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)

June 2008

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 3rd 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 June 2008.

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

- Further establishment of project organization and staffing;
- Boulder stabilization, temporary soil nailing and portal formation works and installation of temporary facilities at Eastern Portal;
- Erection of SOR's Site Offices, installation of temporary facilities, slope works and marine works at Western Portal;
- AIP & DDA submissions for temporary works at both portals;
- DDA submission for permanent works for Main Tunnel Precast Segmental Lining;
- Environmental impact monitoring; and
- TBM design and fabrication overseas.

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
Noise	0	0	0	0	N/A
Water	1	16	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 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

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

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. Baseline 24-hour TSP monitoring was conducted at Outside the Site Office at Western Portal (AQ3) in between 13 June to 26 June 2008.

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 except the monitoring at mid-flood tide on 7 June 2008 that was cancelled due to Black Rainstorm Warnings. In addition, monitoring on 25 and 27 June 2008 has been changed to 26 and 28 June 2008 due to Tropical Cyclone Warning Signals No. 8. One Action level and sixteen Limit level exceedances were recorded. The exceedances are considered due to the natural fluctuations but not due to the Project.

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/XP0175 for Area of Mount Butler Office and EP860/W10/XP0177 for Eastern Portal) and Construction Noise Permit (License No.: GW-RS0114-08 for Eastern Portal and GW-RS0363-08 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	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Status of submissions under EP	2	Baseline Environmental Monitoring Report_v.4.0 (for Western Portal)	Submitted to EPD on 8 July 2008 (EP condition 3.2)	Verified by IEC	---
		Monthly EM&A Report (29th May to 31st May 08)	Submitted to EPD on 11 June 2008 (EP condition 3.3)	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 works at Eastern Portal;
- Slope works, ELS works and marine works at Western Portal; and
- Utilities trial pits and additional ground investigation works at 19 nos. Intake sites.

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 3rd monthly EM&A report summarizing the EM&A works for the Project in June 2008 at Eastern and Western Portals. Baseline 24 hours TSP Air Quality Monitoring was conducted at Outside the Site Office at Western Portal (AQ3) in between 13 June to 26 June 2008 and the results will be presented in Baseline Environmental Monitoring Report for Western Portal.

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. Roger Lee	Safety Manager	2671 7333	2671 9300
		Mr. Ben Ho	Environmental Officer		

Construction Programme

1.8 The site activities undertaken in the reporting month included:

- Further establishment of project organization and staffing;
- Boulder stabilization, temporary soil nailing and portal formation works and installation of temporary facilities at Eastern Portal;
- Erection of SOR's Site Offices, installation of temporary facilities, slope works and marine works at Western Portal;
- AIP & DDA submissions for temporary works at both portals;

- DDA submission for permanent works for Main Tunnel Precast Segmental Lining;
- Environmental impact monitoring; and
- TBM design and fabrication overseas.

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
Boulder stabilization, temporary soil nailing and portal formation works and installation of temporary facilities at Eastern Portal.	Noise and dust impact	Provided water spraying during soil nail works/rock drilling. Provided temporary noise barriers.
Erection of SOR's Site Offices, installation of temporary facilities, slope works and marine works at Western Portal.	Noise, dust, water quality impact and waste generation	Provided water spraying during soil nail work and slope works Provided silt curtain during the marine works On-site waste sorting and implementation of trip ticket system
AIP & DDA submissions for temporary works at both portals.	Nil	Nil
DDA submission for permanent works for Main Tunnel Precast Segmental Lining.	Nil	Nil
Environmental impact monitoring	Nil	Nil
TBM design and fabrication overseas	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 June 2008.

2. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

2.2 Two designated monitoring stations, AQ1 and AQ2 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

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	1

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 2.2.1 of the Approved 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. 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.

2.22 Baseline 24-hour TSP monitoring was conducted at Outside the Site Office at Western Portal (AQ3) in between 13 June to 26 June 2008.

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 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-Jun-08	231.4	345	500
	4-Jun-08	146.8		
	5-Jun-08	181.3		
	10-Jun-08	17.8		
	11-Jun-08	45.1		
	13-Jun-08	122.6		
	16-Jun-08	136.8		
	17-Jun-08	119.7		
	20-Jun-08	41.1		
	23-Jun-08	21.9		
	26-Jun-08	31.3		
	27-Jun-08	74.7		

24-hr TSP (AQ1)	3-Jun-08	51.6	201	260
	7-Jun-08	37.7		
	13-Jun-08	42.1		
	19-Jun-08	37.4		
	25-Jun-08	30.6		
Western Portal				
1-hr TSP (AQ2)	2-Jun-08	28.0	321	500
	4-Jun-08	48.0		
	5-Jun-08	37.4		
	10-Jun-08	39.5		
	11-Jun-08	44.5		
	13-Jun-08	36.9		
	16-Jun-08	26.5		
	17-Jun-08	51.2		
	20-Jun-08	26.9		
	23-Jun-08	44.2		
	26-Jun-08	28.0		
	27-Jun-08	48.0		

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	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	1
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

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 at the three designated locations was conducted as scheduled in the reporting month.

Eastern Portal (NC1 & NC2)

3.9 No Action/Limit Level exceedance was recorded.

Western Portal (NC3)

3.10 No Action/Limit Level exceedance was recorded.

3.11 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.

3.12 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/.

3.13 The major noise source identified at the designated noise monitoring stations was the traffic noise along the Tai Hang Road and the construction works.

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)
NC2 – The Legend	64.8 (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)
NC3 – Outside Aegean Terrace	57.7 (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)

(*) 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	4-Jun-08	69.8, Measured ≦ Baseline	When one documented compliant is received	70*dB(A)
	10-Jun-08	69.1, Measured ≦ Baseline		
	16-Jun-08	67.2, Measured ≦ Baseline		
	26-Jun-08	66.8, Measured ≦ Baseline		
NC2	4-Jun-08	73.2		75dB(A)
	10-Jun-08	71.4		
	16-Jun-08	64.1, Measured ≦ Baseline		
	26-Jun-08	64.2		
Western Portal				
NC3	4-Jun-08	41.4	When one documented compliant is received	75dB(A)
	10-Jun-08	56.2, Measured ≦ Baseline		
	16-Jun-08	56.2, Measured ≦ Baseline		
	26-Jun-08	55.2, 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 Water quality monitoring was conducted as scheduled in the reporting month except the monitoring at mid-flood tide on 7 June 2008 that was cancelled due to Black Rainstorm Warnings. In addition, monitoring on 25 and 27 June 2008 has been changed to 26 and 28 June 2008 due to Tropical Cyclone Warning Signals No. 8. The monitoring data and graphical presentations of the monitoring results are shown in **Appendix H**. Details of the Exceedance Report are shown in **Appendix I**.

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 A total of 1 Action level and 16 Limit Level exceedances of SS were recorded in the reporting month. The exceedances are considered due to the natural fluctuations but not due to the Project. The rationales are detailed below:-

- The control station value *(Note1) already exceeded either the baseline action or limit Levels.
- Based on the field records, no non-compliance or mal-practice (such as plume) of marine construction activities was observed.
- No pollution discharge from construction activity was observed.
- Silt curtain deployed during the course of marine works.
- No construction activity was observed.

Note 1 – CE: Control Station (Ebb)
CF: Control Station (Flood)

4.14 As shown in the Graphical presentation, there is no significant difference in water quality during the reporting month. Those fluctuations are considered due to the natural variation.

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
23 January 2008	9.20
23 February 2008	9.55
15 March 2008	9.30
4 April 2008	9.40
3 May 2008	8.55
27 June 2008	7.20

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 4th June, 13th June, 20th June and 27th June 2008. IEC site inspections were conducted on 27th June 2008. 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 1 nos. of dump trucks of waste were delivered to SENT and 80 nos. of C&D waste was delivered to Public Fill Reception Facilities. Both the trip ticket system and chit accounting system for disposal of waste were operating smoothly to date. One marginally overloading case was recorded during this reporting period, DNJV will closely monitor the disposal procedures to prevent the reoccurrence. 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/XP0175	23/06/08	30/06/13	Industrial discharge (Area of Mount Butler Office)	Valid
EP860/W10/XP0177	23/06/08	30/06/13	Industrial discharge (Eastern Portal Site)	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-RS0114-08	08/03/08	06/09/08	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-RS0363-08	10/06/08	23/08/08	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Cyberport Road near Cyberport Sewage Treatment Plant, Cyberport, Hong Kong.	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 period 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	04/06/2008	*Marine Works* Excess material was observed from the decks at Western Portal. The Contractor was reminded to clear them to prevent it from contaminating the sea.	*Follow-up action was needed for the item.
	13/06/2008	Standing water was observed in the drip tray at Eastern Portal. The Contractor was reminded to dry it out and provide suitable storage area for the chemical waste.	*Follow-up action was needed for the item.
	13/06/2008	*Marine Works* Excess material was observed from the decks at Western Portal. The Contractor was reminded to clear them more frequently.	Rectification/improvement was observed during the follow-up audit session.
	20/06/2008	Silty water was observed running to the U-Channel at Eastern Portal. The Contractor was reminded to provide the mitigation measures to prevent any silty water from discharging to the drainage system.	Rectification/improvement was observed during the follow-up audit session.
	20/06/2008	Standing water was observed in the tank. The Contractor was reminded to dry it out to prevent mosquito breed.	*Follow-up action was needed for the item.
	27/06/2008	Standing water was observed in the tank, drip tray and the valley at Eastern Portal. The Contractor was reminded to dry it out and pave the valley to prevent mosquito breed.	*Follow-up action was needed for the item.
	27/06/2008	Worn sand bags were observed at Eastern Portal. The Contractor was reminded to replace them.	Rectification/improvement was observed during the follow-up audit session.
Waste / Chemical Management	04/06/2008	Oil leakage was observed at Eastern Portal. The Contractor was reminded to clear them as soon as possible and clear the standing water in drip tray regularly to prevent overflow.	*Follow-up action was needed for the item.
	13/06/2008	Standing water was observed in the drip tray at Eastern Portal. The Contractor was reminded to dry it out and provide suitable storage area for the chemical waste.	*Follow-up action was needed for the item.
	20/06/2008	Chemical waste was observed without suitable storage area at Eastern Portal. The Contractor was reminded to provide the storage area which should be enclosed on at least three sides by a wall and covering etc.	This item was not rectified during the follow-up audit session. Follow-up action was needed for the outstanding item.
	27/06/2008	Chemical waste was observed covered with tarpaulin but without the storage area that is enclosed on at least three sides by a wall etc at Eastern Portal. The Contractor was reminded to provide it as soon as possible.	This item was not rectified during the follow-up audit session. Follow-up action was needed for the outstanding item.
	27/06/2008	Oil spillage was observed at the sedimentation tank at Western Portal. The Contractor was reminded to clear them and disposed through the licensed chemical waste collector.	Rectification/improvement was observed during the follow-up audit session.
Ecology	04/06/2008	Worn sand bag was observed at the access	Rectification/improvement

Parameters	Date	Observations and Recommendations	Follow-up
		road at Eastern Portal. The Contractor was reminded to replace it to prevent any silt from getting to the existing stream.	was observed during the follow-up audit session.
	04/06/2008	Silt was observed at the access road at Eastern Portal. The Contractor was reminded to clear them regularly to prevent from discharging into existing stream.	Rectification/improvement was observed during the follow-up audit session.

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 27th June 2008, the observations were recorded and they are presented as follows:

5.10 Rectification/improvement was observed for the observations on 29th May 2008 by IEC during the follow-up audit session.

27th June 2008

Eastern Portal

- Surface channel was silty. More frequent cleaning up of surface channels is required.
- Stagnant water was observed on site. Skip for tool and material storage was full of water. Water accumulation in drip tray of a generator on site was observed.
- The sludge tank of wastewater treatment plant was full already. Prompt removal is required.

Western Portal

- Wastewater in sedimentation tanks was muddy. Oily surface was observed in the last sedimentation tank.

5.11 The Contractor agreed to clear the stagnant water and silt on site frequently and ensure the wastewater treatment plants including sedimentation tanks can function properly.

Non-compliance Recorded during Site Inspections

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

Summary of Mitigation Measures Implemented

5.13 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**.

5.14 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.

5.15 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.

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

Implementation Status of Event Action Plans

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

Eastern Portal

1-hr TSP Monitoring

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

24-hr TSP Monitoring

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

Construction Noise

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

Western Portal

1-hr TSP Monitoring

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

24-hr TSP Monitoring

2.27 Baseline 24-hour TSP monitoring was conducted at Outside the Site Office at Western Portal (AQ3) in between 13 June to 26 June 2008.

Construction Noise

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

Water Quality

5.23 A total of 1 Action level and 16 Limit Level exceedances of SS were recorded in the reporting month. The exceedances are considered due to the natural fluctuations but not due to the Project. No further action was required to carry out.

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

5.24 No environmental complaint was received in the reporting month.

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

5.26 There were a total of 2 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

- 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;
- 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;
- 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. July 2008 to August 2008 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
- Site Investigation at 19 nos. Intake sites - Excavation main tunnel at Eastern Portal - Soil nail works - Pipe Piling works and installation of temporary facilities	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
- Boulder stabilization and soil slope - Marine works and Erection of SOR's Site Offices.	Marine Water Quality and 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; k) Use of acoustic barriers if necessary; and l) Installation and maintenance of silt curtain.

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

Construction Noise Monitoring

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

Water Quality

7.5 Water quality monitoring was conducted as scheduled in the reporting month except the monitoring at mid-flood tide on 7 June 2008 that was cancelled due to Black Rainstorm Warnings. In addition, monitoring on 25 and 27 June 2008 has been changed to 26 and 28 June 2008 due to Tropical Cyclone Warning Signals No. 8. A total of 1 Action level and 16 Limit Level exceedances of SS were recorded in the reporting month. The exceedances are considered due to the natural fluctuations but not due to the Project.

Complaint and Prosecution

7.6 No environmental complaints and 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

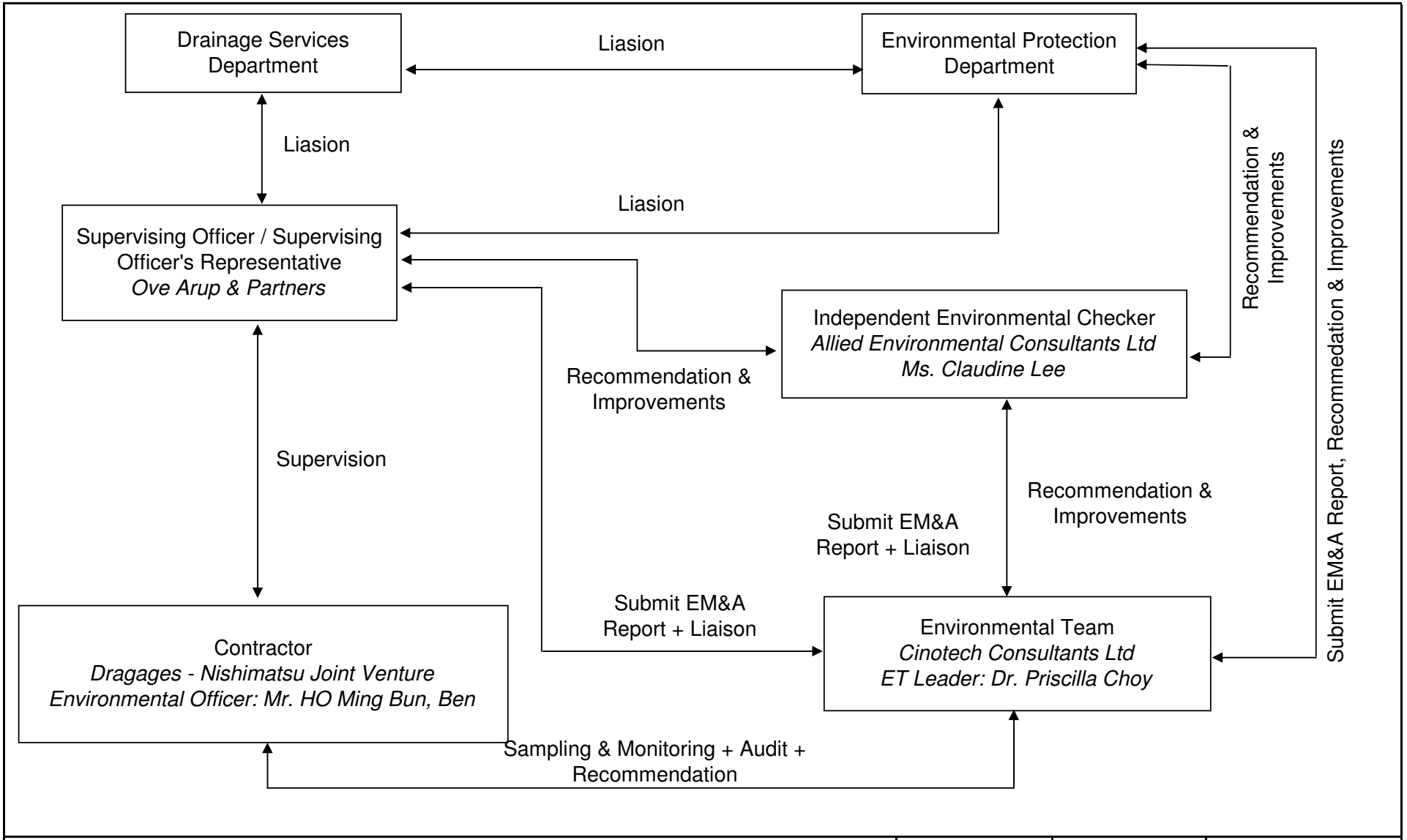
- To prevent any surface runoff discharge into any stream course.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review 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	Scale	Proposal No.	
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	N.T.S	MA8001	CINOTECH
Site Layout Plan	Date: Apr-08	Figure: 1.1	



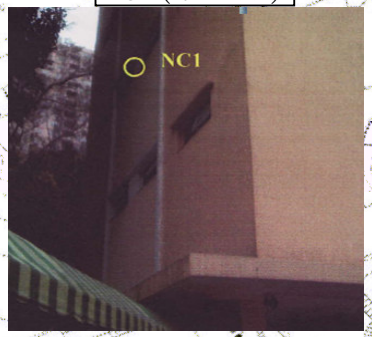
Title		Scale	Proposa
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Organization Chart		N.T.S	No. MA8001
		Date Apr-08	Figure 2.1

CINOTECH

AQ1 (Canopy)

NC1 (2/F floor)

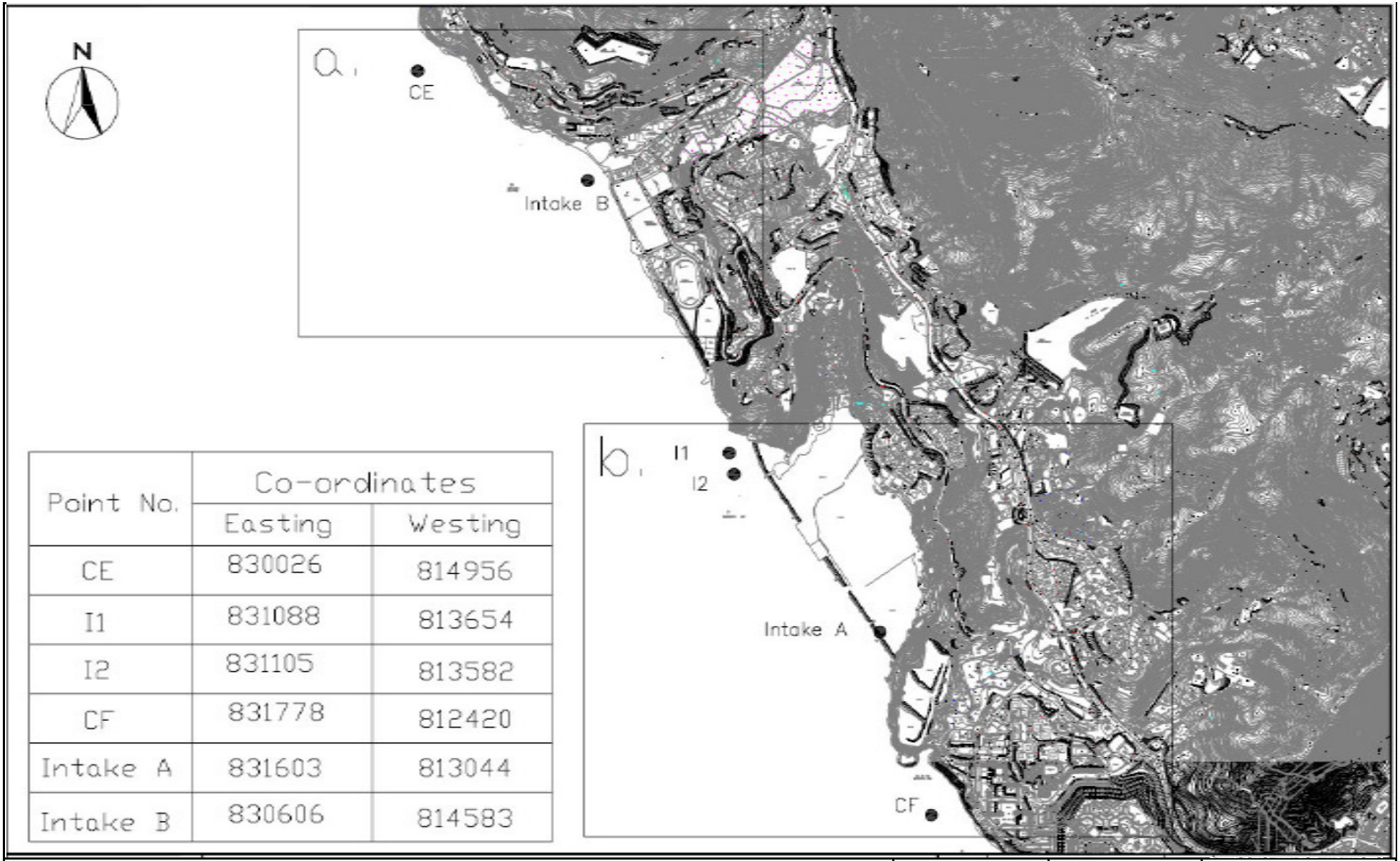
Works Area



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: Jun-08	Propos No. MA8001 Figure 3.1a

