A	43	0	03SEP08A	08NOV08A		0	0
S020040	Notify,Coord&Obtain Permit-Utility Prov - E5A	149	148	19JAN09A	03AUG09	91	50	-87
CC9 - SECTION 3 OF THE WORKS (PORTION E5B)								
Construction								
Preliminary Works								
S030020	Notify,Coord&Obtain Permit-Utility Prov - E5B	265	193	24OCT08A	30SEP09	75	5	-136
CC10-SECTION 4 OF THE WORKS (PORTION MB16)								
Construction								
Preliminary Works								
S040100	Notify SO for Portion Possession - (MB16)	0	0		27NOV08A		0	28
S040110	25 wks prior to Portion Possess Date-(MB16)	175	149	27NOV08A	17JUN09	9	-28	9
S040112	Obtain permit Inst Env Base Monitor Inst(MB16)	24	24	20JAN09	19FEB09	59	-21	-14
S040114	Install ENV Instruments & start monitor(MB16)	12	12	20FEB09	05MAR09	59	-21	-14
S040116	P & S Environmental Base Monitoring Report(MB16)	12	12	06MAR09	19MAR09	59	-21	-14
S040118	Conduct Tree Survey (MB16)	6	6	20MAR09	26MAR09	59	-21	-14
S040119	P & S Tree Survey Report (MB16)	6	6	27MAR09	02APR09	59	-21	-14
S040121	TMLG submission, coordination & Approval - MB16	48	48	20JAN09	19MAR09	71	-21	-14
CC11-SECTION 5 OF THE WORKS (PORTION MBD2)								
Construction								
Preliminary Works								
S050015	Conduct Utility Identification Works - MBD2	40	0	08SEP08A	29NOV08A		0	0
S050030	Notify,Coord&Obtain Permit-Utility Prov - MBD2	149	148	19JAN09A	03AUG09	75	-20	-87
CC12-SECTION 6 OF THE WORKS (PORTION E7)								
Construction								
Preliminary Works								
S060030	Notify,Coord&Obtain Permit-Utility Prov - E7	225	146	16OCT08A	31JUL09	757	52	-85
S060100	Notify SO for Portion Possession - E7	0	0		03MAR09*	0	0	0
S060110	25 wks prior to Portion Possess Date-(E7)	175	175	04MAR09	25AUG09	0	0	0
S060112	Obtain permit Install Env Base Monitor Inst(E7)	24	24	04MAR09	31MAR09	70	0	0
S060114	Install ENV Instruments & start monitor(E7)	12	12	01APR09	20APR09	70	0	0
S060125	TMLG submission, coordination & Approval - E7	48	48	04MAR09	07MAY09	82	0	0
CC13-SECTION 7 OF THE WORKS (PORTION THR2)								
Construction								
Preliminary Works								
S070100	Notify SO for Portion Possession - (THR2)	0	0		27NOV08A		0	22
S070110	25 wks prior to Portion Possess Date-(THR2)	175	121	27NOV08A	20MAY09	23	0	23
S070112	Obtain permit Env Base Monitor Inst(THR2)	24	24	20JAN09	19FEB09	49	-21	-23
S070114	Install ENV Instruments & start monitor(THR2)	12	12	20FEB09	05MAR09	49	-21	-23
S070116	P & S Environmental Base Monitoring Report(THR2)	12	12	06MAR09	19MAR09	49	-21	-23
S070118	Conduct Tree Survey (THR2)	6	6	20MAR09	26MAR09	49	-21	-23
S070120	P & S Tree Survey Report (THR2)	6	6	27MAR09	02APR09	49	-21	-23
CC14-SECTION 8 OF THE WORKS (PORTION GL1)								
Construction								
Preliminary Works								
S080010	Conduct Ground Investigation Works - GL1	12	0	25SEP08A	23NOV08A		0	-94
S080030	Notify,Coord&Obtain Permit-Utility Prov - GL1	364	364	19JAN09A	03MAY10	32	-236	-285