CINOTECH

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

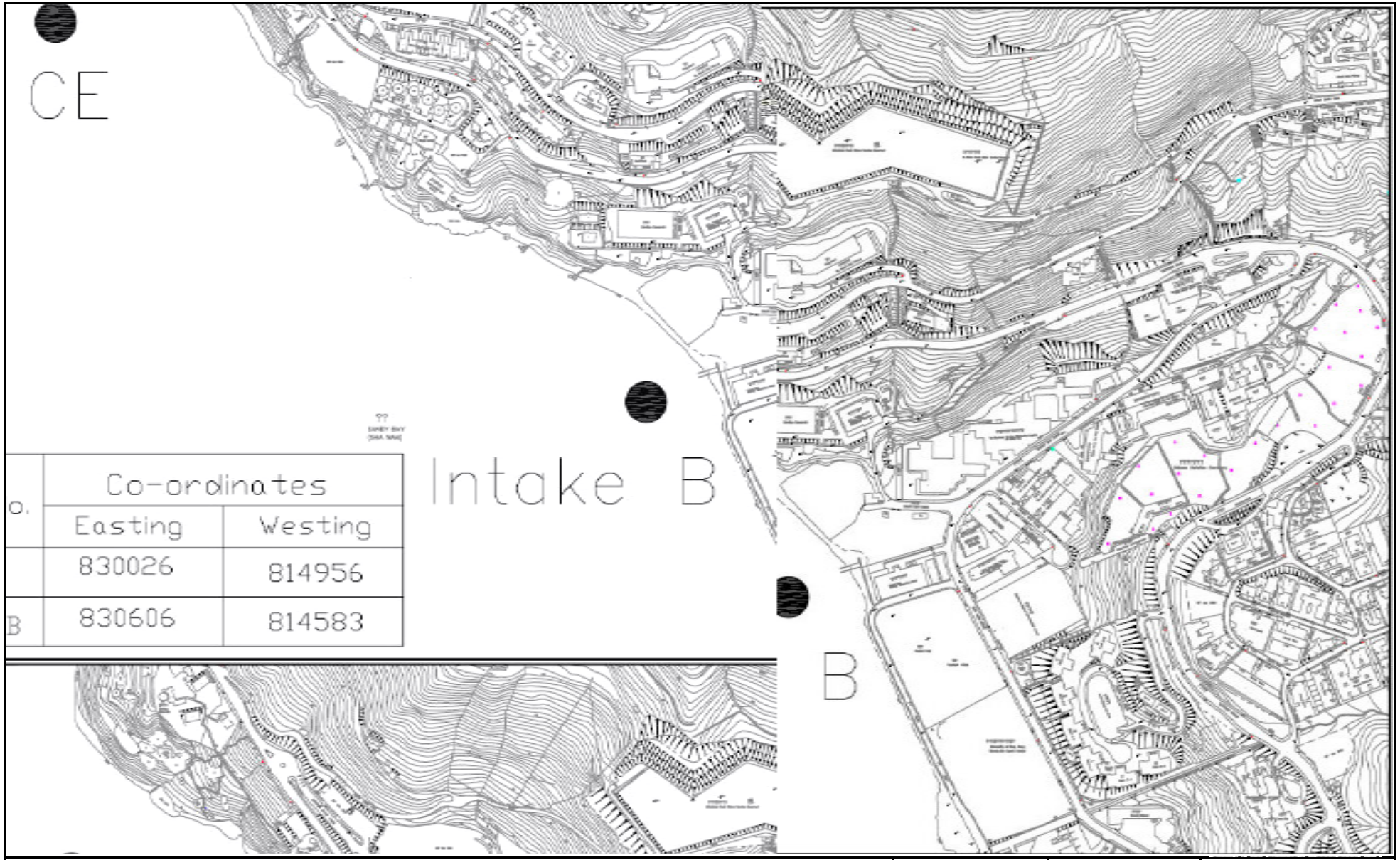
Title

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

Locations of Water Quality Monitoring Stations

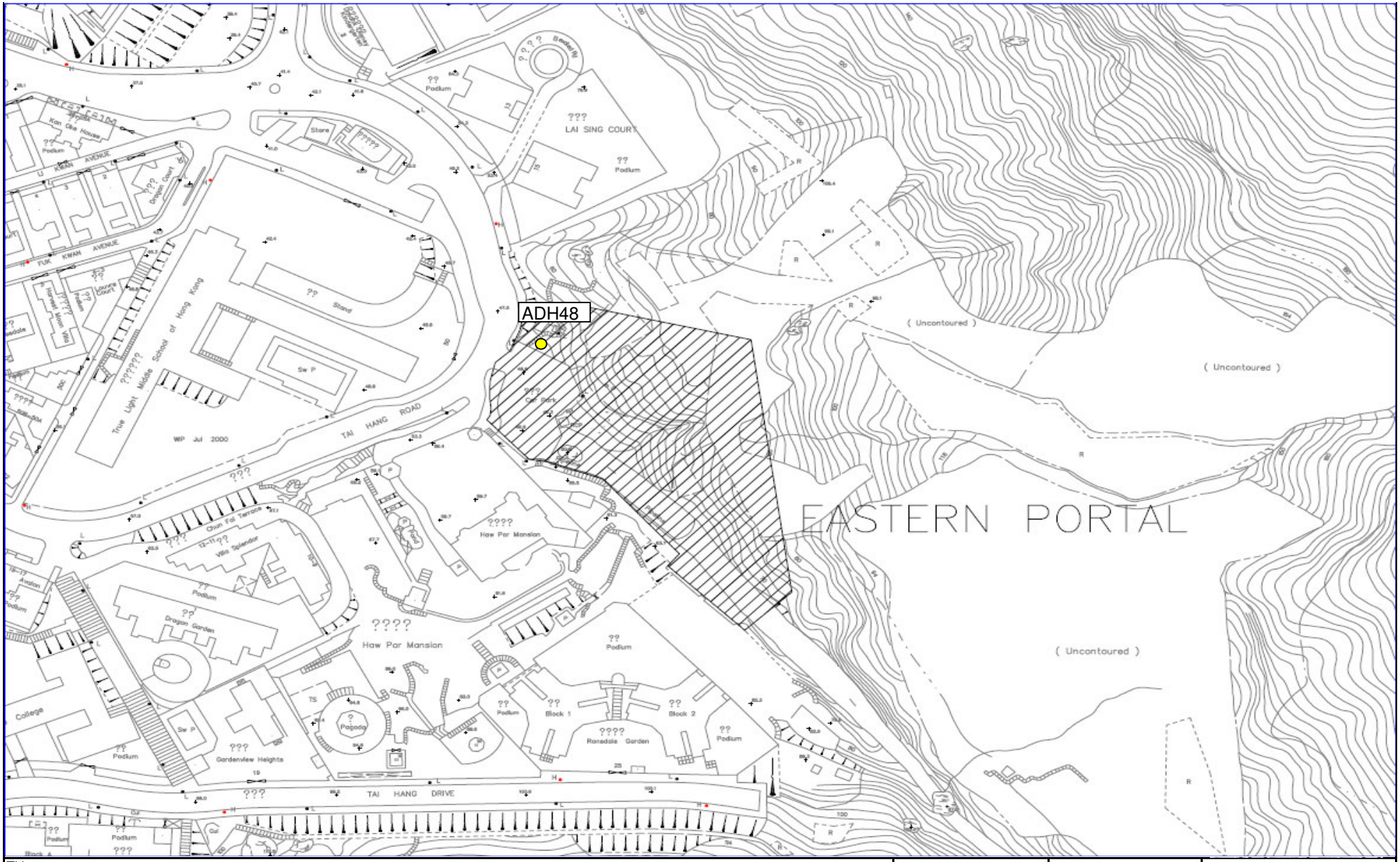
Scale	N.T.S	Propos No.	MA8001
Date	Jun-08	Figure	4.1

CINOTECH



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 Date: Jun-08	Propos No. MA8001 Figure 4.1a

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	Propos No. MA8001	CINOTECH
	Date Jun-08	Figure 4.2	

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, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AQ1	345	500
AQ2	321	

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

Location	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AQ1	201	260

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. MA8001/44/0002

Station	AQ1 - Canopy	Operator:	WK
Date:	17-Apr-08	Next Due Date:	16-Jun-08
Equipment No.:	A-01-44	Serial No.	1316

Ambient Condition			
Temperature, Ta (K)	298.6	Pressure, Pa (mmHg)	762.2

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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.1	3.48	59.84	8.4	2.90
2	9.5	3.08	52.94	6.2	2.49
3	7.4	2.72	46.64	5.0	2.24
4	4.5	2.12	36.22	3.2	1.79
5	2.6	1.61	27.37	2.0	1.41

By Linear Regression of Y on X

Slope , mw = **0.0448** **Intercept, bw :** **0.1696**

Correlation coefficient* = **0.9979**

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.38**

Remarks: _____

Conducted by: Wk Tang Signature: Kwai Date: 17 Apr 2008

Checked by: [illegible] Signature: [illegible] Date: 17 April 2008

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8001/44/0003

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

Date: 16-Jun-08 Next Due Date: 15-Aug-08

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

Ambient Condition			
Temperature, Ta (K)	299.3	Pressure, Pa (mmHg)	755.5

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	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.2	3.47	59.75	8.4	2.88
2	9.8	3.11	53.48	6.8	2.59
3	7.3	2.69	46.06	5.1	2.25
4	4.5	2.11	36.02	3.1	1.75
5	2.7	1.63	27.74	1.7	1.30

By Linear Regression of Y on X

Slope , mw = 0.0494 **Intercept, bw =** -0.0478

Correlation coefficient* = 0.9994

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.35**

Remarks:

Conducted by: WK. Tang Signature: Date: 16/6/08

Checked by: Signature: Date: 16 June 2008

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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - 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

) = -0.02496
(r) = 0.99999
T[H2O(Ta/Pa)]
intercept (b) = -0.03970
coefficient (r) = 0.99999
y axis = SQRT[H2O(Pa/760)(298/Ta)]
intercept (b
coefficient
y axis = SQR
](298/Ta)
CALCULATIONS
Vstd = Diff. Vol[(Pa-Diff. Hg)/760
Qstd = Vstd/Time
Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

WELLAB 匯力
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

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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/080424/1B
Date of Issue:	2008-04-26
Date Received:	2008-04-24
Date Tested:	2008-04-24
Date Completed:	2008-04-25
Next Due Date:	2008-06-25

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	: 22 degree Celsius
Relative Humidity	: 61%

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)	0.0039

****

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Patrick Tse

PATRICK TSE
Laboratory Manager

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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

ATTN: **Mr. Henry Leung**

Test Report No.:	C/080624/1A
Date of Issue:	2008-06-26
Date Received:	2008-06-24
Date Tested:	2008-06-24
Date Completed:	2008-06-25
Next Due Date:	2008-08-25
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	: 22 degree Celsius
Relative Humidity	: 61%

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)	0.0036

****

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PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

ATTN: **Mr. Henry Leung**

Test Report No.:	C/N/70903-2
Date of Issue:	2007-09-03
Date Received:	2007-09-01
Date Tested:	2007-09-03
Date Completed:	2007-09-03
Next Due Date:	2008-09-02
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	: 22 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse

PATRICK TSE
Senior Chemist

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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/N/71116/2
Date of Issue:	2007-11-16
Date Received:	2007-11-15
Date Tested:	2007-11-15
Date Completed:	2007-11-16
Next Due Date:	2008-11-15
Page:	1 of 1

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

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PATRICK TSE
Senior Chemist

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
1602-1610 Delta House,
3 On Yiu Street,
Shatin, N.T.

Test Report No.:	C/N/70903-3
Date of Issue:	2007-09-03
Date Received:	2007-09-01
Date Tested:	2007-09-03
Date Completed:	2007-09-03
Next Due Date:	2008-09-02

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	: 22 degree Celsius
Relative Humidity	: 62%

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

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PATRICK TSE
Senior Chemist

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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/80505-1
Date of Issue:	2008-05-06
Date Received:	2008-05-05
Date Tested:	2008-05-05
Date Completed:	2008-05-06
Next Due Date:	2008-08-05

ATTN: **Mr. Henry Leung**

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	: 21 degree Celsius
Relative Humidity	: 62%

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

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Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

Test Report No.:	C/W/80505-1
Date of Issue:	2008-05-06
Date Received:	2008-05-05
Date Tested:	2008-05-05
Date Completed:	2008-05-06
Next Due Date:	2008-08-05
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

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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/80505-2
Date of Issue:	2008-05-06
Date Received:	2008-05-05
Date Tested:	2008-05-05
Date Completed:	2008-05-06
Next Due Date:	2008-08-05

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	: 21 degree Celsius
Relative Humidity	: 62%

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

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PATRICK TSE
Laboratory Manager

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TEST REPORT

Test Report No.:	C/W/80505-2
Date of Issue:	2008-05-06
Date Received:	2008-05-05
Date Tested:	2008-05-05
Date Completed:	2008-05-06
Next Due Date:	2008-08-05
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**********

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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.:	06715
Date of Issue:	2008/06/04
Date Received:	2008/06/03
Date Tested:	2008/06/03
Date Completed:	2008/06/04
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/03
Number of Sample: 68
Custody No.: MA8001/80603

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake B bf	19	17	14	104

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

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	06730
Date of Issue:	2008/06/06
Date Received:	2008/06/05
Date Tested:	2008/06/05
Date Completed:	2008/06/06
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/05
Number of Sample: 68
Custody No.: MA8001/80605

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
Intake B bf	20	21	4	96

**********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.:	06752
Date of Issue:	2008/06/11
Date Received:	2008/06/10
Date Tested:	2008/06/10
Date Completed:	2008/06/11
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/07
Number of Sample: 34
Custody No.: MA8001/80607

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	9	9	2	96

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

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Patrick Tse

PATRICK TSE
Laboratory Manager

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18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
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TEST REPORT

QC REPORT

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

Laboratory No.:	06751
Date of Issue:	2008/06/11
Date Received:	2008/06/10
Date Tested:	2008/06/10
Date Completed:	2008/06/11
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/10
Number of Sample: 68
Custody No.: MA8001/80610

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	8	9	7	94

**********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.:	06765
Date of Issue:	2008/06/13
Date Received:	2008/06/12
Date Tested:	2008/06/12
Date Completed:	2008/06/13
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/12
Number of Sample: 68
Custody No.: MA8001/80612

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	8	10	13	92

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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.:	06784
Date of Issue:	2008/06/17
Date Received:	2008/06/16
Date Tested:	2008/06/16
Date Completed:	2008/06/17
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/14
Number of Sample: 68
Custody No.: MA8001/80614

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2bf	16	19	13	94

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TEST REPORT

QC REPORT

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

Laboratory No.:	06785
Date of Issue:	2008/06/17
Date Received:	2008/06/16
Date Tested:	2008/06/16
Date Completed:	2008/06/17
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/16
Number of Sample: 68
Custody No.: MA8001/80616

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	13	13	2	98

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TEST REPORT

QC REPORT

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

Laboratory No.:	06820
Date of Issue:	2008/06/19
Date Received:	2008/06/18
Date Tested:	2008/06/18
Date Completed:	2008/06/19
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/18
Number of Sample: 68
Custody No.: MA8001/80618

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	5	6	13	96

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Patrick Tse

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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.:	06830
Date of Issue:	2008/06/23
Date Received:	2008/06/20
Date Tested:	2008/06/20
Date Completed:	2008/06/23
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/20
Number of Sample: 68
Custody No.: MA8001/80620

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2me	8	7	6	92

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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.:	06837
Date of Issue:	2008/06/24
Date Received:	2008/06/23
Date Tested:	2008/06/23
Date Completed:	2008/06/24
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/23
Number of Sample: 68
Custody No.: MA8001/80623

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2mf	16	17	6	94

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TEST REPORT

QC REPORT

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

Laboratory No.:	06858
Date of Issue:	2008/06/27
Date Received:	2008/06/26
Date Tested:	2008/06/26
Date Completed:	2008/06/27
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/26
Number of Sample: 58
Custody No.: MA8001/80626

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2mf	9	9	9	96

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TEST REPORT

QC REPORT

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

Laboratory No.:	06885
Date of Issue:	2008/07/02
Date Received:	2008/06/30
Date Tested:	2008/06/30
Date Completed:	2008/07/02
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/28
Number of Sample: 58
Custody No.: MA8001/80628

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
I2mf	12	12	3	98

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E-mail: wellab@wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	06886
Date of Issue:	2008/07/02
Date Received:	2008/06/30
Date Tested:	2008/06/30
Date Completed:	2008/07/02
Page:	1 of 1

ATTN: Mr. Henry Leung

Sampling Site: Design and Construction of Hong Kong West Drainage Tunnel
Project No.: MA8001
Sampling Date: 2008/06/30
Number of Sample: 58
Custody No.: MA8001/80630

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
CEse	38	37	3	96

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Laboratory Manager

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APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Impact Air and Noise Monitoring Schedule for June 2008 (for Eastern Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun
	1 hr TSP	24 hrs TSP	1 hr TSP Noise	1 hr TSP		24 hrs TSP
8-Jun	**9-Jun**	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun
		1 hr TSP Noise	1 hr TSP		1 hr TSP 24 hrs TSP	
15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun
	1 hr TSP Noise	1 hr TSP		24 hrs TSP	1 hr TSP	
22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun
	1 hr TSP		24 hrs TSP	1 hr TSP Noise	1 hr TSP	
29-Jun	30-Jun	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul

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

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Impact Air and Noise Monitoring Schedule for June 2008 (for Western Portal)

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

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

Air Quality Monitoring Station

AQ2 - Outside Aegean Terrace

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 June 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun
		Mid-Ebb 11:43 Mid-Flood 18:00		Mid-Flood 08:00 Mid-Ebb 13:30		(Cancelled) ~~Mid-Flood 08:00~~ Mid-Ebb 15:18
8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun
		Mid-Flood 10:46 Mid-Ebb 17:45		Mid-Ebb 08:12 Mid-Flood 13:58		Mid-Ebb 10:00 Mid-Flood 16:34
15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun
	Mid-Ebb 11:11 Mid-Flood 18:00		Mid-Ebb 12:14 Mid-Flood 18:00		Mid-Flood 08:00 Mid-Ebb 13:23	
22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun
	Mid-Flood 08:03 Mid-Ebb 15:15			Mid-Flood 10:30 Mid-Ebb 17:30		Mid-Flood 08:00 Mid-Ebb 14:00
29-Jun	30-Jun					
	Mid-Ebb 09:49 Mid-Flood 17:02					

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 July 2008 (Eastern Portal)

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

Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel
Tentative Impact Air and Noise Monitoring Schedule for July 2008 (Western Portal)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29-Jun	30-Jun	**1-Jul**	2-Jul	3-Jul	4-Jul	5-Jul
			1 hr TSP 24 hrs TSP	1 hr TSP Noise	1 hr TSP	
6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul
		1 hr TSP 24 hrs TSP	1 hr TSP Noise		1 hr TSP	
13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul
	24 hrs TSP	1 hr TSP Noise	1 hr TSP	1 hr TSP		24 hrs TSP
20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul
	1 hr TSP Noise		1 hr TSP	1 hr TSP	24 hrs TSP	
27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug
	1 hr TSP Noise	1 hr TSP		24 hrs TSP	1 hr 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 July 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29-Jun	30-Jun	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul
	Mid-Ebb 09:49 Mid-Flood 17:02		Mid-Ebb 11:28 Mid-Flood 18:00		Mid-Flood 08:00 Mid-Ebb 13:20	
6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul
	Mid-Flood 08:38 Mid-Ebb 15:33		Mid-Flood 10:20 Mid-Ebb 16:50		Mid-Ebb 08:00 Mid-Flood 14:23	
13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul
	Mid-Ebb 10:08 Mid-Flood 18:00		Mid-Ebb 11:23 Mid-Flood 18:00		Mid-Ebb 12:30 Mid-Flood 18:00	
20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul
	Mid-Flood 08:00 Mid-Ebb 14:17		Mid-Flood 08:54 Mid-Ebb 15:23		Mid-Flood 10:43 Mid-Ebb 16:11	
27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug
	Mid-Ebb 08:39 Mid-Flood 16:21		Mid-Ebb 10:34 Mid-Flood 18:00		Mid-Ebb 12:17 Mid-Flood 18:00	

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

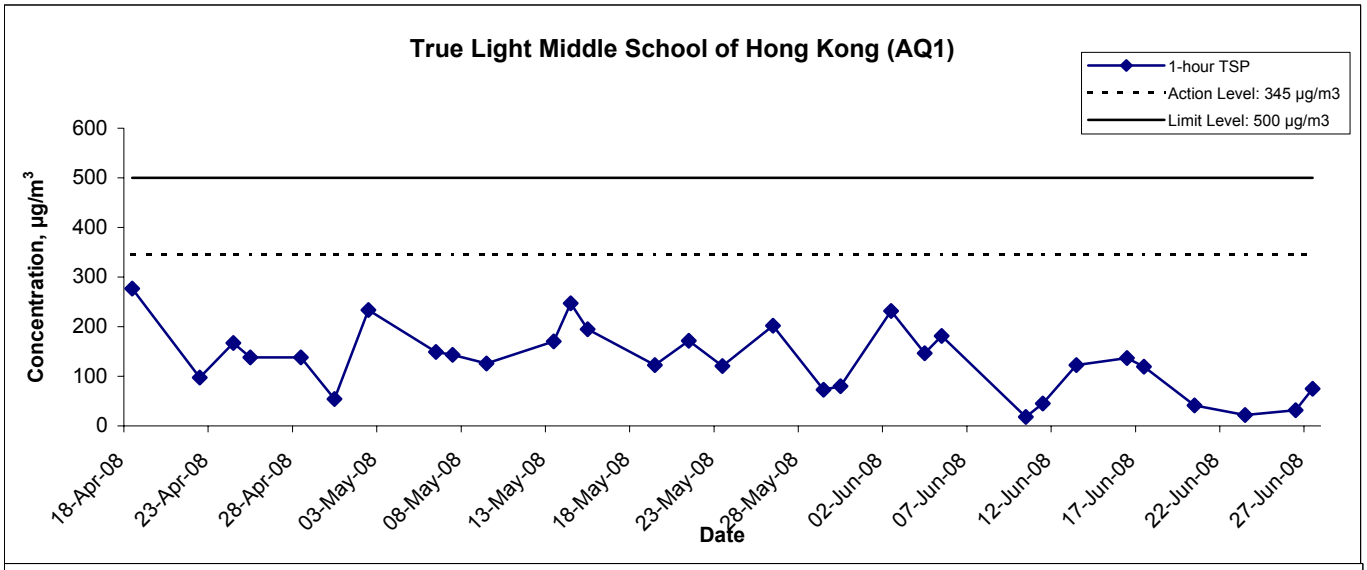
Station AQ1 (True Light Middle School of Hong Kong)

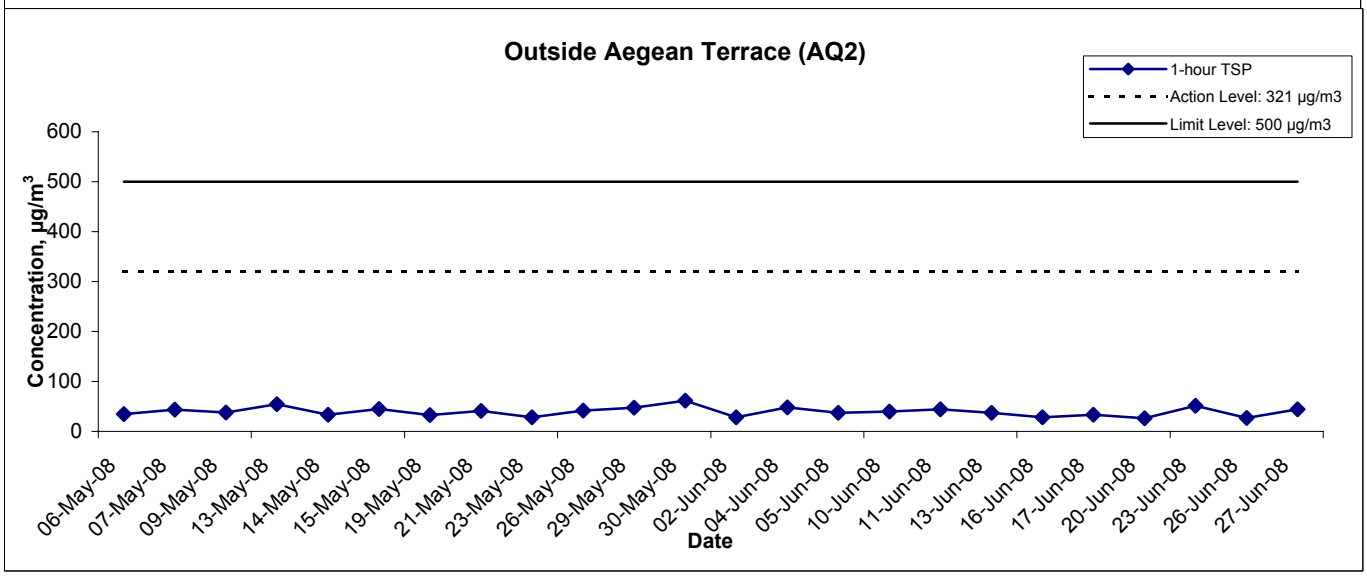
Date	Sampling Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure (Pa)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
2-Jun-08	09:00	Cloudy	297.4	757.8	2.8623	2.8792	0.0169	1440.9	1441.9	1.0	1.22	1.22	1.22	73.0	231.4
4-Jun-08	15:15	Cloudy	298.6	758.2	2.7988	2.8095	0.0107	1465.9	1466.9	1.0	1.22	1.21	1.22	72.9	146.8
5-Jun-08	09:00	Cloudy	299.5	758.8	2.8434	2.8566	0.0132	1467.9	1468.9	1.0	1.21	1.21	1.21	72.8	181.3
10-Jun-08	14:05	Cloudy	297.1	759.3	2.8317	2.8330	0.0013	1492.9	1493.9	1.0	1.22	1.22	1.22	73.2	17.8
11-Jun-08	09:00	Sunny	296.9	759.5	2.8757	2.8790	0.0033	1493.9	1494.9	1.0	1.22	1.22	1.22	73.2	45.1
13-Jun-08	09:00	Cloudy	300.1	755.8	2.8524	2.8613	0.0089	1494.9	1495.9	1.0	1.21	1.21	1.21	72.6	122.6
16-Jun-08	14:20	Cloudy	301.2	754.8	2.8454	2.8554	0.0100	1519.9	1520.9	1.0	1.22	1.22	1.22	73.1	136.8
17-Jun-08	09:00	Cloudy	298.2	756.2	2.8222	2.8310	0.0088	1520.9	1521.9	1.0	1.23	1.23	1.23	73.5	119.7
20-Jun-08	16:15	Cloudy	303.7	758.2	2.7958	2.7988	0.0030	1545.9	1546.9	1.0	1.22	1.22	1.22	73.0	41.1
23-Jun-08	09:00	Sunny	302.6	754.3	2.8416	2.8432	0.0016	1546.9	1547.9	1.0	1.22	1.22	1.22	72.9	21.9
26-Jun-08	09:00	Cloudy	298.7	755.8	2.8597	2.8620	0.0023	1571.9	1572.9	1.0	1.22	1.22	1.22	73.5	31.3
27-Jun-08	09:00	Cloudy	298.1	757.3	2.8161	2.8216	0.0055	1572.9	1573.9	1.0	1.23	1.23	1.23	73.6	74.7
														Min	17.8
														Max	231.4
														Average	94.5

Appendix E - 1-hour TSP Monitoring Results

Station AQ2 (Outside Aegean Terrace)			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
2-Jun-08	13:35	Cloudy	28.0
4-Jun-08	13:40	Cloudy	48.0
5-Jun-08	13:55	Cloudy	37.4
10-Jun-08	15:35	Cloudy	39.5
11-Jun-08	15:35	Sunny	44.5
13-Jun-08	13:00	Cloudy	36.9
16-Jun-08	13:00	Cloudy	28.1
17-Jun-08	9:05	Cloudy	33.6
20-Jun-08	14:15	Sunny	26.5
23-Jun-08	14:25	Sunny	51.2
26-Jun-08	15:30	Cloudy	26.9
27-Jun-08	15:45	Cloudy	44.2
		Average	39.6
		Maximum	61.3
		Minimum	26.5

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: Jun 08	Project No.: MA8001 Appendix: E	CINOTECH

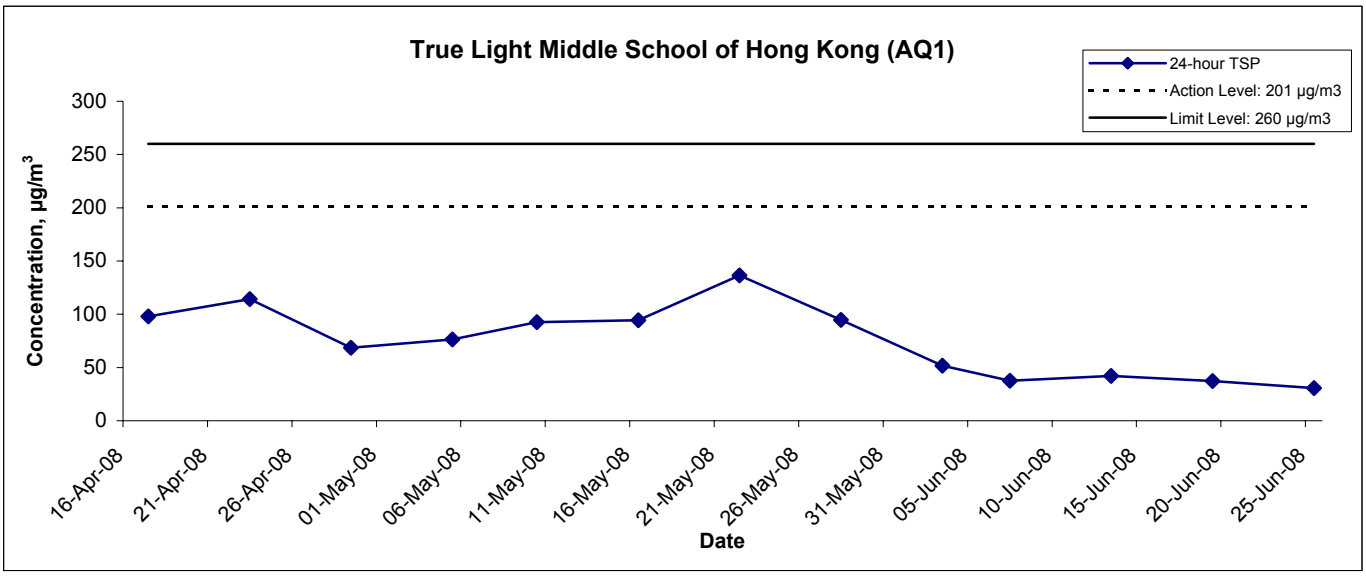
APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

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. (μg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
3-Jun-08	Cloudy	299.2	759.2	2.8308	2.9211	0.0903	1441.9	1465.9	24.0	1.21	1.21	1.21	1748.9	51.6
7-Jun-08	Rainy	296.8	759.6	2.8401	2.9063	0.0662	1468.9	1492.9	24.0	1.22	1.22	1.22	1757.3	37.7
13-Jun-08	Cloudy	300.7	754.3	2.8756	2.9487	0.0731	1495.9	1519.9	24.0	1.21	1.21	1.21	1738.1	42.1
19-Jun-08	Cloudy	299.6	760.3	2.8816	2.9476	0.0660	1521.9	1545.9	24.0	1.23	1.23	1.23	1765.6	37.4
25-Jun-08	Cloudy	298.6	750.2	2.8387	2.8925	0.0538	1547.9	1571.9	24.0	1.22	1.22	1.22	1756.9	30.6
													Min	30.6
													Max	51.6
													Average	39.9

24-hr TSP Concentration Levels



Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

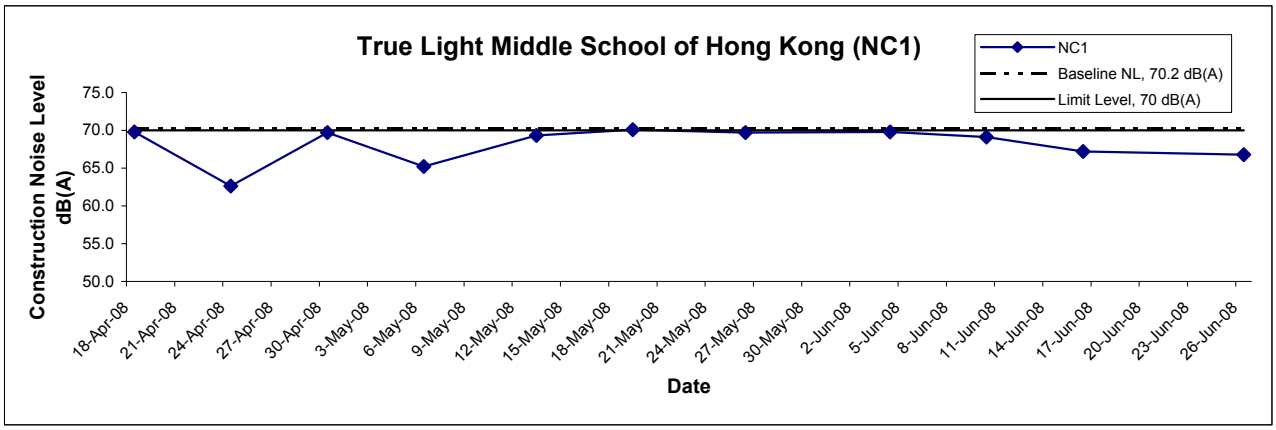
Appendix G - Noise Monitoring Results

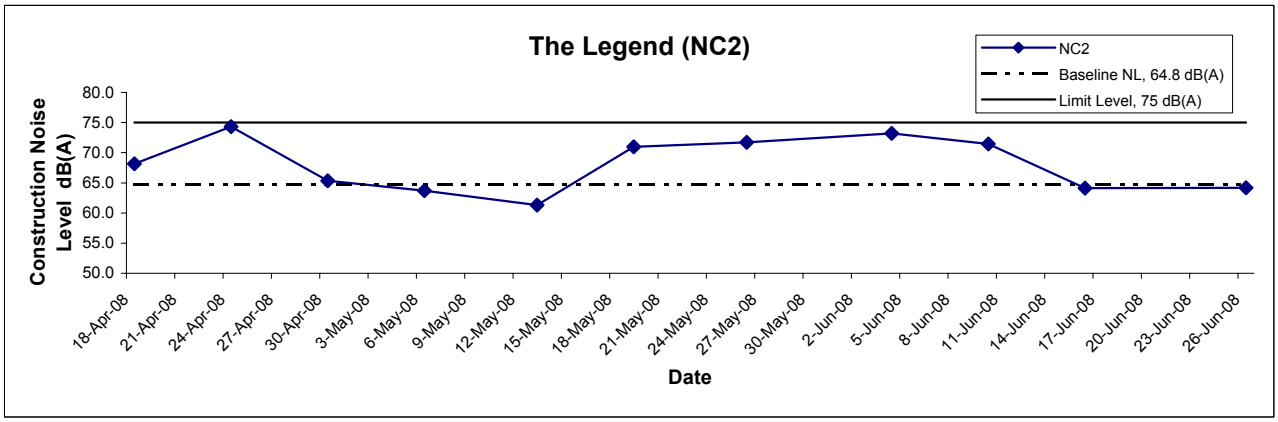
Location NC1 - True Light Middle School of Hong Kong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
4-Jun-08	15:30	Cloudy	69.8	72.5	66.0	70.2	69.8, Measured ≤ Baseline
10-Jun-08	14:10	Cloudy	69.1	72.5	64.0		69.1, Measured ≤ Baseline
16-Jun-08	14:25	Cloudy	67.2	70.5	61.0		67.2, Measured ≤ Baseline
26-Jun-08	13:25	Cloudy	66.8	68.5	62.0		66.8, Measured ≤ Baseline

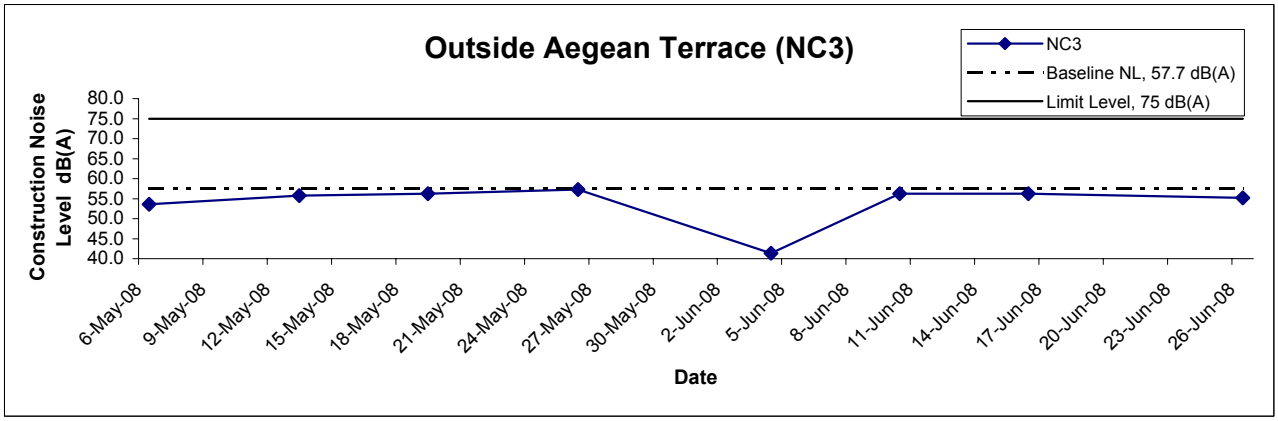
Location NC2 - The Legend							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
4-Jun-08	16:25	Cloudy	73.8	76.0	68.5	64.8	73.2
10-Jun-08	14:50	Cloudy	72.3	75.5	66.5		71.4
16-Jun-08	15:35	Cloudy	64.1	65.0	63.0		64.1, Measured ≤ Baseline
26-Jun-08	14:35	Cloudy	67.5	68.0	64.5		64.2

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}
4-Jun-08	13:40	Cloudy	57.8	59.5	51.5	57.7	41.4
10-Jun-08	15:45	Cloudy	56.2	58.0	50.5		56.2, Measured ≤ Baseline
16-Jun-08	13:05	Cloudy	56.2	58.5	50.5		56.2, Measured ≤ Baseline
26-Jun-08	15:30	Cloudy	55.2	56.5	53.5		55.2, Measured ≤ Baseline

Noise Levels







Title	Scale	Project
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Construction Noise Monitoring Results	N.T.S	No. MA8001
	Date: Jun 08	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*
3-Jun-08	Cloudy	Moderate	12:59	Surface	1	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	99.6 99.6	99.6	6.8 6.8	6.8	6.8	2.8 2.8	2.8	3.8	19.0 19.0	19.0	19.8
				Middle	5.5	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	98.4 98.1	98.3	6.7 6.7	6.7		4.4 4.4	4.4		24.0 24.0	24.0	
				Bottom	10	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	96.8 96.8	96.8	6.6 6.6	6.6	6.6	4.4 3.9	4.2		16.0 17.0	16.5	
5-Jun-08	Cloudy	Moderate	13:03	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	29.9 29.9	29.9	96.5 96.6	96.6	6.4 6.4	6.4	6.4	6.7 6.7	6.7	9.2	9.0 9.0	9.0	15.3
				Middle	6	26.2 26.2	26.2	7.3 7.3	7.3	30.2 30.3	30.3	96.8 96.8	96.8	6.4 6.4	6.4		8.0 8.0	8.0		16.0 16.0	16.0	
				Bottom	11	26.1 26.0	26.1	7.4 7.4	7.4	30.6 30.7	30.7	96.2 95.8	96.0	6.2 6.2	6.2	6.2	13.0 13.0	13.0		21.0 21.0	21.0	
7-Jun-08	Rainy	Rough	15:00	Surface	1	26.3 26.3	26.3	7.4 7.4	7.4	30.4 30.4	30.4	98.6 97.5	98.1	7.2 7.1	7.2	7.1	2.4 2.6	2.5	6.2	16.0 16.0	16.0	15.3
				Middle	5.5	26.1 26.1	26.1	7.4 7.4	7.4	30.6 30.6	30.6	94.8 93.2	94.0	7.0 6.9	7.0		7.3 7.9	7.6		14.0 14.0	14.0	
				Bottom	10	25.9 25.9	25.9	7.4 7.4	7.4	30.9 30.8	30.9	96.8 95.2	96.0	6.9 6.8	6.9	6.9	8.3 8.5	8.4		16.0 16.0	16.0	
10-Jun-08	Sunny	Calm	17:26	Surface	1	26.9 26.8	26.9	7.4 7.4	7.4	22.6 22.6	22.6	102.9 102.6	102.8	7.3 7.2	7.3	7.3	1.4 1.5	1.5	1.5	13.0 13.0	13.0	14.8
				Middle	5.5	26.8 26.8	26.8	7.4 7.4	7.4	22.6 22.6	22.6	102.4 102.2	102.3	7.2 7.2	7.2		1.5 1.5	1.5		16.0 16.0	16.0	
				Bottom	10	26.5 26.2	26.4	7.3 7.3	7.3	29.9 30.2	30.1	102.2 101.3	101.8	7.0 6.9	7.0	7.0	1.5 1.5	1.5		16.0 15.0	15.5	
12-Jun-08	Cloudy	Moderate	08:28	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	28.4 28.4	28.4	107.4 107.5	107.5	8.0 8.0	8.0	7.9	4.1 4.1	4.1	4.3	8.0 8.0	8.0	8.3
				Middle	5.5	26.7 26.7	26.7	7.6 7.6	7.6	28.6 28.3	28.5	106.8 105.9	106.4	7.8 7.8	7.8		4.5 4.5	4.5		7.0 7.0	7.0	
				Bottom	10	26.7 26.7	26.7	7.6 7.6	7.6	28.3 28.3	28.3	103.0 102.8	102.9	7.7 7.6	7.7	7.7	4.2 4.2	4.2		10.0 10.0	10.0	
14-Jun-08	Cloudy	Moderate	10:58	Surface	1	27.0 27.0	27.0	7.5 7.5	7.5	30.5 30.5	30.5	95.4 96.5	96.0	7.4 7.4	7.4	7.2	6.8 6.9	6.9	6.2	13.0 13.0	13.0	14.0
				Middle	5.5	26.8 26.8	26.8	7.5 7.5	7.5	30.4 30.4	30.4	90.4 90.4	90.4	6.9 6.9	6.9		5.7 5.5	5.6		11.0 11.0	11.0	
				Bottom	10	26.3 26.3	26.3	7.5 7.5	7.5	30.4 30.4	30.4	89.3 89.5	89.4	6.9 6.9	6.9	6.9	6.1 6.2	6.2		18.0 18.0	18.0	
16-Jun-08	Cloudy	Moderate	11:46	Surface	1	26.7 26.8	26.8	7.5 7.5	7.5	21.3 21.2	21.3	89.9 89.8	89.9	7.7 7.7	7.7	7.5	6.4 6.4	6.4	6.6	11.0 11.0	11.0	12.3
				Middle	6	26.2 26.2	26.2	7.5 7.5	7.5	25.6 25.5	25.6	85.7 83.5	84.6	7.3 7.1	7.2		6.7 6.6	6.7		12.0 12.0	12.0	
				Bottom	11	26.1 26.1	26.1	7.5 7.5	7.5	28.0 27.8	27.9	79.8 78.2	79.0	6.8 6.7	6.8	6.8	6.7 6.7	6.7		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 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*
18-Jun-08	Cloudy	Moderate	12:58	Surface	1	26.2 26.2	26.2	7.5 7.5	7.5	22.1 22.1	22.1	97.3 97.1	97.2	7.1 7.1	7.1	7.1	3.2 3.2	3.2	3.1	8.0 8.0	8.0	10.0
				Middle	6.5	26.4 26.4	26.4	7.5 7.5	7.5	22.3 22.3	22.3	95.5 95.7	95.6	7.0 7.0	7.0		2.5 2.5	2.5		10.0 10.0	10.0	
				Bottom	12	26.1 26.1	26.1	7.5 7.5	7.5	22.4 22.4	22.4	92.2 92.5	92.4	6.7 6.8	6.8	6.8	3.4 3.5	3.5		12.0 12.0	12.0	
20-Jun-08	Fine	Calm	13:47	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	30.4 30.4	30.4	86.5 86.6	86.6	6.7 6.7	6.7	6.7	2.8 2.8	2.8	3.3	9.0 9.0	9.0	10.2
				Middle	5.5	26.2 26.2	26.2	7.4 7.4	7.4	30.4 30.4	30.4	86.8 86.8	86.8	6.7 6.7	6.7		3.0 3.1	3.1		12.0 11.0	11.5	
				Bottom	10	26.2 26.2	26.2	7.4 7.4	7.4	30.4 30.4	30.4	86.2 85.8	86.0	6.7 6.7	6.7	6.7	3.9 3.9	3.9		10.0 10.0	10.0	
23-Jun-08	Fine	Calm	15:37	Surface	1	27.7 27.7	27.7	7.4 7.4	7.4	24.4 24.4	24.4	145.2 144.1	144.7	9.3 9.4	9.4	9.6	3.7 3.7	3.7	3.4	18.0 18.0	18.0	16.0
				Middle	5.5	27.1 27.1	27.1	7.5 7.5	7.5	25.4 25.4	25.4	147.9 147.2	147.6	9.8 9.7	9.8		3.4 3.4	3.4		17.0 17.0	17.0	
				Bottom	10	26.5 26.5	26.5	7.5 7.5	7.5	26.7 26.8	26.8	115.0 114.0	114.5	7.4 7.4	7.4	7.4	3.2 3.2	3.2		13.0 13.0	13.0	
26-Jun-08	Rainy	Moderate	17:16	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.4 22.4	22.4	93.3 93.3	93.3	6.9 6.9	6.9	6.8	1.7 1.6	1.7	1.8	6.0 6.0	6.0	8.8
				Middle	5.5	26.0 26.0	26.0	7.4 7.4	7.4	23.0 23.0	23.0	89.5 89.0	89.3	6.6 6.6	6.6		1.5 1.5	1.5		7.0 8.0	7.5	
				Bottom	10	25.9 25.9	25.9	7.4 7.4	7.4	23.4 23.4	23.4	85.7 85.6	85.7	6.4 6.3	6.4	6.4	2.1 2.1	2.1		13.0 13.0	13.0	
28-Jun-08	Rainy	Calm	08:51	Surface	1	27.4 27.5	27.5	7.6 7.6	7.6	19.7 19.7	19.7	105.3 105.0	105.2	7.5 7.4	7.5	7.0	3.3 3.3	3.3	3.6	7.0 7.0	7.0	8.8
				Middle	5.5	26.9 26.9	26.9	7.6 7.6	7.6	21.2 21.2	21.2	89.7 89.7	89.7	6.4 6.4	6.4		3.5 3.6	3.6		9.0 10.0	9.5	
				Bottom	10	25.6 25.6	25.6	7.6 7.6	7.6	28.3 28.3	28.3	75.3 75.3	75.3	6.1 6.1	6.1	6.1	3.8 3.9	3.9		10.0 10.0	10.0	
30-Jun-08	Rainy	Calm	10:15	Surface	1	25.5 25.5	25.5	7.5 7.5	7.5	22.4 22.4	22.4	94.3 94.3	94.3	7.1 7.1	7.1	6.9	3.2 3.2	3.2	3.3	38.0 38.0	38.0	27.8
				Middle	6	25.5 25.5	25.5	7.5 7.5	7.5	22.8 22.8	22.8	89.7 89.4	89.6	6.7 6.7	6.7		3.2 3.3	3.3		21.0 21.0	21.0	
				Bottom	11	25.5 25.4	25.5	7.5 7.5	7.5	23.3 23.4	23.4	87.6 87.6	87.6	6.6 6.6	6.6	6.6	3.3 3.3	3.3		24.0 25.0	24.5	