Start Date	23NOV07
Finish Date	08MAR12
Data Date	20JAN09
Run Date	30JAN09 09:25

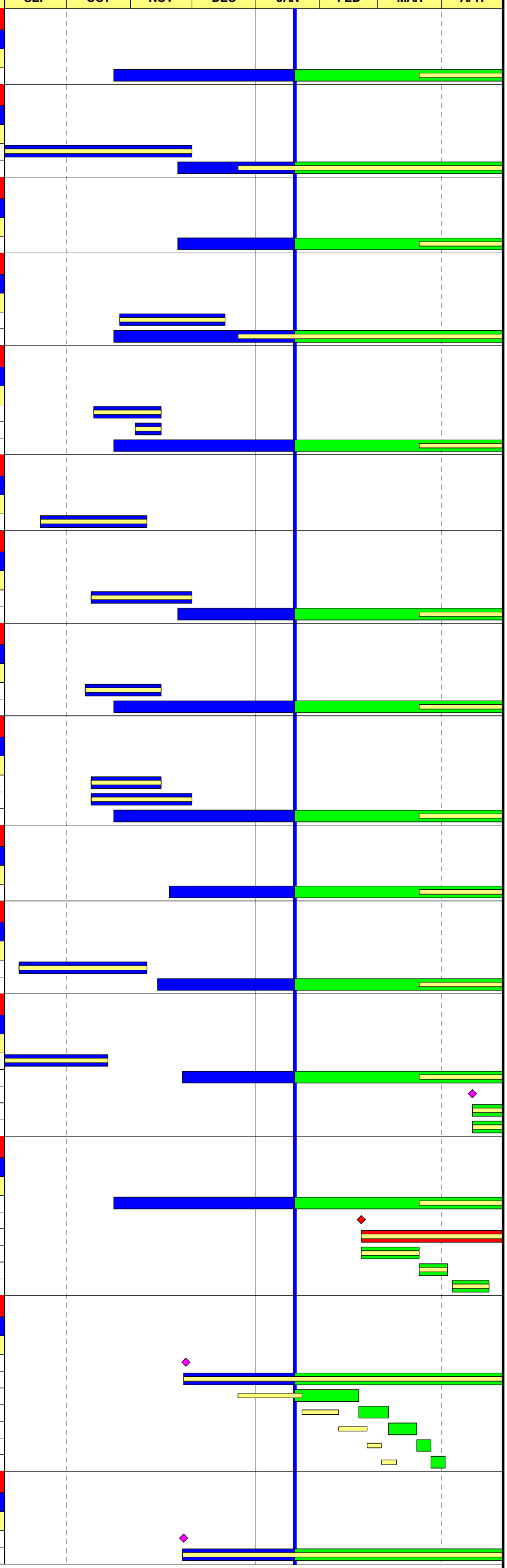
Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