Remarks: * **DA: Depth-Averaged**

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

Water Quality Monitoring Results at CE - 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*
3-Jun-08	Cloudy	Moderate	18:30	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	97.1 96.0	96.6	6.6 6.6	6.6	6.5	2.8 2.8	2.8	3.0	19.0 19.0	19.0	18.0
				Middle	5.5	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	92.9 92.9	92.9	6.3 6.3	6.3		3.0 3.0	3.0		17.0 17.0	17.0	
				Bottom	10	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	92.7 92.5	92.6	6.3 6.3	6.3	6.3	3.3 3.2	3.3		18.0 18.0	18.0	
5-Jun-08	Sunny	Moderate	08:02	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	29.9 29.9	29.9	92.9 92.9	92.9	6.5 6.5	6.5	6.5	8.2 8.3	8.3	9.9	10.0 10.0	10.0	11.3
				Middle	5.5	26.2 26.2	26.2	7.4 7.4	7.4	30.2 30.3	30.3	94.1 94.7	94.4	6.5 6.5	6.5		10.6 10.6	10.6		9.0 9.0	9.0	
				Bottom	10	26.0 26.0	26.0	7.4 7.4	7.4	30.9 30.9	30.9	94.8 94.3	94.6	6.2 6.2	6.2	6.2	10.7 10.6	10.7		15.0 15.0	15.0	
10-Jun-08	Sunny	Calm	11:14	Surface	1	26.9 26.9	26.9	7.4 7.4	7.4	22.5 22.5	22.5	106.3 106.7	106.5	7.5 7.5	7.5	7.6	2.7 2.7	2.7	2.0	18.0 16.0	17.0	12.7
				Middle	5.5	26.9 26.9	26.9	7.4 7.4	7.4	22.5 22.5	22.5	108.3 108.3	108.3	7.6 7.6	7.6		1.5 1.5	1.5		9.0 9.0	9.0	
				Bottom	10	26.3 26.0	26.2	7.3 7.3	7.3	30.4 30.6	30.5	107.3 100.8	104.1	7.3 6.9	7.1	7.1	1.6 1.7	1.7		12.0 12.0	12.0	
12-Jun-08	Cloudy	Moderate	14:29	Surface	1	27.8 27.9	27.9	7.6 7.6	7.6	26.2 26.2	26.2	118.2 120.8	119.5	8.9 9.0	9.0	9.1	3.4 3.5	3.5	3.4	12.0 12.0	12.0	14.8
				Middle	5.5	27.8 27.8	27.8	7.6 7.6	7.6	26.5 26.5	26.5	123.6 123.6	123.6	9.2 9.2	9.2		3.2 3.2	3.2		9.0 9.0	9.0	
				Bottom	10	27.8 27.8	27.8	7.6 7.6	7.6	26.6 26.6	26.6	123.6 123.1	123.4	9.2 9.2	9.2	9.2	3.5 3.4	3.5		7.0 7.0	7.0	
14-Jun-08	Cloudy	Moderate	17:08	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	91.7 91.9	91.8	7.3 7.3	7.3	7.2	5.0 5.1	5.1	5.9	13.0 13.0	13.0	14.3
				Middle	5.5	26.3 26.3	26.3	7.6 7.6	7.6	30.4 30.4	30.4	88.0 88.3	88.2	7.0 7.0	7.0		5.9 5.9	5.9		16.0 16.0	16.0	
				Bottom	10	26.2 26.2	26.2	7.6 7.6	7.6	30.4 30.4	30.4	85.4 85.4	85.4	6.8 6.8	6.8	6.8	6.6 6.8	6.7		14.0 14.0	14.0	
16-Jun-08	Cloudy	Moderate	17:26	Surface	1	26.9 26.9	26.9	7.6 7.6	7.6	29.3 29.3	29.3	92.9 92.6	92.8	7.7 7.6	7.7	7.5	6.3 6.3	6.3	6.2	8.0 8.0	8.0	9.7
				Middle	5.5	26.1 26.1	26.1	7.6 7.6	7.6	27.6 27.5	27.6	84.6 84.6	84.6	7.2 7.2	7.2		5.8 5.8	5.8		7.0 7.0	7.0	
				Bottom	10	25.6 25.5	25.6	7.6 7.6	7.6	32.2 32.2	32.2	74.7 74.7	74.7	6.4 6.4	6.4	6.4	6.5 6.5	6.5		14.0 14.0	14.0	
18-Jun-08	Cloudy	Moderate	18:27	Surface	1	25.8 25.8	25.8	7.6 7.6	7.6	21.7 21.7	21.7	90.0 90.1	90.1	6.6 6.6	6.6	6.6	3.7 3.8	3.8	3.9	8.0 8.0	8.0	13.2
				Middle	5.5	25.8 25.8	25.8	7.6 7.6	7.6	21.7 21.7	21.7	88.7 88.7	88.7	6.5 6.5	6.5		4.0 4.0	4.0		17.0 17.0	17.0	
				Bottom	10	25.8 25.8	25.8	7.6 7.6	7.6	21.8 21.7	21.8	87.4 87.3	87.4	6.4 6.5	6.5	6.5	3.8 3.9	3.9		14.0 15.0	14.5	

Remarks: * **DA: Depth-Averaged**

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

Water Quality Monitoring Results at CE - 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*
20-Jun-08	Fine	Calm	09:36	Surface	1	25.2 25.2	25.2	7.4 7.4	7.4	30.4 30.4	30.4	82.9 82.9	82.9	6.5 6.5	6.5	6.6	2.4 2.4	2.4	3.1	16.0 15.0	15.5	9.5
				Middle	5.5	25.2 25.2	25.2	7.4 7.4	7.4	30.5 30.5	30.5	84.1 84.7	84.4	6.5 6.6	6.6		3.4 3.4	3.4		8.0 8.0	8.0	
				Bottom	10	25.4 25.4	25.4	7.4 7.4	7.4	30.4 30.4	30.4	84.8 84.3	84.6	6.6 6.5	6.6	6.6	3.5 3.6	3.6		5.0 5.0	5.0	
23-Jun-08	Sunny	Calm	08:32	Surface	1	28.6 28.6	28.6	7.5 7.5	7.5	25.2 24.9	25.1	137.9 137.0	137.5	9.0 9.0	9.0	8.7	3.5 3.5	3.5	3.6	16.0 16.0	16.0	12.3
				Middle	6	28.1 28.1	28.1	7.5 7.5	7.5	25.0 24.9	25.0	130.1 123.9	127.0	8.5 8.1	8.3		4.0 4.0	4.0		11.0 11.0	11.0	
				Bottom	11	27.5 27.4	27.5	7.5 7.5	7.5	25.0 25.0	25.0	122.4 138.2	130.3	8.0 9.0	8.5	8.5	3.4 3.3	3.4		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 CF - 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*
3-Jun-08	Cloudy	Moderate	12:00	Surface	1	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	97.5 96.7	97.1	6.6 6.6	6.6	6.6	2.6 2.5	2.6	3.3	20.0 20.0	20.0	18.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	93.6 93.2	93.4	6.4 6.4	6.4	6.4	4.0 3.8	3.9		16.0 16.0	16.0	
5-Jun-08	Cloudy	Moderate	13:44	Surface	1	26.4 26.4	26.4	7.4 7.4	7.4	29.1 29.1	29.1	100.4 100.4	100.4	6.8 6.8	6.8	6.8	5.4 5.4	5.4	6.3	12.0 12.0	12.0	13.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.3 26.3	26.3	7.4 7.4	7.4	29.4 29.5	29.5	97.9 97.8	97.9	6.6 6.6	6.6	6.6	7.2 7.1	7.2		15.0 15.0	15.0	
7-Jun-08	Rainy	Rough	15:52	Surface	1	26.2 26.2	26.2	7.5 7.5	7.5	30.0 30.0	30.0	98.3 98.3	98.3	7.0 7.0	7.0	7.0	2.6 2.6	2.6	2.9	15.0 15.0	15.0	11.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.2 26.2	26.2	7.5 7.5	7.5	30.2 30.2	30.2	93.6 93.6	93.6	6.7 6.7	6.7	6.7	3.1 3.2	3.2		8.0 8.0	8.0	
10-Jun-08	Sunny	Calm	18:16	Surface	1	26.9 26.9	26.9	7.4 7.4	7.4	22.5 22.5	22.5	104.6 104.7	104.7	7.4 7.4	7.4	7.4	1.5 1.5	1.5	1.6	8.0 8.0	8.0	11.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.9 26.8	26.9	7.4 7.4	7.4	22.5 24.6	23.6	100.7 100.4	100.6	7.1 7.0	7.1	7.1	1.5 1.6	1.6		15.0 15.0	15.0	
12-Jun-08	Cloudy	Moderate	07:26	Surface	1	26.8 26.8	26.8	7.6 7.6	7.6	27.2 27.1	27.2	104.5 104.3	104.4	7.8 7.7	7.8	7.8	3.9 3.8	3.9	4.3	8.0 8.0	8.0	9.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.8 26.8	26.8	7.6 7.6	7.6	27.2 27.2	27.2	102.8 102.7	102.8	7.6 7.6	7.6	7.6	4.7 4.6	4.7		10.0 10.0	10.0	
14-Jun-08	Cloudy	Moderate	09:55	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	30.1 30.2	30.2	89.5 89.6	89.6	7.4 7.4	7.4	7.4	4.6 4.5	4.6	5.1	16.0 16.0	16.0	15.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.7 26.7	26.7	7.6 7.6	7.6	30.2 30.2	30.2	88.7 88.7	88.7	7.4 7.4	7.4	7.4	5.5 5.6	5.6		15.0 15.0	15.0	
16-Jun-08	Cloudy	Moderate	12:37	Surface	1	26.9 26.9	26.9	7.5 7.5	7.5	20.3 20.3	20.3	92.1 91.8	92.0	7.9 7.8	7.9	7.9	6.4 6.4	6.4	6.4	14.0 14.0	14.0	13.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.6 26.6	26.6	7.5 7.5	7.5	21.8 21.7	21.8	88.2 87.1	87.7	7.6 7.5	7.6	7.6	6.3 6.3	6.3		12.0 13.0	12.5	

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-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*
18-Jun-08	Cloudy	Moderate	11:46	Surface	1	26.3 26.3	26.3	7.6 7.6	7.6	21.8 21.8	21.8	89.2 89.0	89.1	6.5 6.5	6.5	6.5	3.5 3.5	3.5	3.7	13.0 13.0	13.0	10.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.1 26.1	26.1	7.6 7.6	7.6	22.4 22.5	22.5	88.3 88.3	88.3	6.4 6.4	6.4	6.4	3.7 3.8	3.8		8.0 8.0	8.0	
20-Jun-08	Fine	Calm	13:06	Surface	1	26.2 26.1	26.2	7.4 7.4	7.4	30.4 30.4	30.4	90.4 90.4	90.4	7.0 7.0	7.0	7.0	2.8 2.9	2.9	3.1	8.0 8.0	8.0	7.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.3 26.4	26.4	7.4 7.4	7.4	30.4 30.4	30.4	87.9 87.8	87.9	6.8 6.8	6.8	6.8	3.2 3.2	3.2		6.0 6.0	6.0	
23-Jun-08	Fine	Calm	14:33	Surface	1	29.0 29.0	29.0	7.5 7.5	7.5	23.4 23.2	23.3	144.0 141.8	142.9	9.0 9.0	9.0	9.0	3.6 3.6	3.6	4.0	13.0 14.0	13.5	13.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	28.8 28.8	28.8	7.5 7.5	7.5	23.9 24.0	24.0	152.6 152.6	152.6	9.7 9.7	9.7	9.7	4.3 4.3	4.3		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 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*
3-Jun-08	Cloudy	Moderate	17:30	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	92.7 92.4	92.6	6.3 6.3	6.3	6.3	2.8 2.9	2.9	3.4	20.0 20.0	20.0	17.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	91.2 91.0	91.1	6.2 6.2	6.2	6.2	3.9 3.9	3.9		15.0 15.0	15.0	
5-Jun-08	Sunny	Moderate	08:45	Surface	1	26.3 26.4	26.4	7.4 7.4	7.4	29.2 29.2	29.2	95.6 95.5	95.6	6.7 6.7	6.7	6.7	7.9 7.8	7.9	9.5	11.0 10.0	10.5	11.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.3 26.3	26.3	7.3 7.3	7.3	29.3 29.3	29.3	95.6 95.7	95.7	6.3 6.3	6.3	6.3	11.0 11.2	11.1		12.0 12.0	12.0	
10-Jun-08	Sunny	Calm	12:12	Surface	1	27.0 26.9	27.0	7.4 7.4	7.4	22.4 22.5	22.5	99.1 99.0	99.1	7.0 7.0	7.0	7.0	1.9 1.9	1.9	2.3	12.0 12.0	12.0	15.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.9 27.0	27.0	7.3 7.3	7.3	22.5 22.5	22.5	98.7 98.5	98.6	7.0 6.9	7.0	7.0	2.6 2.6	2.6		19.0 19.0	19.0	
12-Jun-08	Cloudy	Moderate	13:23	Surface	1	27.7 27.7	27.7	7.6 7.6	7.6	26.1 26.1	26.1	106.4 106.8	106.6	8.0 8.1	8.1	8.1	4.1 4.1	4.1	4.0	5.0 5.0	5.0	11.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	27.5 27.6	27.6	7.5 7.5	7.5	26.5 26.6	26.6	108.6 107.2	107.9	8.2 8.1	8.2	8.2	3.8 3.9	3.9		14.0 14.0	14.0	
14-Jun-08	Cloudy	Moderate	16:10	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	91.9 91.8	91.9	7.7 7.6	7.7	7.7	4.4 4.2	4.3	5.0	13.0 13.0	13.0	14.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.3 26.3	26.3	7.6 7.6	7.6	30.4 30.4	30.4	90.4 90.1	90.3	7.5 7.5	7.5	7.5	5.6 5.7	5.7		16.0 16.0	16.0	
16-Jun-08	Cloudy	Moderate	18:21	Surface	1	26.9 26.9	26.9	7.5 7.5	7.5	20.4 20.4	20.4	91.6 91.5	91.6	7.8 7.8	7.8	7.8	6.3 6.3	6.3	6.3	14.0 14.0	14.0	13.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.6 26.6	26.6	7.5 7.5	7.5	21.7 21.6	21.7	86.3 86.1	86.2	7.4 7.4	7.4	7.4	6.3 6.2	6.3		12.0 12.0	12.0	
18-Jun-08	Cloudy	Moderate	17:23	Surface	1	25.9 25.9	25.9	7.5 7.5	7.5	22.0 22.0	22.0	88.0 88.1	88.1	6.4 6.4	6.4	6.4	3.8 3.9	3.9	4.3	18.0 18.0	18.0	13.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	25.8 25.8	25.8	7.5 7.5	7.5	22.0 22.0	22.0	87.2 87.2	87.2	6.4 6.4	6.4	6.4	4.7 4.6	4.7		8.0 8.0	8.0	

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*
20-Jun-08	Fine	Calm	08:30	Surface	1	25.3 25.3	25.3	7.4 7.4	7.4	31.0 30.4	30.7	85.6 85.5	85.6	6.7 6.7	6.7	6.7	2.6 2.5	2.6	3.3	9.0 9.0	9.0	12.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	25.2 25.2	25.2	7.4 7.4	7.4	30.1 30.2	30.2	85.6 85.7	85.7	6.7 6.7	6.7	6.7	4.0 3.8	3.9		15.0 16.0	15.5	
23-Jun-08	Sunny	Calm	07:24	Surface	1	28.7 28.7	28.7	7.5 7.5	7.5	23.2 23.3	23.3	126.0 126.1	126.1	8.3 8.3	8.3	8.3	3.7 3.7	3.7	3.6	17.0 17.0	17.0	16.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	4	28.0 28.0	28.0	7.5 7.5	7.5	24.3 24.3	24.3	124.0 124.0	124.0	8.2 8.2	8.2	8.2	3.3 3.4	3.4		15.0 16.0	15.5	
26-Jun-08	Rainy	Moderate	11:36	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	23.1 23.1	23.1	91.1 91.1	91.1	6.7 6.7	6.7	6.7	2.0 2.0	2.0	2.0	9.0 9.0	9.0	9.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	26.0 26.0	26.0	7.4 7.4	7.4	23.2 23.2	23.2	87.7 87.7	87.7	6.5 6.5	6.5	6.5	2.0 2.0	2.0		10.0 10.0	10.0	
28-Jun-08	Rainy	Calm	14:09	Surface	1	27.9 27.9	27.9	7.6 7.7	7.7	18.3 18.3	18.3	111.7 111.7	111.7	7.9 7.9	7.9	7.9	2.8 2.8	2.8	3.4	12.0 12.0	12.0	11.0
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	25.8 25.8	25.8	7.6 7.6	7.6	26.9 26.9	26.9	78.2 78.2	78.2	6.3 6.3	6.3	6.3	3.9 3.8	3.9		10.0 10.0	10.0	
30-Jun-08	Rainy	Calm	16:37	Surface	1	25.5 25.5	25.5	7.5 7.5	7.5	25.5 25.4	25.5	91.0 91.1	91.1	6.8 6.9	6.9	6.9	3.2 3.2	3.2	3.3	19.0 20.0	19.5	19.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-		- -	-		- -	-	
				Bottom	3	25.2 25.2	25.2	7.5 7.5	7.5	26.6 26.6	26.6	82.1 82.1	82.1	6.1 6.1	6.1	6.1	3.3 3.3	3.3		19.0 19.0	19.0	

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*
3-Jun-08	Cloudy	Moderate	12:28	Surface	1	26.0 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	97.2 96.3	96.8	6.6 6.5	6.6	6.5	2.3 2.6	2.5	3.2	19.0 19.0	19.0	19.3
				Middle	4.5	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	92.8 92.6	92.7	6.3 6.3	6.3		3.1 3.4	3.3		17.0 17.0	17.0	
				Bottom	8	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	92.4 91.8	92.1	6.3 6.2	6.3	6.3	3.9 3.7	3.8		22.0 22.0	22.0	
5-Jun-08	Cloudy	Moderate	13:25	Surface	1	26.3 26.3	26.3	7.3 7.3	7.3	29.4 29.3	29.4	94.3 94.2	94.3	6.5 6.5	6.5	6.6	7.1 7.3	7.2	7.1	10.0 10.0	10.0	14.7
				Middle	4.5	26.3 26.3	26.3	7.3 7.3	7.3	29.5 29.6	29.6	94.3 94.4	94.4	6.7 6.7	6.7		7.3 7.2	7.3		16.0 16.0	16.0	
				Bottom	8	26.2 26.2	26.2	7.4 7.4	7.4	30.0 30.0	30.0	94.2 94.0	94.1	6.3 6.3	6.3	6.3	6.7 6.6	6.7		18.0 18.0	18.0	
7-Jun-08	Rainy	Rough	15:28	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	30.0 30.0	30.0	99.4 99.4	99.4	7.1 7.1	7.1	7.0	3.7 3.7	3.7	4.1	11.0 11.0	11.0	14.3
				Middle	4.5	26.1 26.1	26.1	7.5 7.5	7.5	30.2 30.3	30.3	95.7 95.6	95.7	6.9 6.8	6.9		3.7 3.8	3.8		18.0 18.0	18.0	
				Bottom	8	26.1 26.1	26.1	7.5 7.5	7.5	30.5 30.5	30.5	95.1 95.6	95.4	6.8 6.8	6.8	6.8	4.6 5.2	4.9		14.0 14.0	14.0	
10-Jun-08	Sunny	Calm	17:51	Surface	1	26.9 26.9	26.9	7.3 7.3	7.3	22.5 22.5	22.5	104.5 104.5	104.5	7.4 7.4	7.4	7.4	1.5 1.5	1.5	1.5	10.0 10.0	10.0	10.0
				Middle	4.5	26.9 26.9	26.9	7.3 7.3	7.3	22.5 22.5	22.5	104.7 104.6	104.7	7.4 7.4	7.4		1.5 1.5	1.5		9.0 10.0	9.5	
				Bottom	8	26.8 26.7	26.8	7.4 7.4	7.4	22.9 25.0	24.0	104.4 104.0	104.2	7.3 7.2	7.3	7.3	1.5 1.7	1.6		11.0 10.0	10.5	
12-Jun-08	Cloudy	Moderate	07:58	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	28.1 28.1	28.1	103.1 103.3	103.2	7.8 7.8	7.8	7.9	3.8 3.8	3.8	3.8	3.0 3.0	3.0	8.7
				Middle	4.5	26.8 26.8	26.8	7.6 7.6	7.6	28.1 28.1	28.1	108.5 108.3	108.4	7.9 8.0	8.0		3.4 3.4	3.4		10.0 10.0	10.0	
				Bottom	8	26.7 26.7	26.7	7.6 7.6	7.6	28.1 28.1	28.1	104.7 104.2	104.5	7.9 7.9	7.9	7.9	4.2 4.1	4.2		13.0 13.0	13.0	
14-Jun-08	Cloudy	Moderate	10:20	Surface	1	26.7 26.7	26.7	7.5 7.5	7.5	30.1 30.1	30.1	96.8 96.8	96.8	8.1 8.1	8.1	8.1	4.5 4.5	4.5	4.8	10.0 10.0	10.0	13.3
				Middle	4.5	26.6 26.6	26.6	7.6 7.6	7.6	30.2 30.2	30.2	96.5 96.2	96.4	8.0 8.0	8.0		5.2 5.1	5.2		13.0 13.0	13.0	
				Bottom	8	26.6 26.6	26.6	7.6 7.6	7.6	30.3 30.3	30.3	95.4 95.3	95.4	7.9 7.9	7.9	7.9	4.6 4.6	4.6		17.0 17.0	17.0	
16-Jun-08	Cloudy	Moderate	11:30	Surface	1	26.6 26.6	26.6	7.5 7.5	7.5	22.3 22.3	22.3	94.4 93.2	93.8	8.0 7.9	8.0	7.5	6.1 6.1	6.1	6.3	8.0 8.0	8.0	11.7
				Middle	4.5	25.7 25.6	25.7	7.5 7.5	7.5	32.0 32.0	32.0	84.3 80.6	82.5	7.1 6.8	7.0		6.3 6.3	6.3		12.0 12.0	12.0	
				Bottom	8	25.5 25.5	25.5	7.5 7.5	7.5	32.3 32.3	32.3	73.0 72.3	72.7	6.3 6.2	6.3	6.3	6.4 6.4	6.4		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 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*
18-Jun-08	Cloudy	Moderate	12:32	Surface	1	26.1 26.1	26.1	7.5 7.5	7.5	22.0 22.0	22.0	98.9 98.8	98.9	7.2 7.2	7.2	7.1	3.5 3.5	3.5	3.6	11.0 11.0	11.0	7.8
				Middle	5	26.2 26.2	26.2	7.5 7.5	7.5	22.1 22.1	22.1	93.8 93.1	93.5	6.9 6.8	6.9		3.5 3.5	3.5		9.0 9.0	9.0	
				Bottom	9	26.2 26.2	26.2	7.5 7.5	7.5	22.2 22.2	22.2	91.8 91.6	91.7	6.7 6.7	6.7	6.7	3.8 3.8	3.8		3.0 4.0	3.5	
20-Jun-08	Fine	Calm	13:42	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	30.3 30.3	30.3	84.3 84.2	84.3	6.6 6.6	6.6	6.6	2.6 2.1	2.4	2.5	9.0 9.0	9.0	11.0
				Middle	4.5	26.2 26.2	26.2	7.4 7.4	7.4	30.3 30.3	30.3	84.3 84.4	84.4	6.6 6.6	6.6		2.5 2.5	2.5		11.0 11.0	11.0	
				Bottom	8	26.3 26.3	26.3	7.4 7.4	7.4	30.4 30.6	30.5	84.2 84.0	84.1	6.6 6.5	6.6	6.6	2.6 2.5	2.6		13.0 13.0	13.0	
23-Jun-08	Fine	Calm	15:13	Surface	1	27.6 27.7	27.7	7.4 7.4	7.4	24.2 24.2	24.2	147.6 145.3	146.5	9.5 9.4	9.5	9.4	3.1 3.1	3.1	3.9	12.0 12.0	12.0	11.7
				Middle	4.5	27.1 27.1	27.1	7.5 7.5	7.5	25.6 25.7	25.7	143.8 140.0	141.9	9.4 9.2	9.3		4.0 4.0	4.0		12.0 12.0	12.0	
				Bottom	8	26.7 26.6	26.7	7.5 7.5	7.5	27.0 27.0	27.0	131.0 122.3	126.7	8.5 8.0	8.3	8.3	4.6 4.5	4.6		11.0 11.0	11.0	
26-Jun-08	Rainy	Moderate	17:44	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	23.0 22.9	23.0	89.0 88.5	88.8	6.6 6.6	6.6	6.5	1.6 1.6	1.6	1.7	8.0 8.0	8.0	9.3
				Middle	5	26.0 26.0	26.0	7.4 7.4	7.4	23.4 23.4	23.4	86.4 86.2	86.3	6.4 6.4	6.4		1.7 1.7	1.7		9.0 9.0	9.0	
				Bottom	9	26.0 26.0	26.0	7.4 7.4	7.4	23.4 23.4	23.4	85.0 85.2	85.1	6.5 6.5	6.5	6.5	1.9 1.9	1.9		11.0 11.0	11.0	
28-Jun-08	Rainy	Calm	08:29	Surface	1	27.9 27.9	27.9	7.7 7.7	7.7	18.2 18.3	18.3	108.5 108.5	108.5	7.7 7.7	7.7	7.2	3.1 3.0	3.1	3.5	8.0 8.0	8.0	9.7
				Middle	4.5	26.7 26.7	26.7	7.7 7.7	7.7	20.7 20.7	20.7	92.7 91.6	92.2	6.6 6.5	6.6		3.3 3.3	3.3		10.0 10.0	10.0	
				Bottom	8	25.7 25.7	25.7	7.6 7.6	7.6	27.9 27.8	27.9	76.2 76.2	76.2	6.2 6.2	6.2	6.2	4.1 4.1	4.1		11.0 11.0	11.0	
30-Jun-08	Rainy	Calm	10:33	Surface	1	25.5 25.5	25.5	7.6 7.6	7.6	22.7 22.7	22.7	99.6 99.6	99.6	7.5 7.5	7.5	7.2	3.7 3.7	3.7	3.4	21.0 21.0	21.0	20.8
				Middle	4.5	25.5 25.5	25.5	7.6 7.6	7.6	23.0 23.1	23.1	92.5 90.9	91.7	6.9 6.8	6.9		3.1 3.1	3.1		23.0 24.0	23.5	
				Bottom	8	25.3 25.2	25.3	7.5 7.5	7.5	25.7 25.8	25.8	81.9 79.9	80.9	6.1 6.1	6.1	6.1	3.3 3.4	3.4		18.0 18.0	18.0	

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*
3-Jun-08	Cloudy	Moderate	17:57	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	94.6 93.9	94.3	6.5 6.4	6.5	6.4	2.6 2.1	2.4	2.5	17.0 17.0	17.0	15.5
				Middle	4.5	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	91.3 91.2	91.3	6.2 6.2	6.2		2.6 2.6	2.6		16.0 16.0	16.0	
				Bottom	8	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	90.6 90.6	90.6	6.2 6.2	6.2	6.2	2.6 2.5	2.6		13.0 14.0	13.5	
5-Jun-08	Sunny	Moderate	08:23	Surface	1	26.3 26.3	26.3	7.4 7.4	7.4	29.5 29.5	29.5	98.5 97.5	98.0	6.5 6.5	6.5	6.6	6.6 6.5	6.6	8.0	12.0 12.0	12.0	11.8
				Middle	4.5	26.2 26.2	26.2	7.4 7.4	7.4	29.7 29.8	29.8	95.8 95.5	95.7	6.6 6.6	6.6		7.5 7.5	7.5		9.0 9.0	9.0	
				Bottom	8	26.1 26.1	26.1	7.4 7.4	7.4	30.2 30.2	30.2	95.0 94.8	94.9	6.2 6.2	6.2	6.2	9.7 9.9	9.8		15.0 14.0	14.5	
10-Jun-08	Sunny	Calm	11:00	Surface	1	26.7 26.7	26.7	7.4 7.4	7.4	22.4 22.5	22.5	100.8 100.8	100.8	7.1 7.1	7.1	7.0	1.7 1.6	1.7	2.2	11.0 11.0	11.0	10.0
				Middle	4.5	26.6 26.6	26.6	7.4 7.4	7.4	23.1 23.1	23.1	95.9 94.8	95.4	6.8 6.7	6.8		1.5 1.5	1.5		8.0 8.0	8.0	
				Bottom	8	26.4 26.2	26.3	7.4 7.4	7.4	28.2 29.1	28.7	93.7 92.6	93.2	6.4 6.4	6.4	6.4	3.1 3.6	3.4		11.0 11.0	11.0	
12-Jun-08	Cloudy	Moderate	13:55	Surface	1	27.2 27.2	27.2	7.6 7.6	7.6	26.5 26.6	26.6	98.4 97.8	98.1	7.5 7.5	7.5	7.5	2.8 2.8	2.8	2.9	9.0 9.0	9.0	10.0
				Middle	4.5	27.2 27.2	27.2	7.6 7.6	7.6	26.6 26.6	26.6	97.5 98.9	98.2	7.5 7.5	7.5		3.3 3.2	3.3		5.0 6.0	5.5	
				Bottom	8	27.2 27.2	27.2	7.6 7.6	7.6	26.6 26.6	26.6	100.0 100.0	100.0	7.6 7.6	7.6	7.6	2.5 2.5	2.5		11.0 10.0	10.5	
14-Jun-08	Cloudy	Moderate	16:34	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	30.4 30.6	30.5	96.0 93.2	94.6	7.8 7.8	7.8	7.6	3.7 3.7	3.7	4.6	9.0 10.0	9.5	11.7
				Middle	4.5	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	93.6 93.7	93.7	7.4 7.4	7.4		4.7 4.6	4.7		18.0 18.0	18.0	
				Bottom	8	26.6 26.6	26.6	7.6 7.6	7.6	30.3 30.3	30.3	95.5 95.8	95.7	7.3 7.3	7.3	7.3	5.2 5.4	5.3		7.0 8.0	7.5	
16-Jun-08	Cloudy	Moderate	17:53	Surface	1	26.8 26.8	26.8	7.6 7.6	7.6	21.2 21.4	21.3	90.3 90.8	90.6	7.7 7.7	7.7	7.4	6.3 6.4	6.4	6.6	11.0 11.0	11.0	15.0
				Middle	4.5	26.3 26.3	26.3	7.6 7.6	7.6	25.4 25.1	25.3	82.4 82.3	82.4	7.1 7.1	7.1		6.6 6.6	6.6		18.0 18.0	18.0	
				Bottom	8	26.1 26.1	26.1	7.6 7.6	7.6	27.7 27.8	27.8	78.2 77.1	77.7	6.7 6.7	6.7	6.7	6.8 6.8	6.8		16.0 16.0	16.0	
18-Jun-08	Cloudy	Moderate	17:55	Surface	1	25.8 25.8	25.8	7.5 7.5	7.5	21.6 21.6	21.6	90.9 90.8	90.9	6.7 6.7	6.7	6.8	3.3 3.3	3.3	3.5	11.0 11.0	11.0	12.0
				Middle	4.5	25.8 25.8	25.8	7.6 7.6	7.6	21.6 21.6	21.6	91.3 91.6	91.5	6.7 6.8	6.8		3.5 3.4	3.5		13.0 13.0	13.0	
				Bottom	8	25.8 25.8	25.8	7.6 7.6	7.6	21.7 21.7	21.7	90.6 90.9	90.8	6.7 6.7	6.7	6.7	3.7 3.7	3.7		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-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*
20-Jun-08	Fine	Calm	09:08	Surface	1	25.2 25.2	25.2	7.5 7.4	7.5	30.2 30.2	30.2	88.5 87.5	88.0	6.9 6.8	6.9	6.8	2.3 2.6	2.5	3.2	6.0 7.0	6.5	6.8
				Middle	4.5	25.2 25.2	25.2	7.4 7.4	7.4	30.1 30.1	30.1	85.8 85.5	85.7	6.7 6.6	6.7		3.1 3.4	3.3		9.0 9.0	9.0	
				Bottom	8	25.2 25.2	25.2	7.5 7.5	7.5	30.2 30.2	30.2	85.0 84.8	84.9	6.6 6.6	6.6	6.6	3.9 3.7	3.8		5.0 5.0	5.0	
23-Jun-08	Sunny	Calm	07:58	Surface	1	28.6 28.6	28.6	7.5 7.5	7.5	24.7 24.7	24.7	149.6 149.4	149.5	10.0 10.0	10.0	10.2	3.7 3.7	3.7	3.5	16.0 16.0	16.0	14.3
				Middle	4.5	28.5 28.4	28.5	7.5 7.5	7.5	24.7 24.8	24.8	155.8 155.3	155.6	10.3 10.3	10.3		3.5 3.5	3.5		12.0 12.0	12.0	
				Bottom	8	27.8 27.9	27.9	7.5 7.5	7.5	24.9 24.9	24.9	130.8 130.8	130.8	8.8 8.8	8.8	8.8	3.4 3.3	3.4		15.0 15.0	15.0	
26-Jun-08	Rainy	Moderate	11:26	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	23.0 23.0	23.0	89.6 89.6	89.6	6.6 6.6	6.6	6.6	1.8 1.8	1.8	1.8	5.0 6.0	5.5	10.8
				Middle	5	26.0 26.0	26.0	7.4 7.4	7.4	23.3 23.3	23.3	87.4 87.0	87.2	6.5 6.4	6.5		1.6 1.7	1.7		8.0 8.0	8.0	
				Bottom	9	25.9 25.9	25.9	7.4 7.4	7.4	23.4 23.4	23.4	85.4 85.0	85.2	6.3 6.3	6.3	6.3	1.9 1.9	1.9		19.0 19.0	19.0	
28-Jun-08	Rainy	Calm	13:33	Surface	1	27.4 27.4	27.4	7.7 7.7	7.7	19.7 19.7	19.7	101.7 101.7	101.7	7.2 7.2	7.2	6.6	3.3 3.3	3.3	3.3	14.0 13.0	13.5	12.8
				Middle	4.5	26.6 26.6	26.6	7.7 7.7	7.7	22.2 22.1	22.2	84.8 84.2	84.5	6.0 6.0	6.0		2.6 2.6	2.6		11.0 11.0	11.0	
				Bottom	8	25.5 25.5	25.5	7.6 7.6	7.6	29.0 28.9	29.0	75.2 75.3	75.3	6.1 6.1	6.1	6.1	4.0 4.1	4.1		14.0 14.0	14.0	
30-Jun-08	Rainy	Calm	17:13	Surface	1	25.4 25.4	25.4	7.6 7.6	7.6	24.2 24.2	24.2	92.4 92.4	92.4	7.1 7.1	7.1	7.1	3.1 3.1	3.1	3.1	13.0 14.0	13.5	17.2
				Middle	5	25.3 25.3	25.3	7.6 7.6	7.6	25.4 25.4	25.4	90.5 90.6	90.6	7.0 7.0	7.0		3.3 3.2	3.3		15.0 15.0	15.0	
				Bottom	9	25.2 25.2	25.2	7.6 7.6	7.6	25.1 25.1	25.1	87.2 87.3	87.3	6.7 6.7	6.7	6.7	2.9 2.9	2.9		23.0 23.0	23.0	

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-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*
3-Jun-08	Cloudy	Moderate	12:21	Surface	1	26.0 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	93.4 92.3	92.9	6.3 6.3	6.3	6.3	2.3 2.1	2.2	3.1	18.0 18.0	18.0	17.8
				Middle	4.5	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	90.9 90.7	90.8	6.2 6.2	6.2		2.5 2.2	2.4		18.0 18.0	18.0	
				Bottom	8	26.0 26.0	26.0	7.5 7.5	7.5	48.9 48.9	48.9	87.8 87.8	87.8	6.0 6.0	6.0	6.0	4.5 4.7	4.6		17.0 18.0	17.5	
5-Jun-08	Cloudy	Moderate	13:29	Surface	1	26.3 26.3	26.3	7.4 7.4	7.4	29.2 29.3	29.3	94.3 94.2	94.3	6.4 6.4	6.4	6.5	5.1 5.2	5.2	7.5	9.0 9.0	9.0	15.3
				Middle	4.5	26.3 26.3	26.3	7.4 7.3	7.4	29.6 29.6	29.6	94.2 94.1	94.2	6.5 6.5	6.5		6.8 6.8	6.8		15.0 15.0	15.0	
				Bottom	8	26.1 26.1	26.1	7.4 7.4	7.4	30.3 30.4	30.4	94.2 93.9	94.1	6.1 6.1	6.1	6.1	10.5 10.5	10.5		22.0 22.0	22.0	
7-Jun-08	Rainy	Rough	15:33	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	30.2 30.2	30.2	97.3 96.0	96.7	7.0 6.9	7.0	6.9	4.6 4.6	4.6	4.4	15.0 16.0	15.5	10.5
				Middle	4.5	26.1 26.1	26.1	7.5 7.5	7.5	30.3 30.3	30.3	93.5 93.3	93.4	6.7 6.7	6.7		4.4 4.2	4.3		9.0 9.0	9.0	
				Bottom	8	26.1 26.1	26.1	7.4 7.4	7.4	30.5 30.5	30.5	93.2 93.0	93.1	6.7 6.7	6.7	6.7	4.2 4.4	4.3		7.0 7.0	7.0	
10-Jun-08	Sunny	Calm	17:56	Surface	1	26.9 26.9	26.9	7.4 7.4	7.4	22.5 22.5	22.5	101.5 100.7	101.1	7.1 7.1	7.1	7.1	1.4 1.5	1.5	1.5	11.0 11.0	11.0	10.0
				Middle	4.5	26.9 26.9	26.9	7.4 7.4	7.4	22.5 22.5	22.5	100.1 100.0	100.1	7.1 7.0	7.1		1.5 1.4	1.5		8.0 8.0	8.0	
				Bottom	8	26.8 26.7	26.8	7.3 7.3	7.3	22.6 22.6	22.6	99.0 98.4	98.7	7.0 6.9	7.0	7.0	1.4 1.4	1.4		11.0 11.0	11.0	
12-Jun-08	Cloudy	Moderate	07:49	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	27.4 27.4	27.4	100.5 100.3	100.4	7.6 7.6	7.6	7.8	3.7 3.7	3.7	3.8	5.0 5.0	5.0	6.7
				Middle	4.5	26.9 26.9	26.9	7.6 7.6	7.6	27.2 27.2	27.2	103.1 103.2	103.2	7.8 7.9	7.9		3.8 3.8	3.8		8.0 8.0	8.0	
				Bottom	8	26.7 26.7	26.7	7.6 7.6	7.6	27.3 27.3	27.3	103.1 103.0	103.1	7.9 7.8	7.9	7.9	3.9 4.0	4.0		7.0 7.0	7.0	
14-Jun-08	Cloudy	Moderate	10:16	Surface	1	26.6 26.6	26.6	7.5 7.5	7.5	30.1 30.1	30.1	94.4 94.4	94.4	7.9 7.9	7.9	7.9	3.3 3.3	3.3	4.3	17.0 17.0	17.0	15.3
				Middle	4.5	26.6 26.6	26.6	7.6 7.6	7.6	30.2 30.2	30.2	94.0 94.0	94.0	7.8 7.8	7.8		4.5 4.5	4.5		17.0 17.0	17.0	
				Bottom	8	26.6 26.6	26.6	7.5 7.5	7.5	30.2 30.2	30.2	93.8 93.7	93.8	7.8 7.6	7.7	7.7	5.2 5.1	5.2		12.0 12.0	12.0	
16-Jun-08	Cloudy	Moderate	11:26	Surface	1	26.9 26.9	26.9	7.5 7.5	7.5	23.3 23.3	23.3	93.4 93.4	93.4	7.7 7.7	7.7	7.7	6.3 6.3	6.3	6.2	14.0 14.0	14.0	14.3
				Middle	4.5	26.1 26.1	26.1	7.5 7.5	7.5	27.8 27.8	27.8	92.8 88.1	90.5	7.7 7.4	7.6		5.8 5.8	5.8		13.0 13.0	13.0	
				Bottom	8	25.6 25.6	25.6	7.5 7.5	7.5	32.1 32.1	32.1	76.8 76.8	76.8	6.6 6.6	6.6	6.6	6.5 6.4	6.5		16.0 16.0	16.0	

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-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*
18-Jun-08	Cloudy	Moderate	12:27	Surface	1	26.2 26.2	26.2	7.5 7.5	7.5	22.0 22.0	22.0	99.6 97.3	98.5	7.3 7.1	7.2	7.0	3.8 3.7	3.8	3.7	12.0 12.0	12.0	9.7
				Middle	5	26.2 26.2	26.2	7.5 7.5	7.5	22.2 22.1	22.2	92.1 92.1	92.1	6.7 6.7	6.7		3.6 3.6	3.6		5.0 5.0	5.0	
				Bottom	9	26.0 26.0	26.0	7.5 7.5	7.5	22.3 22.3	22.3	91.5 91.5	91.5	6.7 6.7	6.7	6.7	3.8 3.8	3.8		12.0 12.0	12.0	
20-Jun-08	Fine	Calm	13:36	Surface	1	26.4 26.4	26.4	7.4 7.4	7.4	30.4 30.5	30.5	84.3 84.2	84.3	6.6 6.6	6.6	6.6	2.2 2.2	2.2	2.9	6.0 6.0	6.0	6.7
				Middle	4.5	26.3 26.3	26.3	7.4 7.4	7.4	30.4 30.4	30.4	84.2 84.1	84.2	6.6 6.6	6.6		3.0 3.3	3.2		8.0 8.0	8.0	
				Bottom	8	26.3 26.3	26.3	7.4 7.4	7.4	30.4 30.3	30.4	84.2 83.9	84.1	6.5 6.5	6.5	6.5	3.1 3.2	3.2		6.0 6.0	6.0	
23-Jun-08	Fine	Calm	15:03	Surface	1	28.3 28.3	28.3	7.5 7.4	7.5	24.6 24.6	24.6	133.7 133.8	133.8	8.4 8.5	8.5	9.3	4.2 4.2	4.2	3.7	17.0 16.0	16.5	17.0
				Middle	5	27.7 27.7	27.7	7.5 7.5	7.5	25.0 25.0	25.0	153.0 152.0	152.5	10.0 9.9	10.0		3.6 3.6	3.6		15.0 16.0	15.5	
				Bottom	9	27.0 27.0	27.0	7.5 7.5	7.5	26.1 26.4	26.3	141.1 136.0	138.6	9.2 8.9	9.1	9.1	3.2 3.1	3.2		19.0 19.0	19.0	
26-Jun-08	Rainy	Moderate	17:27	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.9 22.9	22.9	90.6 90.0	90.3	6.7 6.7	6.7	6.7	1.7 1.7	1.7	1.7	7.0 6.0	6.5	10.2
				Middle	6	26.0 26.0	26.0	7.5 7.5	7.5	23.1 23.1	23.1	88.9 88.7	88.8	6.6 6.6	6.6		1.6 1.6	1.6		8.0 8.0	8.0	
				Bottom	11	25.9 26.0	26.0	7.5 7.5	7.5	23.3 23.3	23.3	86.8 86.6	86.7	6.4 6.4	6.4	6.4	1.7 1.7	1.7		16.0 16.0	16.0	
28-Jun-08	Rainy	Calm	08:24	Surface	1	27.9 27.9	27.9	7.7 7.6	7.7	18.1 18.1	18.1	108.6 108.7	108.7	7.7 7.7	7.7	7.3	2.7 2.7	2.7	3.2	12.0 12.0	12.0	9.3
				Middle	4.5	26.8 26.8	26.8	7.7 7.6	7.7	20.6 20.6	20.6	97.9 95.5	96.7	7.0 6.8	6.9		2.5 2.5	2.5		7.0 7.0	7.0	
				Bottom	8	26.3 26.2	26.3	7.6 7.6	7.6	24.5 25.0	24.8	87.2 87.3	87.3	6.1 6.1	6.1	6.1	4.2 4.6	4.4		9.0 9.0	9.0	
30-Jun-08	Rainy	Calm	10:47	Surface	1	25.5 25.5	25.5	7.6 7.5	7.6	22.3 22.4	22.4	91.3 91.3	91.3	6.9 6.9	6.9	6.7	3.1 3.1	3.1	3.2	21.0 21.0	21.0	22.7
				Middle	4.5	25.4 25.3	25.4	7.5 7.5	7.5	24.6 24.6	24.6	86.3 86.3	86.3	6.5 6.5	6.5		3.1 3.1	3.1		25.0 25.0	25.0	
				Bottom	8	25.2 25.2	25.2	7.5 7.5	7.5	26.6 26.6	26.6	80.1 80.1	80.1	6.0 6.0	6.0	6.0	3.3 3.3	3.3		22.0 22.0	22.0	

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*
3-Jun-08	Cloudy	Moderate	17:50	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	97.2 95.7	96.5	6.7 6.5	6.6	6.5	2.2 2.2	2.2	2.9	20.0 19.0	19.5	19.5
				Middle	4.5	26.0 26.0	26.0	7.4 7.4	7.4	48.9 48.9	48.9	91.7 91.6	91.7	6.3 6.2	6.3		3.0 3.3	3.2		18.0 19.0	18.5	
				Bottom	8	26.0 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	90.7 90.7	90.7	6.2 6.2	6.2	6.2	3.1 3.2	3.2		21.0 20.0	20.5	
5-Jun-08	Sunny	Moderate	08:28	Surface	1	26.4 26.4	26.4	7.4 7.4	7.4	28.9 28.9	28.9	96.7 96.7	96.7	6.4 6.4	6.4	6.4	6.7 6.7	6.7	8.1	8.0 8.0	8.0	10.8
				Middle	4.5	26.3 26.3	26.3	7.4 7.4	7.4	29.3 29.3	29.3	95.6 95.2	95.4	6.4 6.4	6.4		7.1 7.1	7.1		10.0 11.0	10.5	
				Bottom	8	26.2 26.2	26.2	7.4 7.4	7.4	29.7 29.7	29.7	94.4 94.3	94.4	6.2 6.2	6.2	6.2	10.7 10.5	10.6		11.0 17.0	14.0	
10-Jun-08	Sunny	Calm	10:55	Surface	1	27.0 27.0	27.0	7.4 7.4	7.4	22.4 22.4	22.4	100.3 100.3	100.3	7.1 7.1	7.1	7.0	1.7 1.6	1.7	2.6	11.0 11.0	11.0	10.3
				Middle	4.5	26.6 26.6	26.6	7.4 7.4	7.4	22.5 22.7	22.6	97.6 97.6	97.6	6.9 6.9	6.9		2.8 2.8	2.8		11.0 11.0	11.0	
				Bottom	8	26.2 26.2	26.2	7.4 7.4	7.4	28.5 28.4	28.5	91.7 88.3	90.0	6.3 6.1	6.2	6.2	3.4 3.0	3.2		9.0 9.0	9.0	
12-Jun-08	Cloudy	Moderate	13:44	Surface	1	27.2 27.2	27.2	7.6 7.6	7.6	26.5 26.5	26.5	98.6 98.6	98.6	7.5 7.5	7.5	7.6	3.1 3.1	3.1	3.1	7.0 8.0	7.5	10.0
				Middle	4.5	27.3 27.3	27.3	7.6 7.6	7.6	26.5 26.5	26.5	101.7 101.4	101.6	7.7 7.7	7.7		3.3 3.3	3.3		5.0 5.0	5.0	
				Bottom	8	27.3 27.3	27.3	7.6 7.6	7.6	26.5 26.5	26.5	99.5 99.6	99.6	7.6 7.6	7.6	7.6	3.0 3.0	3.0		4.0 5.0	4.5	
14-Jun-08	Cloudy	Moderate	16:30	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	30.4 30.3	30.4	91.5 90.6	91.1	7.9 7.8	7.9	7.9	4.7 4.7	4.7	4.5	12.0 12.0	12.0	13.3
				Middle	4.5	26.7 26.7	26.7	7.5 7.5	7.5	30.3 30.3	30.3	93.8 93.8	93.8	7.8 7.8	7.8		4.5 4.5	4.5		12.0 12.0	12.0	
				Bottom	8	26.6 26.5	26.6	7.6 7.6	7.6	30.3 30.3	30.3	94.4 94.5	94.5	7.4 7.4	7.4	7.4	4.4 4.3	4.4		16.0 16.0	16.0	
16-Jun-08	Cloudy	Moderate	18:00	Surface	1	27.0 27.0	27.0	7.6 7.6	7.6	29.9 29.9	29.9	95.0 95.3	95.2	8.1 8.1	8.1	7.6	6.3 6.3	6.3	6.5	8.0 8.0	8.0	11.3
				Middle	4.5	26.3 26.3	26.3	7.6 7.6	7.6	25.2 25.3	25.3	83.2 83.2	83.2	7.1 7.1	7.1		6.5 6.5	6.5		10.0 10.0	10.0	
				Bottom	8	26.1 26.1	26.1	7.6 7.6	7.6	27.6 27.8	27.7	76.9 76.0	76.5	6.6 6.6	6.6	6.6	6.7 6.7	6.7		16.0 16.0	16.0	
18-Jun-08	Cloudy	Moderate	17:44	Surface	1	25.7 25.7	25.7	7.5 7.5	7.5	21.5 21.6	21.6	88.1 88.2	88.2	6.4 6.4	6.4	6.4	3.9 3.8	3.9	4.1	5.0 6.0	5.5	5.5
				Middle	4.5	25.7 25.7	25.7	7.5 7.5	7.5	21.7 21.7	21.7	86.6 86.5	86.6	6.3 6.3	6.3		4.4 4.3	4.4		6.0 6.0	6.0	
				Bottom	8	25.7 25.7	25.7	7.5 7.5	7.5	21.7 21.7	21.7	85.1 85.3	85.2	6.2 6.3	6.3	6.3	3.9 3.9	3.9		5.0 5.0	5.0	