901A Sheet 5 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
CC15-SECTION9 OF THE WORKS(PORTION HR1)								
Construction								
Preliminary Works								
S090030	Notify,Coord&Obtain Permit-Utility Prov - HR1	243	243	24OCT08A	01DEC09	660	-45	-186
CC20-SECTION 14 OF THE WORKS (PORTION BR6)								
Construction								
Preliminary Works								
S140015	Conduct Utility Identification Works - BR6	39	0	05AUG08A	30NOV08A		0	0
S140030	Notify,Coord&Obtain Permit-Utility Prov - BR6	386	363	24NOV08A	30APR10	10	-235	-284
CC21-SECTION 15 OF THE WORKS (PORTION W3)								
Construction								
Preliminary Works								
S150030	Notify,Coord&Obtain Permit-Utility Prov - W3	149	313	24NOV08A	27FEB10	590	-115	-234
CC25-SECTION 19 OF THE WORKS (PORTION MA17)								
Construction								
Preliminary Works								
S190010	Conduct Ground Investigation Works - MA17	54	0	27OCT08A	16DEC08A		0	-84
S190030	Notify,Coord&Obtain Permit-Utility Prov - MA17	339	267	24OCT08A	31DEC09	36	-139	-158
CC28-SECTION 22 OF THE WORKS (PORTION TP5)								
Construction								
Preliminary Works								
S220010	Conduct Ground Investigation Works -TP5	37	0	14OCT08A	15NOV08A		0	-58
S220015	Conduct Utility Identification Works - TP5	44	0	03NOV08A	15NOV08A		0	0
S220030	Notify,Coord&Obtain Permit-Utility Prov - TP5	265	193	24OCT08A	30SEP09	710	5	-84
CC29-SECTION 23 OF THE WORKS (PORTION TP4)								
Construction								
Preliminary Works								
S230010	Conduct Ground Investigation Works -TP4	47	0	18SEP08A	08NOV08A		0	-16
CC30-SECTION 24 OF THE WORKS (PORTION W5)								
Construction								
Preliminary Works								
S240015	Conduct Utility Identification Works - W5	43	0	13OCT08A	30NOV08A		0	0
S240030	Notify,Coord&Obtain Permit-Utility Prov - W5	239	193	24NOV08A	30SEP09	710	5	-66
CC31-SECTION 25 OF THE WORKS (PORTION CR1)								
Construction								
Preliminary Works								
S250015	Conduct Utility Identification Works - CR1	45	0	10OCT08A	15NOV08A		0	0
S250030	Notify,Coord&Obtain Permit-Utility Prov - CR1	327	255	24OCT08A	15DEC09	648	-57	-110
CC32-SECTION 26 OF THE WORKS (PORTION RR1)								
Construction								
Preliminary Works								
S260010	Conduct Ground Investigation Works -RR1	37	0	13OCT08A	15NOV08A		0	-40
S260015	Conduct Utility Identification Works - RR1	45	0	13OCT08A	30NOV08A		0	0
S260030	Notify,Coord&Obtain Permit-Utility Prov - RR1	265	193	24OCT08A	30SEP09	710	5	-66
CC33-SECTION 27 OF THE WORKS (PORTION W8)								
Construction								
Preliminary Works								
S270030	Notify,Coord&Obtain Permit-Utility Prov - W8	278	229	20NOV08A	14NOV09	674	-31	-84
CC34-SECTION 28 OF THE WORKS (PORTION P5)								
Construction								
Preliminary Works								
S280015	Conduct Utility Identification Works - P5	91	0	08SEP08A	08NOV08A		0	0
S280030	Notify,Coord&Obtain Permit-Utility Prov - P5	247	193	14NOV08A	30SEP09	710	5	-48
CC35-SECTION 29 OF THE WORKS (PORTION W10)								
Construction								
Preliminary Works								
S290010	Conduct GI & Utility Identification Works - W10	24	0	08AUG08A	20OCT08A		0	7
S290030	Notify,Coord&Obtain Permit-Utility Prov - W10	190	146	26NOV08A	31JUL09	757	3	5
S290100	Notify SO for Portion Possession - W10)	0	0		15APR09*	2	0	0
S290110	25 wks prior to Portion Possess Date-(W10)	175	175	16APR09	07OCT09	2	0	0
S290112	Obtain permit Install Env Base Monitor Inst(W10)	24	24	16APR09	19MAY09	73	0	0
CC36-SECTION 30 OF THE WORKS (PORTION HKU1)								
Construction								
Preliminary Works								
S300020	Notify,Coord&Obtain Permit-Utility Prov - HKU1	218	146	24OCT08A	31JUL09	757	52	-88
S300100	Notify SO for Portion Possession - (HKU1)	0	0		20FEB09*	0	0	0
S300110	25 wks prior to Portion Possess Date-(HKU1)	175	175	21FEB09	14AUG09	0	0	0
S300112	Obtain permit Env Base Monitor Inst(HKU1)	24	24	21FEB09	20MAR09	71	0	0
S300114	Install ENV Instruments & start monitor(HKU1)	12	12	21MAR09	03APR09	71	0	0
S300116	P & S Environmental Base Monitoring Report(HKU1)	12	12	06APR09	23APR09	71	0	0
CC37-SECTION 31 OF THE WORKS (PORTION PFLR1)								
Construction								
Preliminary Works								
S310920	Notify SO for Portion Possession - (PFLR1)	0	0		27NOV08A		0	43
S310930	25 wks prior to Portion Possess Date-(PFLR1)	175	149	27NOV08A	17JUN09	27	-28	27
S310932	Obtain permit Env Base Monitor Inst(PFLR1)	24	24	20JAN09	19FEB09	72	-21	1
S310934	Install ENV Instruments & start monitor(PFLR1)	12	12	20FEB09	05MAR09	72	-21	1
S310936	P&S Environmental Base Monitoring Report(PFLR1)	12	12	06MAR09	19MAR09	72	-21	1
S310938	Conduct Tree Survey (PFLR1)	6	6	20MAR09	26MAR09	72	-21	1
S310939	P & S Tree Survey Report (PFLR1)	6	6	27MAR09	02APR09	72	-21	1
CC38-SECTION 32 OF THE WORKS (PORTION SM1)								
Construction								
Preliminary Works								
S320920	Notify SO for Portion Possession - SM1)	0	0		26NOV08A		0	7
S320930	25 wks prior to Portion Possess Date-(SM1)	175	120	26NOV08A	19MAY09	9	0	9