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*
20-Jun-08	Fine	Calm	09:02	Surface	1	25.2 25.2	25.2	7.4 7.4	7.4	30.2 30.2	30.2	86.7 86.7	86.7	6.7 6.7	6.7	6.7	2.3 2.1	2.2	3.1	6.0 6.0	6.0	10.7
				Middle	4.5	25.0 25.1	25.1	7.4 7.4	7.4	30.1 30.1	30.1	85.6 85.2	85.4	6.7 6.6	6.7		2.5 2.2	2.4		18.0 18.0	18.0	
				Bottom	8	25.2 25.2	25.2	7.4 7.5	7.5	30.2 30.2	30.2	84.4 84.3	84.4	6.6 6.6	6.6	6.6	4.5 4.7	4.6		8.0 8.0	8.0	
23-Jun-08	Sunny	Calm	07:47	Surface	1	28.7 28.7	28.7	7.5 7.5	7.5	24.1 24.0	24.1	134.0 134.3	134.2	8.8 8.8	8.8	9.1	3.7 3.7	3.7	3.7	15.0 15.0	15.0	16.7
				Middle	5	28.4 28.4	28.4	7.5 7.5	7.5	24.2 24.1	24.2	144.1 144.2	144.2	9.3 9.2	9.3		3.2 3.1	3.2		16.0 16.0	16.0	
				Bottom	9	28.0 28.1	28.1	7.5 7.5	7.5	24.6 24.6	24.6	130.2 128.4	129.3	8.5 8.4	8.5	8.5	4.2 4.3	4.3		19.0 19.0	19.0	
26-Jun-08	Rainy	Moderate	11:12	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.9 22.9	22.9	92.4 91.5	92.0	6.8 6.8	6.8	6.7	1.8 1.7	1.8	1.7	9.0 9.0	9.0	9.8
				Middle	6	26.0 26.0	26.0	7.4 7.4	7.4	23.1 23.1	23.1	89.0 88.9	89.0	6.6 6.6	6.6		1.6 1.7	1.7		9.0 9.0	9.0	
				Bottom	11	26.0 26.0	26.0	7.4 7.4	7.4	23.3 23.3	23.3	87.3 87.3	87.3	6.5 6.5	6.5	6.5	1.7 1.6	1.7		12.0 11.0	11.5	
28-Jun-08	Rainy	Calm	13:29	Surface	1	27.7 27.7	27.7	7.7 7.7	7.7	18.5 18.6	18.6	107.6 106.8	107.2	7.6 7.6	7.6	7.1	2.8 2.8	2.8	3.1	15.0 14.0	14.5	12.3
				Middle	5	26.7 26.7	26.7	7.6 7.6	7.6	20.7 20.7	20.7	90.7 90.0	90.4	6.5 6.4	6.5		2.9 2.9	2.9		12.0 13.0	12.5	
				Bottom	9	25.7 25.7	25.7	7.7 7.7	7.7	27.6 27.6	27.6	73.0 73.0	73.0	6.1 6.1	6.1	6.1	3.5 3.6	3.6		10.0 10.0	10.0	
30-Jun-08	Rainy	Calm	17:07	Surface	1	25.5 25.5	25.5	7.6 7.6	7.6	24.1 24.1	24.1	97.8 97.6	97.7	7.4 7.4	7.4	7.4	3.1 3.0	3.1	3.4	17.0 18.0	17.5	21.0
				Middle	5	25.4 25.4	25.4	7.6 7.6	7.6	25.4 25.4	25.4	95.6 95.4	95.5	7.3 7.2	7.3		3.3 3.2	3.3		20.0 20.0	20.0	
				Bottom	9	25.3 25.3	25.3	7.6 7.6	7.6	25.1 25.1	25.1	91.8 92.1	92.0	7.0 7.0	7.0	7.0	3.8 3.9	3.9		25.0 26.0	25.5	

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*
3-Jun-08	Cloudy	Moderate	12:11	Surface	1	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	93.9 92.4	93.2	6.4 6.3	6.4	6.3	2.8 2.9	2.9	3.0	17.0 18.0	17.5	20.7
				Middle	5	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	90.6 89.7	90.2	6.2 6.1	6.2		2.9 2.8	2.9		23.0 22.0	22.5	
				Bottom	9	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	89.7 89.2	89.5	6.1 6.1	6.1	6.1	3.1 3.1	3.1		22.0 22.0	22.0	
5-Jun-08	Cloudy	Moderate	13:37	Surface	1	26.4 26.4	26.4	7.3 7.3	7.3	29.0 29.0	29.0	95.6 95.5	95.6	6.3 6.3	6.3	6.4	5.6 5.4	5.5	6.1	18.0 18.0	18.0	15.7
				Middle	5	26.3 26.3	26.3	7.4 7.4	7.4	29.4 29.5	29.5	94.9 94.9	94.9	6.4 6.4	6.4		6.2 6.1	6.2		13.0 13.0	13.0	
				Bottom	9	26.3 26.3	26.3	7.4 7.3	7.4	29.6 29.6	29.6	94.8 94.9	94.9	6.1 6.1	6.1	6.1	6.5 6.5	6.5		16.0 16.0	16.0	
7-Jun-08	Rainy	Rough	15:42	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	30.2 30.2	30.2	98.0 98.0	98.0	7.0 7.0	7.0	6.9	2.7 2.7	2.7	3.6	16.0 16.0	16.0	11.8
				Middle	5	26.2 26.2	26.2	7.5 7.5	7.5	30.3 30.3	30.3	95.5 95.5	95.5	6.8 6.8	6.8		2.6 2.6	2.6		11.0 11.0	11.0	
				Bottom	9	26.1 26.0	26.1	7.5 7.5	7.5	30.7 31.1	30.9	95.6 95.2	95.4	6.8 6.8	6.8	6.8	4.9 5.8	5.4		9.0 8.0	8.5	
10-Jun-08	Sunny	Calm	18:06	Surface	1	26.8 26.8	26.8	7.4 7.4	7.4	22.6 22.6	22.6	102.6 102.2	102.4	7.2 7.2	7.2	7.2	1.5 1.5	1.5	1.5	11.0 11.0	11.0	10.3
				Middle	5	26.8 26.8	26.8	7.4 7.4	7.4	22.6 22.6	22.6	100.8 101.3	101.1	7.1 7.1	7.1		1.5 1.5	1.5		11.0 11.0	11.0	
				Bottom	9	26.9 26.7	26.8	7.4 7.4	7.4	22.5 22.7	22.6	99.5 98.4	99.0	7.0 6.9	7.0	7.0	1.4 1.4	1.4		9.0 9.0	9.0	
12-Jun-08	Cloudy	Moderate	07:37	Surface	1	26.8 26.8	26.8	7.6 7.6	7.6	27.4 27.4	27.4	101.9 101.8	101.9	7.5 7.5	7.5	7.8	4.3 4.3	4.3	4.3	13.0 12.0	12.5	8.2
				Middle	5	26.7 26.7	26.7	7.6 7.6	7.6	27.3 27.3	27.3	104.5 103.6	104.1	8.0 8.0	8.0		4.1 4.1	4.1		7.0 7.0	7.0	
				Bottom	9	26.7 26.7	26.7	7.6 7.6	7.6	27.1 27.2	27.2	102.2 102.0	102.1	7.9 7.8	7.9	7.9	4.4 4.4	4.4		5.0 5.0	5.0	
14-Jun-08	Cloudy	Moderate	10:07	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	30.3 30.2	30.3	91.1 90.9	91.0	7.6 7.6	7.6	7.6	4.6 4.6	4.6	5.1	9.0 9.0	9.0	8.2
				Middle	5	26.7 26.7	26.7	7.6 7.6	7.6	30.2 30.2	30.2	90.9 90.7	90.8	7.5 7.5	7.5		5.4 5.4	5.4		7.0 8.0	7.5	
				Bottom	9	26.6 26.6	26.6	7.6 7.6	7.6	30.2 30.2	30.2	90.6 90.3	90.5	7.5 7.5	7.5	7.5	5.2 5.2	5.2		8.0 8.0	8.0	
16-Jun-08	Cloudy	Moderate	12:26	Surface	1	27.0 27.0	27.0	7.5 7.5	7.5	20.2 20.2	20.2	97.9 98.5	98.2	8.3 8.3	8.3	8.2	6.6 6.6	6.6	6.8	8.0 8.0	8.0	11.0
				Middle	5	26.4 26.4	26.4	7.6 7.5	7.6	25.0 25.1	25.1	96.6 94.8	95.7	8.1 7.9	8.0		6.6 6.6	6.6		8.0 8.0	8.0	
				Bottom	9	26.0 26.0	26.0	7.5 7.6	7.6	28.1 27.9	28.0	76.4 75.0	75.7	6.6 6.5	6.6	6.6	7.1 7.1	7.1		17.0 17.0	17.0	

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*
18-Jun-08	Cloudy	Moderate	12:01	Surface	1	26.2 26.2	26.2	7.5 7.5	7.5	21.3 21.3	21.3	93.1 93.1	93.1	6.8 6.8	6.8	6.8	3.5 3.5	3.5	3.6	5.0 5.0	5.0	11.7
				Middle	5	26.1 26.1	26.1	7.6 7.6	7.6	21.6 21.7	21.7	90.8 90.5	90.7	6.7 6.6	6.7		3.8 3.7	3.8		19.0 19.0	19.0	
				Bottom	9	26.1 26.1	26.1	7.5 7.6	7.6	21.9 21.9	21.9	89.6 89.4	89.5	6.6 6.5	6.6		3.6 3.6	3.6		11.0 11.0	11.0	
20-Jun-08	Fine	Calm	13:26	Surface	1	26.4 26.4	26.4	7.4 7.4	7.4	30.4 30.4	30.4	85.6 85.5	85.6	6.7 6.7	6.7	6.7	2.4 2.4	2.4	2.9	6.0 6.0	6.0	6.8
				Middle	5	26.4 26.4	26.4	7.4 7.4	7.4	30.4 30.4	30.4	84.9 84.9	84.9	6.6 6.6	6.6		2.8 2.7	2.8		9.0 9.0	9.0	
				Bottom	9	26.3 26.3	26.3	7.4 7.4	7.4	30.4 30.4	30.4	84.8 84.9	84.9	6.6 6.6	6.6	6.6	3.4 3.6	3.5		5.0 6.0	5.5	
23-Jun-08	Fine	Calm	14:45	Surface	1	28.1 28.3	28.2	7.5 7.5	7.5	24.4 24.3	24.4	152.2 158.3	155.3	9.8 10.1	10.0	9.2	3.5 3.4	3.5	3.3	12.0 12.0	12.0	12.2
				Middle	5.5	27.3 27.3	27.3	7.5 7.5	7.5	25.8 25.8	25.8	130.3 129.3	129.8	8.4 8.4	8.4		3.3 3.3	3.3		9.0 10.0	9.5	
				Bottom	10	26.5 26.4	26.5	7.5 7.5	7.5	26.7 26.6	26.7	106.0 103.0	104.5	7.8 7.7	7.8	7.8	3.0 3.0	3.0		15.0 15.0	15.0	
26-Jun-08	Rainy	Moderate	16:57	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.7 22.7	22.7	90.4 89.8	90.1	6.7 6.7	6.7	6.6	1.9 1.9	1.9	1.9	9.0 9.0	9.0	9.3
				Middle	4.5	26.0 26.0	26.0	7.4 7.4	7.4	23.0 23.0	23.0	87.8 87.6	87.7	6.5 6.5	6.5		1.9 1.9	1.9		9.0 10.0	9.5	
				Bottom	8	26.0 26.0	26.0	7.4 7.4	7.4	23.3 23.3	23.3	86.3 86.2	86.3	6.4 6.4	6.4	6.4	1.8 1.8	1.8		9.0 10.0	9.5	
28-Jun-08	Rainy	Calm	09:14	Surface	1	27.9 27.9	27.9	7.7 7.7	7.7	18.2 18.2	18.2	110.0 110.0	110.0	7.8 7.8	7.8	7.0	2.7 2.7	2.7	3.5	9.0 9.0	9.0	10.3
				Middle	5	26.5 26.5	26.5	7.6 7.6	7.6	23.2 23.1	23.2	86.1 86.1	86.1	6.1 6.1	6.1		3.6 3.9	3.8		10.0 11.0	10.5	
				Bottom	9	25.6 25.6	25.6	7.6 7.6	7.6	28.8 28.9	28.9	81.9 81.9	81.9	6.5 6.5	6.5	6.5	4.0 4.1	4.1		12.0 11.0	11.5	
30-Jun-08	Rainy	Calm	09:38	Surface	1	25.5 25.5	25.5	7.5 7.5	7.5	22.2 22.2	22.2	92.0 92.0	92.0	6.9 6.9	6.9	6.8	3.3 3.3	3.3	3.2	18.0 18.0	18.0	23.3
				Middle	5	25.4 25.4	25.4	7.5 7.5	7.5	24.5 24.5	24.5	88.5 88.5	88.5	6.6 6.6	6.6		3.1 3.1	3.1		26.0 26.0	26.0	
				Bottom	9	25.2 25.2	25.2	7.5 7.5	7.5	26.6 26.6	26.6	80.1 80.1	80.1	6.1 6.1	6.1	6.1	3.3 3.3	3.3		26.0 26.0	26.0	

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*
3-Jun-08	Cloudy	Moderate	17:41	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	99.4 99.2	99.3	6.8 6.8	6.8	6.6	2.4 2.4	2.4	2.9	20.0 20.0	20.0	17.7
				Middle	5	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	92.4 91.9	92.2	6.3 6.3	6.3		2.8 2.7	2.8		17.0 17.0	17.0	
				Bottom	9	26.0 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	90.9 90.9	90.9	6.2 6.2	6.2	6.2	3.4 3.6	3.5		16.0 16.0	16.0	
5-Jun-08	Sunny	Moderate	08:38	Surface	1	26.4 26.4	26.4	7.4 7.4	7.4	29.1 29.1	29.1	94.5 94.6	94.6	6.7 6.7	6.7	6.8	5.7 5.7	5.7	8.1	11.0 11.0	11.0	11.0
				Middle	5	26.3 26.3	26.3	7.4 7.4	7.4	29.3 29.4	29.4	94.6 94.6	94.6	6.8 6.8	6.8		8.4 8.5	8.5		9.0 9.0	9.0	
				Bottom	9	26.3 26.3	26.3	7.4 7.4	7.4	29.5 29.5	29.5	94.7 94.8	94.8	6.5 6.5	6.5	6.5	9.9 10.0	10.0		13.0 13.0	13.0	
10-Jun-08	Sunny	Calm	11:56	Surface	1	27.1 27.0	27.1	7.4 7.4	7.4	22.4 22.5	22.5	106.4 105.0	105.7	7.5 7.4	7.5	7.4	1.6 1.6	1.6	2.1	11.0 11.0	11.0	13.7
				Middle	5	27.0 26.7	26.9	7.4 7.4	7.4	22.4 22.4	22.4	100.8 101.3	101.1	7.1 7.2	7.2		2.0 1.8	1.9		12.0 12.0	12.0	
				Bottom	9	26.3 25.9	26.1	7.4 7.4	7.4	28.4 30.7	29.6	94.6 94.9	94.8	6.5 6.5	6.5	6.5	2.7 2.7	2.7		18.0 18.0	18.0	
12-Jun-08	Cloudy	Moderate	13:33	Surface	1	27.6 27.8	27.7	7.6 7.6	7.6	26.3 26.2	26.3	111.8 117.1	114.5	8.4 8.8	8.6	9.0	4.4 4.4	4.4	4.5	4.0 4.0	4.0	10.3
				Middle	5	27.8 27.8	27.8	7.6 7.6	7.6	26.2 26.2	26.2	125.1 125.0	125.1	9.3 9.3	9.3		4.8 4.8	4.8		4.0 3.0	3.5	
				Bottom	9	27.8 27.8	27.8	7.6 7.6	7.6	26.2 26.2	26.2	127.4 129.0	128.2	9.5 9.6	9.6	9.6	4.2 4.3	4.3		3.0 4.0	3.5	
14-Jun-08	Cloudy	Moderate	16:19	Surface	1	26.7 26.6	26.7	7.6 7.6	7.6	30.4 30.4	30.4	94.5 94.6	94.6	7.6 7.6	7.6	7.6	4.4 4.3	4.4	4.9	19.0 18.0	18.5	14.2
				Middle	5	26.5 26.5	26.5	7.6 7.6	7.6	30.4 30.5	30.5	92.8 92.8	92.8	7.6 7.6	7.6		4.9 4.8	4.9		16.0 16.0	16.0	
				Bottom	9	26.4 26.4	26.4	7.6 7.6	7.6	30.4 30.4	30.4	95.4 95.4	95.4	7.6 7.6	7.6	7.6	5.4 5.5	5.5		8.0 8.0	8.0	
16-Jun-08	Cloudy	Moderate	18:12	Surface	1	26.9 26.9	26.9	7.6 7.6	7.6	20.5 20.7	20.6	99.0 98.9	99.0	8.3 8.3	8.3	8.0	6.6 6.5	6.6	6.7	9.0 10.0	9.5	14.8
				Middle	4.5	26.3 26.3	26.3	7.6 7.6	7.6	25.2 25.2	25.2	91.7 91.7	91.7	7.7 7.7	7.7		6.5 6.5	6.5		19.0 19.0	19.0	
				Bottom	8	26.0 26.0	26.0	7.6 7.6	7.6	27.9 27.9	27.9	74.3 73.8	74.1	6.5 6.4	6.5	6.5	7.0 6.9	7.0		16.0 16.0	16.0	
18-Jun-08	Cloudy	Moderate	17:33	Surface	1	25.8 25.8	25.8	7.5 7.5	7.5	21.6 21.6	21.6	89.6 89.4	89.5	6.6 6.5	6.6	6.5	3.6 3.6	3.6	3.5	6.0 5.0	5.5	6.7
				Middle	5	25.8 25.8	25.8	7.5 7.5	7.5	21.6 21.6	21.6	87.9 87.7	87.8	6.4 6.4	6.4		3.7 3.5	3.6		10.0 10.0	10.0	
				Bottom	9	25.8 25.8	25.8	7.5 7.5	7.5	21.7 21.7	21.7	86.1 85.8	86.0	6.3 6.3	6.3	6.3	3.1 3.2	3.2		4.0 5.0	4.5	

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*
20-Jun-08	Fine	Calm	08:41	Surface	1	25.2 25.2	25.2	7.5 7.5	7.5	30.2 30.2	30.2	84.5 84.6	84.6	6.6 6.6	6.6	6.6	2.8 2.9	2.9	3.0	5.0 6.0	5.5	5.5
				Middle	5	25.3 25.3	25.3	7.4 7.4	7.4	30.3 30.2	30.3	84.6 84.6	84.6	6.6 6.6	6.6		2.9 2.8	2.9		6.0 6.0	6.0	
				Bottom	9	25.2 25.2	25.2	7.5 7.5	7.5	30.2 30.2	30.2	84.7 84.8	84.8	6.6 6.6	6.6	6.6	3.1 3.1	3.1		5.0 5.0	5.0	
23-Jun-08	Sunny	Calm	07:35	Surface	1	28.6 28.6	28.6	7.5 7.5	7.5	22.7 22.7	22.7	125.6 124.7	125.2	8.3 8.2	8.3	8.6	3.4 3.3	3.4	3.9	12.0 12.0	12.0	12.5
				Middle	5	28.4 28.4	28.4	7.5 7.5	7.5	24.0 24.1	24.1	133.3 132.1	132.7	8.8 8.7	8.8		3.9 3.8	3.9		11.0 12.0	11.5	
				Bottom	9	27.9 28.0	28.0	7.5 7.5	7.5	24.4 24.4	24.4	112.6 111.4	112.0	7.4 7.4	7.4	7.4	4.4 4.5	4.5		14.0 14.0	14.0	
26-Jun-08	Rainy	Moderate	10:57	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.7 22.7	22.7	92.3 91.2	91.8	6.8 6.8	6.8	6.7	2.0 1.9	2.0	1.9	6.0 6.0	6.0	9.2
				Middle	4.5	26.0 26.0	26.0	7.4 7.5	7.5	23.0 23.0	23.0	88.4 88.1	88.3	6.5 6.5	6.5		1.9 1.9	1.9		9.0 8.0	8.5	
				Bottom	8	26.0 26.0	26.0	7.4 7.4	7.4	23.3 23.3	23.3	86.9 86.6	86.8	6.4 6.4	6.4	6.4	1.9 1.9	1.9		13.0 13.0	13.0	
28-Jun-08	Rainy	Calm	14:01	Surface	1	27.8 27.9	27.9	7.7 7.7	7.7	18.2 18.2	18.2	111.1 111.1	111.1	7.9 7.9	7.9	6.9	2.7 2.7	2.7	3.3	10.0 10.0	10.0	12.8
				Middle	5	26.5 26.5	26.5	7.7 7.7	7.7	22.6 22.5	22.6	81.2 81.2	81.2	5.8 5.8	5.8		3.0 3.0	3.0		13.0 14.0	13.5	
				Bottom	9	25.5 25.5	25.5	7.7 7.7	7.7	29.0 29.1	29.1	72.7 72.7	72.7	6.1 6.1	6.1	6.1	4.1 4.2	4.2		15.0 15.0	15.0	
30-Jun-08	Rainy	Calm	16:51	Surface	1	25.5 25.5	25.5	7.6 7.6	7.6	25.1 25.1	25.1	94.1 94.1	94.1	7.2 7.1	7.2	7.1	3.1 3.1	3.1	3.3	19.0 19.0	19.0	23.0
				Middle	5	25.4 25.4	25.4	7.6 7.6	7.6	26.4 26.4	26.4	91.9 91.9	91.9	7.0 7.0	7.0		3.2 3.0	3.1		24.0 24.0	24.0	
				Bottom	9	25.3 25.3	25.3	7.6 7.6	7.6	26.1 26.1	26.1	88.8 88.7	88.8	6.8 6.8	6.8	6.8	3.7 3.8	3.8		26.0 26.0	26.0	

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-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*
3-Jun-08	Cloudy	Moderate	12:46	Surface	1	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	98.0 97.6	97.8	6.7 6.6	6.7	6.7	2.6 2.3	2.5	3.1	22.0 22.0	22.0	20.7
				Middle	5.5	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	96.9 96.6	96.8	6.6 6.6	6.6		3.2 3.3	3.3		25.0 25.0	25.0	
				Bottom	10	26.1 26.1	26.1	7.5 7.5	7.5	48.9 48.9	48.9	95.9 95.8	95.9	6.5 6.5	6.5	6.5	3.7 3.3	3.5		15.0 15.0	15.0	
5-Jun-08	Cloudy	Moderate	13:13	Surface	1	26.3 26.3	26.3	7.4 7.4	7.4	29.7 29.6	29.7	95.0 95.3	95.2	6.7 6.7	6.7	6.7	8.9 8.9	8.9	7.7	16.0 16.0	16.0	13.0
				Middle	6	26.2 26.2	26.2	7.4 7.4	7.4	29.9 30.0	30.0	95.4 95.5	95.5	6.7 6.7	6.7		8.2 7.7	8.0		8.0 8.0	8.0	
				Bottom	11	26.2 26.1	26.2	7.4 7.4	7.4	30.4 30.6	30.5	95.8 95.6	95.7	6.4 6.4	6.4	6.4	6.7 5.9	6.3		15.0 15.0	15.0	
7-Jun-08	Rainy	Rough	15:12	Surface	1	26.2 26.2	26.2	7.5 7.4	7.5	30.7 30.7	30.7	104.0 103.5	103.8	7.4 7.4	7.4	7.3	1.6 1.6	1.6	1.8	11.0 11.0	11.0	10.8
				Middle	6	26.0 26.0	26.0	7.4 7.5	7.5	31.1 31.1	31.1	101.6 100.7	101.2	7.2 7.2	7.2		1.5 1.6	1.6		11.0 10.0	10.5	
				Bottom	11	25.8 25.8	25.8	7.4 7.4	7.4	31.6 31.7	31.7	97.4 96.3	96.9	7.0 6.9	7.0	7.0	2.0 2.3	2.2		11.0 11.0	11.0	
10-Jun-08	Sunny	Calm	17:38	Surface	1	26.8 26.8	26.8	7.4 7.4	7.4	22.6 22.6	22.6	100.8 100.8	100.8	7.1 7.1	7.1	7.1	1.5 1.5	1.5	1.5	9.0 9.0	9.0	10.7
				Middle	5.5	26.8 26.8	26.8	7.3 7.3	7.3	22.6 22.6	22.6	101.3 101.1	101.2	7.1 7.1	7.1		1.5 1.5	1.5		7.0 7.0	7.0	
				Bottom	10	26.8 26.8	26.8	7.3 7.3	7.3	22.6 22.7	22.7	100.7 101.0	100.9	7.1 7.1	7.1	7.1	1.5 1.5	1.5		16.0 16.0	16.0	
12-Jun-08	Cloudy	Moderate	08:15	Surface	1	26.7 26.7	26.7	7.6 7.6	7.6	28.2 28.3	28.3	99.7 99.7	99.7	7.7 7.7	7.7	8.1	3.6 3.6	3.6	4.0	9.0 9.0	9.0	9.8
				Middle	6	26.8 26.8	26.8	7.6 7.6	7.6	28.2 28.2	28.2	109.8 108.3	109.1	8.4 8.3	8.4		4.4 4.3	4.4		5.0 6.0	5.5	
				Bottom	11	26.7 26.7	26.7	7.5 7.5	7.5	28.3 28.3	28.3	107.0 106.9	107.0	8.4 8.3	8.4	8.4	4.0 4.0	4.0		15.0 15.0	15.0	
14-Jun-08	Cloudy	Moderate	10:34	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	97.9 97.8	97.9	8.1 8.1	8.1	8.1	3.8 3.9	3.9	4.6	16.0 16.0	16.0	12.5
				Middle	6	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	97.7 97.7	97.7	8.1 8.1	8.1		4.2 4.2	4.2		11.0 11.0	11.0	
				Bottom	11	26.6 26.6	26.6	7.5 7.5	7.5	30.4 30.4	30.4	97.5 97.6	97.6	8.1 8.1	8.1	8.1	5.7 5.7	5.7		10.0 11.0	10.5	
16-Jun-08	Cloudy	Moderate	11:59	Surface	1	27.0 27.0	27.0	7.6 7.6	7.6	20.1 20.0	20.1	94.4 94.6	94.5	8.0 8.0	8.0	7.8	6.3 6.3	6.3	6.5	10.0 10.0	10.0	10.2
				Middle	5.5	26.4 26.3	26.4	7.6 7.6	7.6	25.1 25.2	25.2	89.2 86.4	87.8	7.5 7.4	7.5		6.4 6.4	6.4		14.0 14.0	14.0	
				Bottom	10	26.2 26.2	26.2	7.6 7.5	7.6	27.2 27.2	27.2	80.7 79.4	80.1	6.9 6.8	6.9	6.9	6.9 6.8	6.9		6.0 7.0	6.5	

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-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*
18-Jun-08	Cloudy	Moderate	12:47	Surface	1	26.3 26.3	26.3	7.6 7.6	7.6	22.1 22.1	22.1	93.6 93.6	93.6	6.9 6.9	6.9	6.8	3.8 3.7	3.8	3.7	12.0 12.0	12.0	11.7
				Middle	6	26.2 26.2	26.2	7.6 7.6	7.6	22.3 22.3	22.3	90.4 90.4	90.4	6.6 6.6	6.6		3.5 3.5	3.5		12.0 12.0	12.0	
				Bottom	11	26.0 26.0	26.0	7.5 7.5	7.5	22.4 22.4	22.4	88.4 88.3	88.4	6.5 6.5	6.5	6.5	3.8 3.7	3.8		11.0 11.0	11.0	
20-Jun-08	Fine	Calm	13:35	Surface	1	26.2 26.2	26.2	7.4 7.4	7.4	30.4 30.4	30.4	85.0 85.3	85.2	6.6 6.6	6.6	6.6	1.9 1.6	1.8	2.8	5.0 5.0	5.0	11.3
				Middle	6	26.2 26.2	26.2	7.4 7.4	7.4	30.3 30.3	30.3	85.4 85.5	85.5	6.6 6.6	6.6		2.7 2.8	2.8		14.0 14.0	14.0	
				Bottom	11	26.0 26.1	26.1	7.4 7.4	7.4	30.5 30.4	30.5	85.8 85.6	85.7	6.7 6.6	6.7	6.7	3.8 3.7	3.8		15.0 15.0	15.0	
23-Jun-08	Fine	Calm	15:25	Surface	1	28.5 28.5	28.5	7.5 7.5	7.5	23.7 23.9	23.8	145.2 142.5	143.9	9.2 9.6	9.4	10.1	3.5 3.5	3.5	3.5	10.0 10.0	10.0	14.3
				Middle	6.5	27.4 27.4	27.4	7.5 7.5	7.5	24.6 24.7	24.7	164.5 163.5	164.0	10.8 10.8	10.8		3.4 3.4	3.4		14.0 14.0	14.0	
				Bottom	12	27.0 26.9	27.0	7.4 7.4	7.4	25.2 25.3	25.3	141.3 140.4	140.9	9.3 9.3	9.3	9.3	3.6 3.6	3.6		19.0 19.0	19.0	
26-Jun-08	Rainy	Moderate	16:53	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.7 22.7	22.7	93.4 93.0	93.2	6.9 6.9	6.9	6.8	2.0 1.9	2.0	2.0	10.0 10.0	10.0	7.8
				Middle	4.5	26.0 26.0	26.0	7.4 7.4	7.4	23.1 23.1	23.1	88.9 88.6	88.8	6.6 6.6	6.6		1.9 1.9	1.9		7.0 7.0	7.0	
				Bottom	8	25.9 25.9	25.9	7.4 7.4	7.4	23.4 23.4	23.4	85.2 84.9	85.1	6.3 6.3	6.3	6.3	2.2 2.2	2.2		6.0 7.0	6.5	
28-Jun-08	Rainy	Calm	08:39	Surface	1	27.4 27.4	27.4	7.7 7.7	7.7	19.8 19.8	19.8	102.0 102.0	102.0	7.2 7.2	7.2	6.7	3.3 3.4	3.4	3.3	6.0 6.0	6.0	9.7
				Middle	6	26.6 26.6	26.6	7.7 7.7	7.7	22.2 22.2	22.2	85.9 85.9	85.9	6.1 6.1	6.1		2.6 2.6	2.6		11.0 11.0	11.0	
				Bottom	11	25.6 25.6	25.6	7.7 7.6	7.7	28.2 29.0	28.6	79.2 79.3	79.3	6.4 6.3	6.4	6.4	3.8 3.9	3.9		12.0 12.0	12.0	
30-Jun-08	Rainy	Calm	09:58	Surface	1	25.5 25.5	25.5	7.6 7.6	7.6	23.1 23.0	23.1	89.1 89.1	89.1	6.7 6.7	6.7	6.6	3.4 3.4	3.4	3.4	22.0 22.0	22.0	25.3
				Middle	6	25.4 25.3	25.4	7.5 7.6	7.6	25.2 25.2	25.2	85.1 85.9	85.5	6.4 6.4	6.4		3.3 3.3	3.3		26.0 26.0	26.0	
				Bottom	11	25.3 25.3	25.3	7.6 7.6	7.6	25.6 25.6	25.6	80.9 80.9	80.9	6.0 6.0	6.0	6.0	3.4 3.5	3.5		28.0 28.0	28.0	

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*
3-Jun-08	Cloudy	Moderate	18:16	Surface	1	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	95.3 94.9	95.1	6.5 6.5	6.5	6.5	1.9 1.6	1.8	2.8	18.0 18.0	18.0	16.0
				Middle	6	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	94.3 94.2	94.3	6.4 6.4	6.4		2.7 2.8	2.8		11.0 11.0	11.0	
				Bottom	11	26.1 26.1	26.1	7.4 7.4	7.4	48.9 48.9	48.9	94.0 94.0	94.0	6.4 6.4	6.4	6.4	3.8 3.7	3.8		19.0 19.0	19.0	
5-Jun-08	Sunny	Moderate	08:12	Surface	1	26.3 26.3	26.3	7.4 7.4	7.4	29.5 29.6	29.6	99.7 99.7	99.7	6.6 6.6	6.6	6.7	6.0 6.1	6.1	7.4	7.0 7.0	7.0	13.5
				Middle	6.5	26.2 26.2	26.2	7.4 7.4	7.4	29.9 30.0	30.0	97.3 97.0	97.2	6.7 6.7	6.7		8.4 7.9	8.2		14.0 14.0	14.0	
				Bottom	12	26.1 26.1	26.1	7.4 7.4	7.4	30.5 30.6	30.6	96.6 96.0	96.3	6.3 6.3	6.3	6.3	7.8 7.9	7.9		20.0 19.0	19.5	
10-Jun-08	Sunny	Calm	11:26	Surface	1	27.1 27.1	27.1	7.4 7.4	7.4	22.5 22.5	22.5	105.6 106.1	105.9	7.4 7.5	7.5	7.5	1.5 1.5	1.5	1.5	13.0 14.0	13.5	15.2
				Middle	6	27.0 27.0	27.0	7.4 7.4	7.4	22.5 22.5	22.5	105.2 105.3	105.3	7.4 7.4	7.4		1.6 1.6	1.6		16.0 16.0	16.0	
				Bottom	11	27.0 27.0	27.0	7.4 7.4	7.4	22.5 22.5	22.5	104.4 104.0	104.2	7.3 7.3	7.3	7.3	1.4 1.4	1.4		16.0 16.0	16.0	
12-Jun-08	Cloudy	Moderate	14:15	Surface	1	27.7 27.7	27.7	7.6 7.6	7.6	26.9 26.9	26.9	96.4 98.3	97.4	7.2 7.4	7.3	7.9	3.3 3.3	3.3	3.3	10.0 9.0	9.5	10.7
				Middle	6.5	27.6 27.6	27.6	7.6 7.6	7.6	26.9 26.9	26.9	109.9 111.4	110.7	8.3 8.4	8.4		3.1 3.2	3.2		10.0 10.0	10.0	
				Bottom	12	27.5 27.5	27.5	7.6 7.6	7.6	26.9 26.9	26.9	112.3 111.7	112.0	8.5 8.4	8.5	8.5	3.3 3.3	3.3		8.0 8.0	8.0	
14-Jun-08	Cloudy	Moderate	16:52	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	30.5 30.4	30.5	98.6 97.6	98.1	7.7 7.6	7.7	7.6	4.0 4.1	4.1	4.8	14.0 14.0	14.0	14.0
				Middle	5.5	26.6 26.6	26.6	7.6 7.6	7.6	30.4 30.4	30.4	95.1 95.9	95.5	7.5 7.5	7.5		5.3 5.1	5.2		12.0 12.0	12.0	
				Bottom	10	26.5 26.5	26.5	7.6 7.6	7.6	30.4 30.4	30.4	95.5 95.4	95.5	7.3 7.3	7.3	7.3	5.1 4.9	5.0		16.0 16.0	16.0	
16-Jun-08	Cloudy	Moderate	17:40	Surface	1	26.6 26.6	26.6	7.6 7.6	7.6	22.2 23.2	22.7	92.8 92.3	92.6	7.9 7.8	7.9	7.3	6.1 6.1	6.1	6.3	12.0 12.0	12.0	11.2
				Middle	6	25.6 25.6	25.6	7.6 7.6	7.6	32.0 32.0	32.0	78.0 76.0	77.0	6.6 6.5	6.6		6.3 6.3	6.3		14.0 14.0	14.0	
				Bottom	11	25.5 25.5	25.5	7.6 7.6	7.6	32.2 32.1	32.2	71.3 71.1	71.2	6.2 6.2	6.2	6.2	6.4 6.5	6.5		7.0 8.0	7.5	
18-Jun-08	Cloudy	Moderate	18:14	Surface	1	25.9 25.9	25.9	7.6 7.6	7.6	21.7 21.7	21.7	91.9 91.5	91.7	6.7 6.7	6.7	6.6	3.9 3.9	3.9	4.1	9.0 9.0	9.0	12.7
				Middle	6	25.7 25.7	25.7	7.5 7.5	7.5	21.7 21.7	21.7	89.2 88.7	89.0	6.5 6.5	6.5		4.0 4.0	4.0		19.0 19.0	19.0	
				Bottom	11	25.7 25.7	25.7	7.5 7.5	7.5	21.8 21.8	21.8	90.4 90.7	90.6	6.6 6.6	6.6	6.6	4.3 4.3	4.3		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**

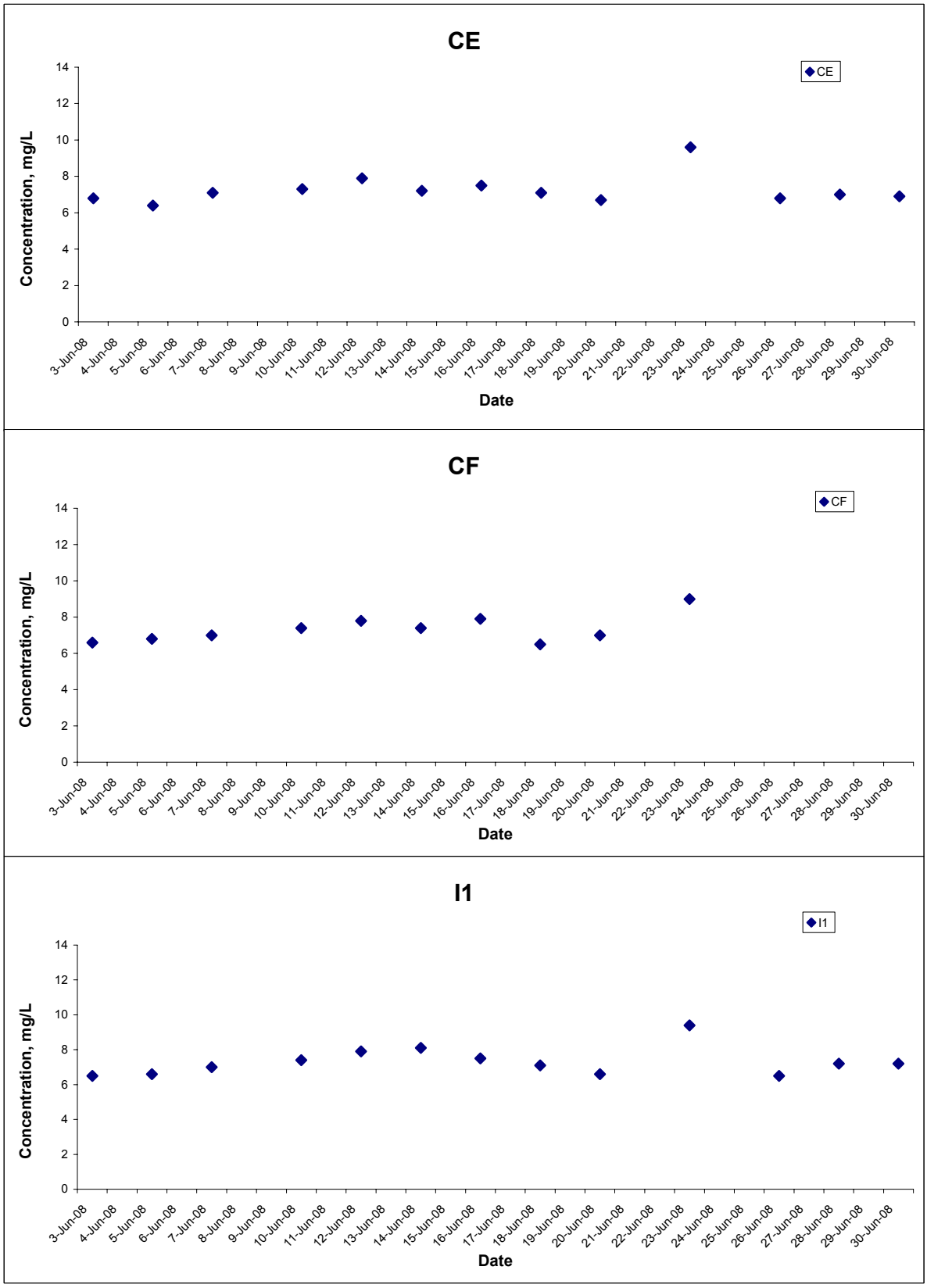
Water Quality Monitoring Results at Intake B - Mid-Flood Tide

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*
20-Jun-08	Fine	Calm	09:22	Surface	1	25.2 25.2	25.2	7.4 7.4	7.4	30.3 30.3	30.3	89.7 89.7	89.7	6.9 6.9	6.9	6.9	2.6 2.3	2.5	3.1	6.0 6.0	6.0	14.5
				Middle	6	25.2 25.3	25.3	7.4 7.4	7.4	30.4 30.4	30.4	87.3 87.0	87.2	6.8 6.7	6.8		3.2 3.3	3.3		21.0 20.0	20.5	
				Bottom	11	25.3 25.2	25.3	7.4 7.4	7.4	30.4 30.4	30.4	86.6 86.0	86.3	6.7 6.7	6.7	6.7	3.7 3.3	3.5		17.0 17.0	17.0	
23-Jun-08	Sunny	Calm	08:17	Surface	1	28.5 28.5	28.5	7.5 7.5	7.5	24.8 24.8	24.8	138.9 139.4	139.2	9.0 9.0	9.0	8.6	2.8 2.7	2.8	3.6	12.0 12.0	12.0	15.3
				Middle	6	27.8 27.9	27.9	7.5 7.5	7.5	25.0 25.0	25.0	124.1 128.0	126.1	7.9 8.2	8.1		3.7 3.6	3.7		17.0 17.0	17.0	
				Bottom	11	27.0 27.0	27.0	7.5 7.5	7.5	25.1 25.1	25.1	120.5 121.6	121.1	7.8 7.8	7.8	7.8	4.1 4.3	4.2		17.0 17.0	17.0	
26-Jun-08	Rainy	Moderate	10:53	Surface	1	26.0 26.0	26.0	7.4 7.4	7.4	22.7 22.7	22.7	94.5 94.5	94.5	7.0 7.0	7.0	6.9	2.1 2.1	2.1	2.1	10.0 10.0	10.0	9.7
				Middle	4.5	26.0 26.0	26.0	7.4 7.4	7.4	23.0 23.0	23.0	90.9 90.0	90.5	6.7 6.7	6.7		2.0 2.0	2.0		10.0 10.0	10.0	
				Bottom	8	25.9 25.9	25.9	7.4 7.4	7.4	23.5 23.5	23.5	86.6 85.7	86.2	6.4 6.3	6.4	6.4	2.1 2.3	2.2		9.0 9.0	9.0	
28-Jun-08	Rainy	Calm	13:46	Surface	1	27.5 27.5	27.5	7.7 7.6	7.7	19.7 19.7	19.7	104.9 104.7	104.8	7.4 7.4	7.4	6.9	2.5 2.5	2.5	3.2	5.0 5.0	5.0	12.0
				Middle	6	26.8 26.8	26.8	7.7 7.7	7.7	21.3 21.3	21.3	89.4 89.0	89.2	6.3 6.3	6.3		3.3 3.3	3.3		14.0 14.0	14.0	
				Bottom	11	25.6 25.6	25.6	7.7 7.7	7.7	28.2 28.2	28.2	73.7 73.8	73.8	6.2 6.2	6.2	6.2	3.9 3.9	3.9		17.0 17.0	17.0	
30-Jun-08	Rainy	Calm	17:28	Surface	1	25.4 25.5	25.5	7.6 7.6	7.6	24.1 24.1	24.1	98.0 97.9	98.0	7.5 7.4	7.5	7.4	3.1 3.1	3.1	3.1	18.0 19.0	18.5	21.2
				Middle	6.5	25.4 25.3	25.4	7.6 7.6	7.6	25.3 25.3	25.3	95.5 95.3	95.4	7.3 7.2	7.3		3.2 3.2	3.2		17.0 17.0	17.0	
				Bottom	12	25.2 25.2	25.2	7.6 7.6	7.6	25.1 25.1	25.1	93.7 93.6	93.7	7.2 7.2	7.2	7.2	3.1 3.1	3.1		28.0 28.0	28.0	

Remarks: * **DA: Depth-Averaged**

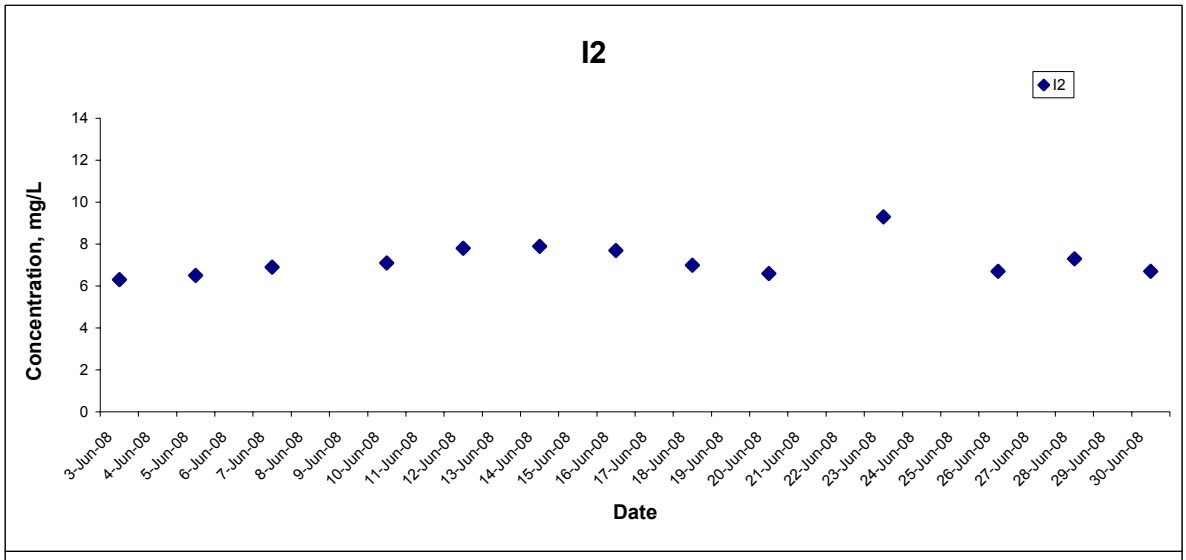
** **Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher**