Start Date 23NOV07
Finish Date 08MAR12
Data Date 20JAN09
Run Date 30JAN09 09:25

Early Bar
Previous Month (812A)
Progress Bar
Critical Activity

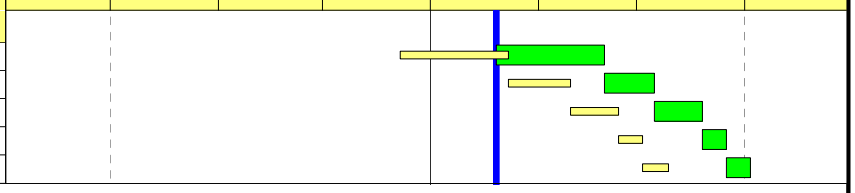
901A Sheet 6 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Dragages Hong Kong 香港寶嘉 — A member of the Bouygues Construction group
西松建設 Nishimatsu Construction Co., Ltd.
Dragages - Nishimatsu Joint Venture 寶嘉 - 西松建設聯營

Date	Revision	Checked	Approved

Act ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Previous Month 812A EF Variance	Approved Baseline 804B EF Variance
Preliminary Works								
S320932	Obtain permit Install Env Base Monitor Inst(SM1)	24	24	20JAN09	19FEB09	37	-21	-36
S320934	Install ENV Instruments & start monitor(SM1)	12	12	20FEB09	05MAR09	37	-21	-36
S320936	P & S Environmental Base Monitoring Report(SM1)	12	12	06MAR09	19MAR09	37	-21	-36
S320938	Conduct Tree Survey (SM1)	6	6	20MAR09	26MAR09	37	-21	-36
S320940	P & S Tree Survey Report (SM1)	6	6	27MAR09	02APR09	37	-21	-36



SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR
2008 | 2009

Start Date	23NOV07
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Early Bar
Previous Month (812A)
Progress Bar
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901A Sheet 7 of 7

Design & Construction of HK. West Drainage Tunnel
Contract No. DC/2007/10
3 MONTH ROLLING PROGRAMME
JANUARY/2009 MONTHLY REPORT

Date	Revision	Checked	Approved

APPENDIX P
WASTE GENERATED QUANTITY

Monthly Waste Flow Table

Quarter ending		Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see notes 2)	Chemical Waste	Others, e.g. general refuse
	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)	(in ' 000 m^3)
Feb-08											40 m^3
Mar-08					6 m^3						84 m^3
Apr-08					34 m^3						34 m^3
May-08					566 m^3			2 m^3			39 m^3
Jun-08					486 m^3	30 m^3				0.4 m^3	6 m^3
Jul-08					1311 m^3	3004 m^3				0.2 m^3	45 m^3
Aug-08			1100 m^3		904 m^3	2404 m^3		2 m^3		0.2 m^3	34 m^3
Sep-08			1620 m^3		64 m^3	11504 m^3					11 m^3
Oct-08			650 m^3		2488 m^3	1882 m^3					28 m^3
Nov-08					4211 m^3	102 m^3		3 m^3		0.2 m^3	22 m^3
Dec-08					9226 m^3			3 m^3			28 m^3
Jan-09			129 m^3		9530 m^3			2 m^3		1.3 m^3	39 m^3
Feb-09											
Mar-09											
Total	0	0	3499 m^3	0	28826 m^3	18926 m^3	0	12 m^3	0	2.3 m^3	410 m^3

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic/foam from packaging material.
(3) Broken concrete for recycling into aggregates.
(4) The Figures for January 2008 are as of 31-01-09.