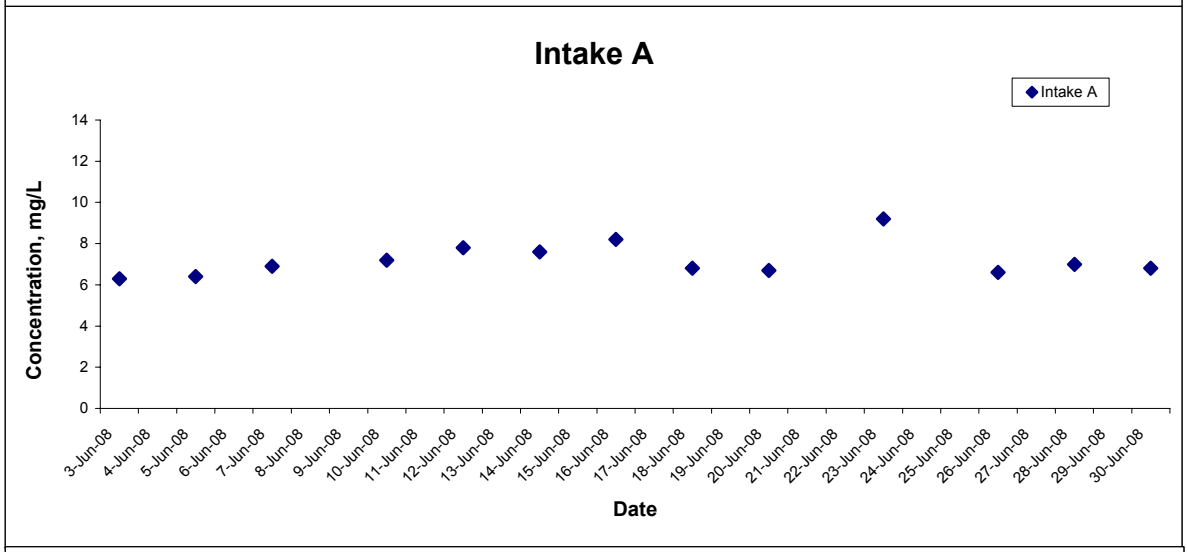
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

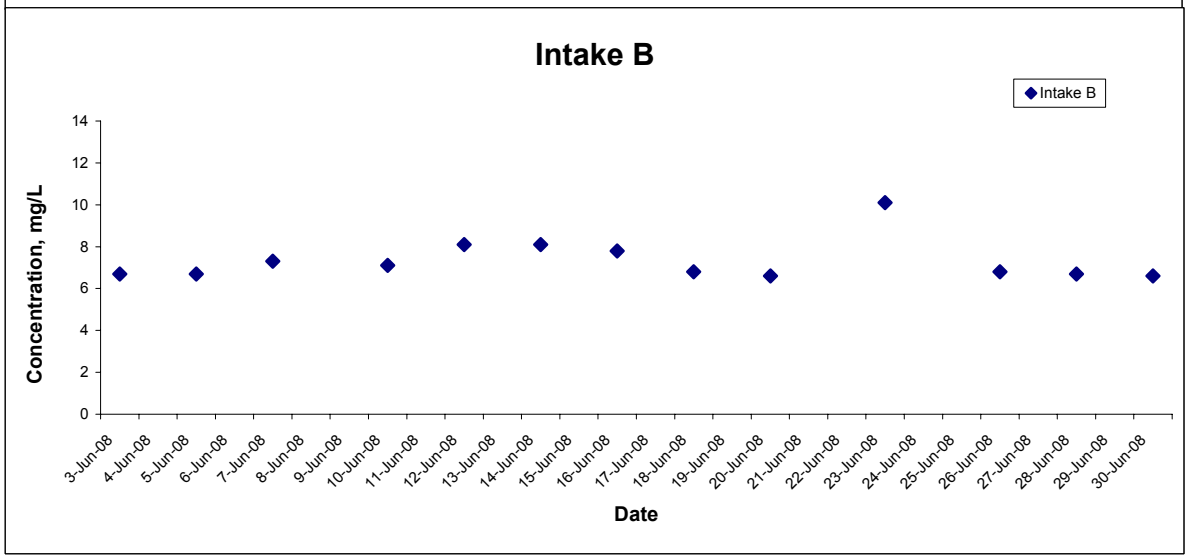


Title		Scale	Project No.	
	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	N.T.S	MA8001	CINOTECH
	Graphical Presentation of Baseline Water Quality Monitoring Results	Date: Jun 08	Appendix: H	

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



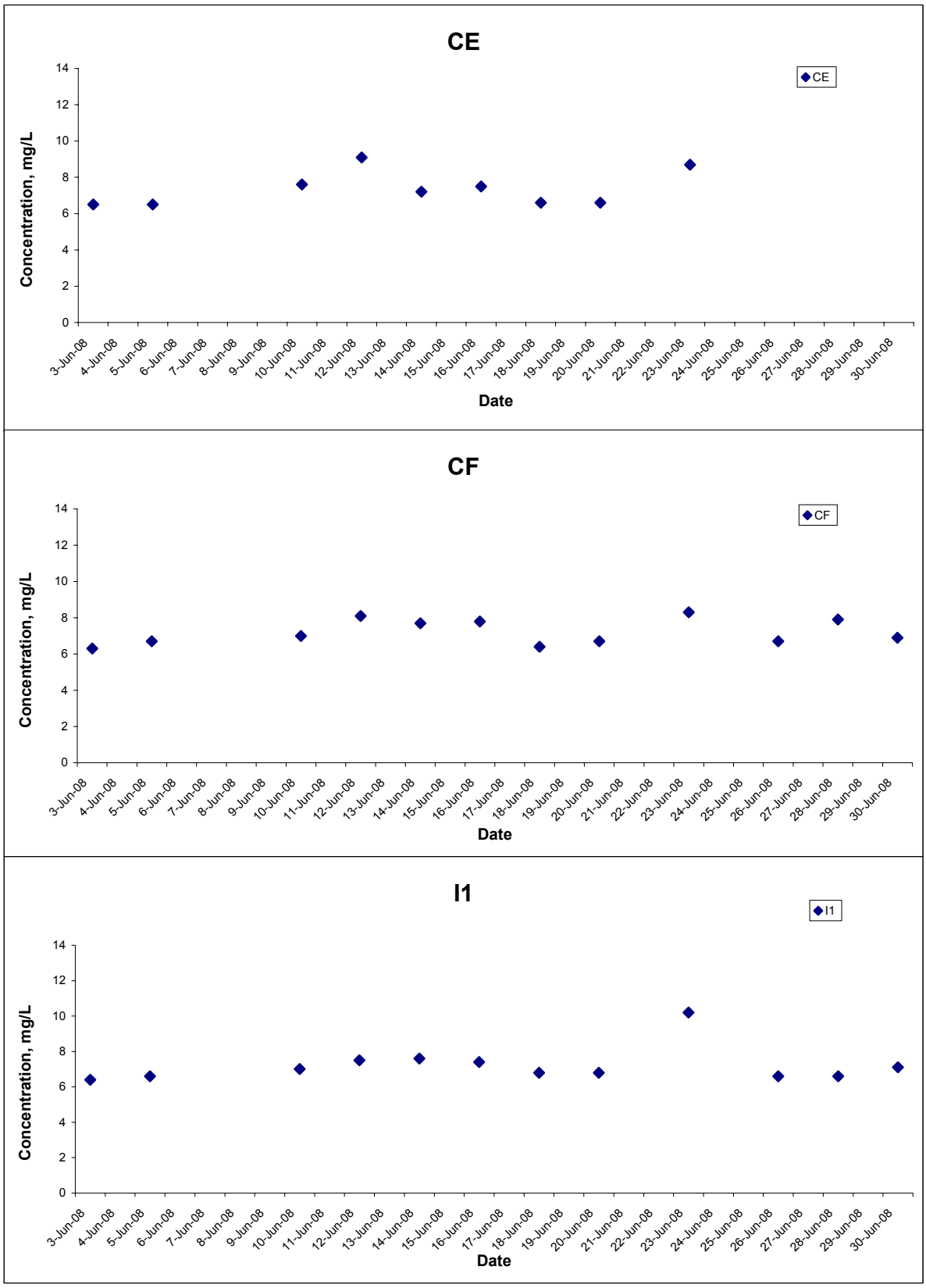




Title	Scale	Project No.
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	N.T.S	MA8001
	Date: Jun 08	Appendix: H

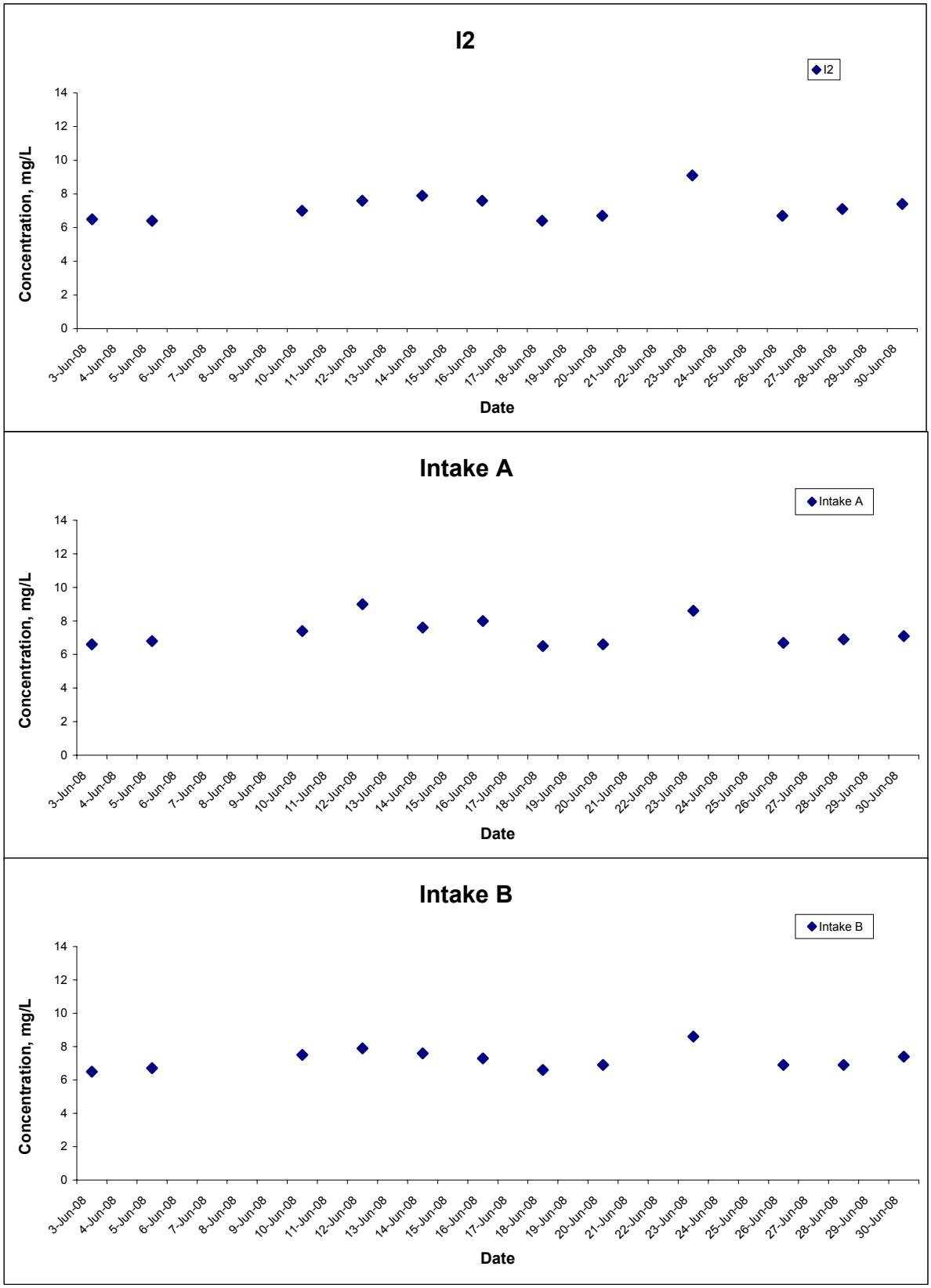
CINOTECH

Dissolved Oxygen (Surface & Middle) 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	CINOTECH
	Graphical Presentation of Baseline Water Quality Monitoring Results	Date: Jun 08	Appendix: H	

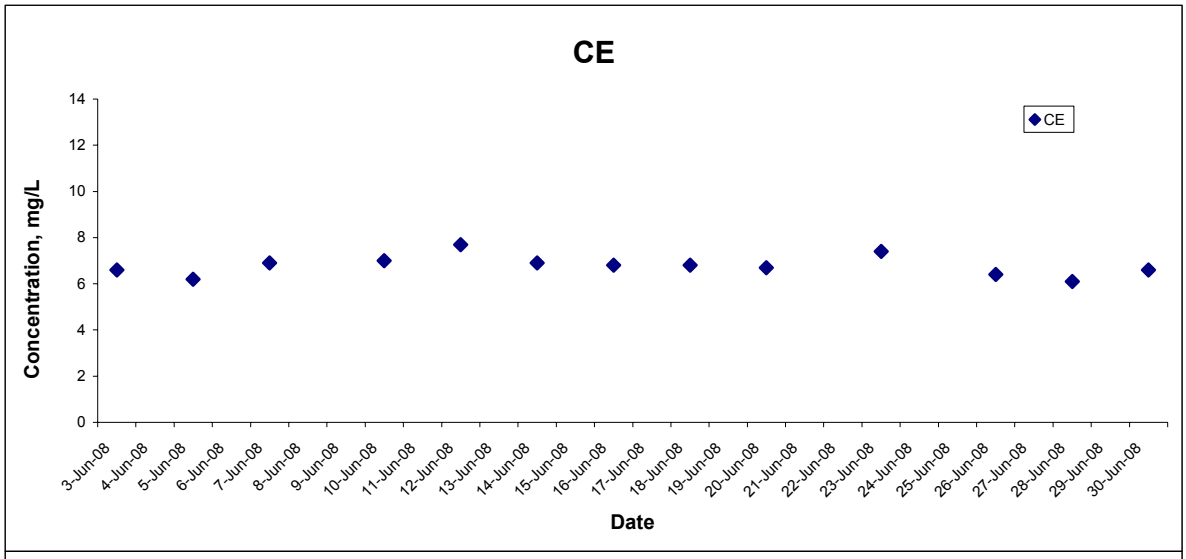
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide

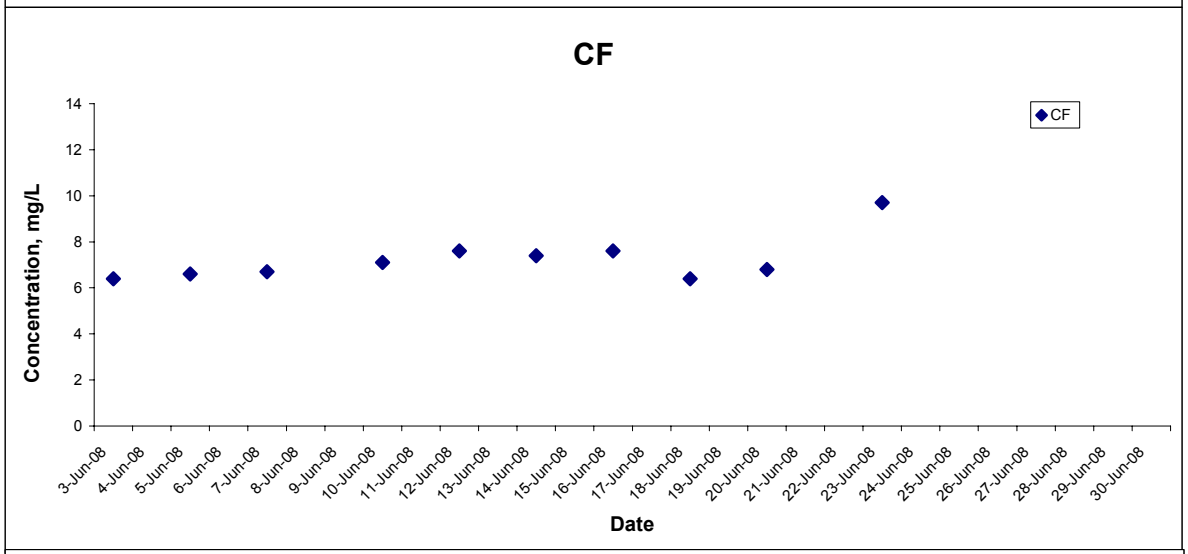


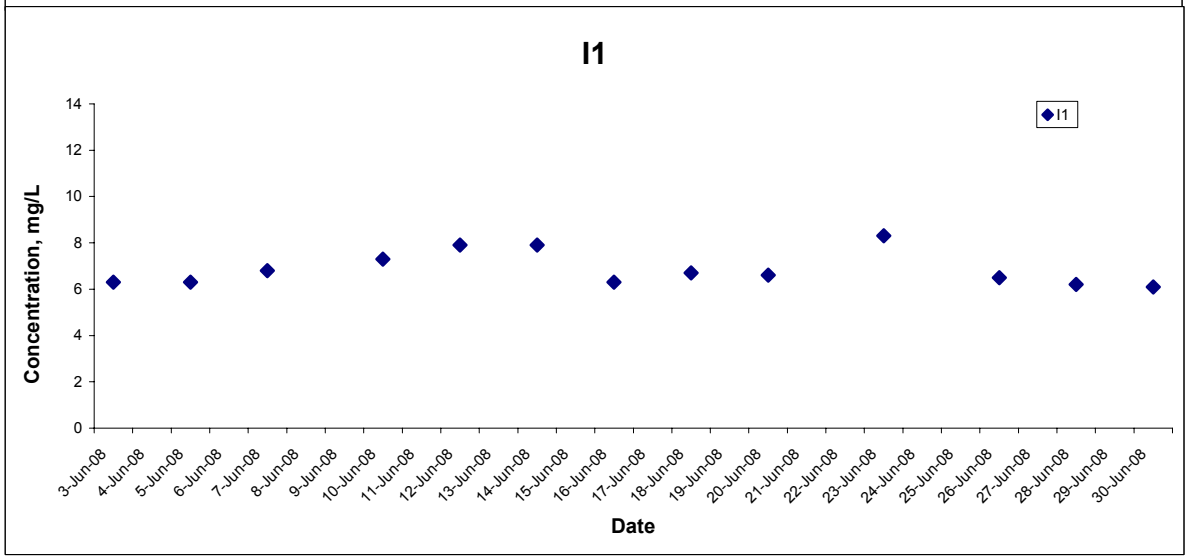
Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

CINOTECH

Dissolved Oxygen (Bottom) at Mid-Ebb Tide

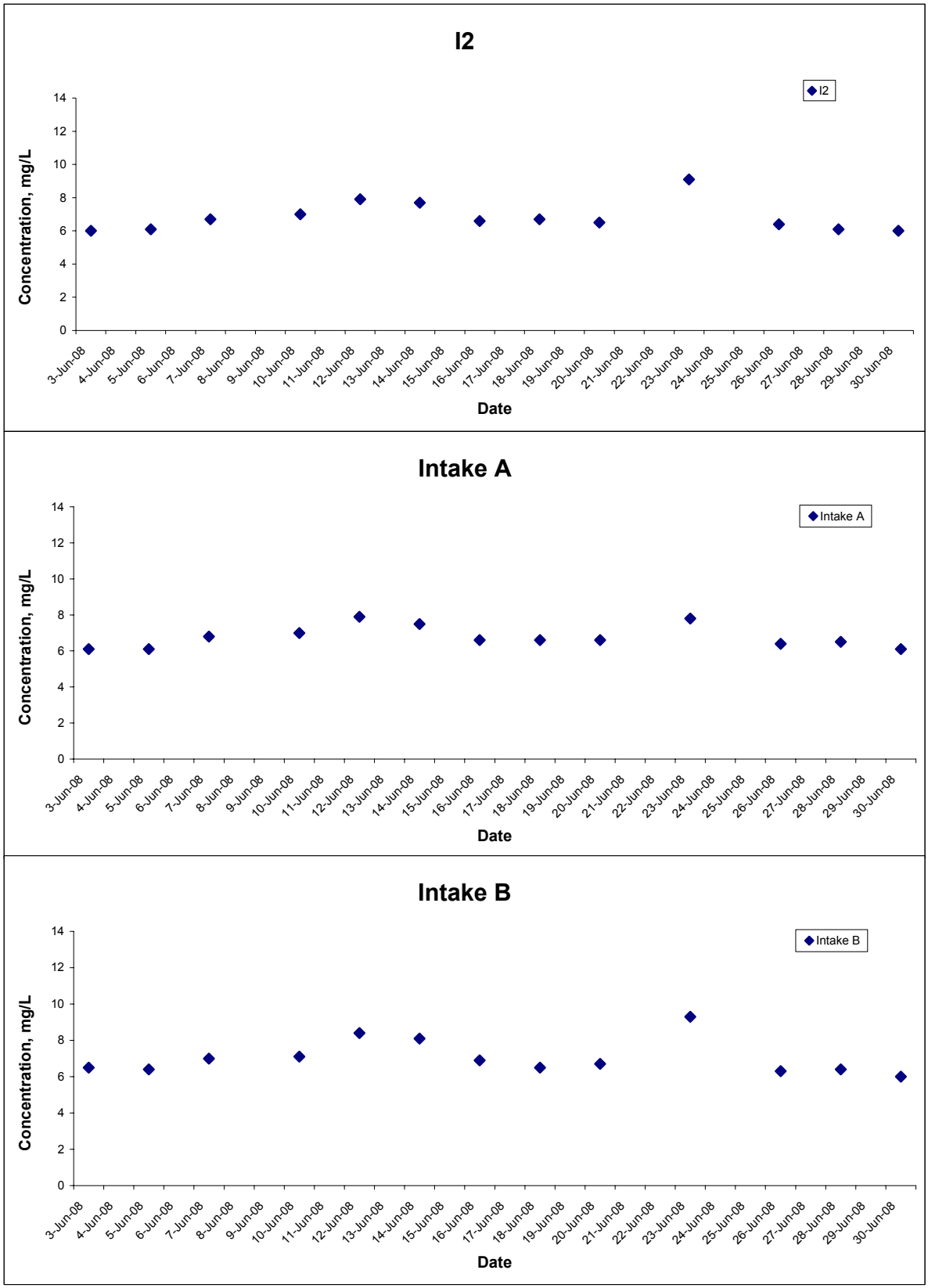






Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

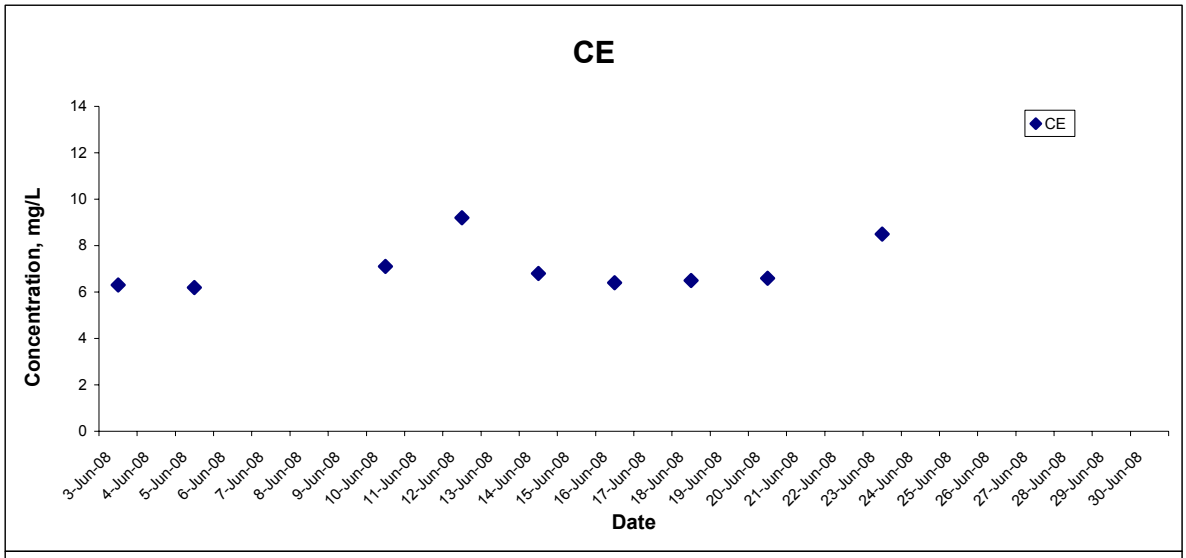
Dissolved Oxygen (Bottom) at Mid-Ebb Tide

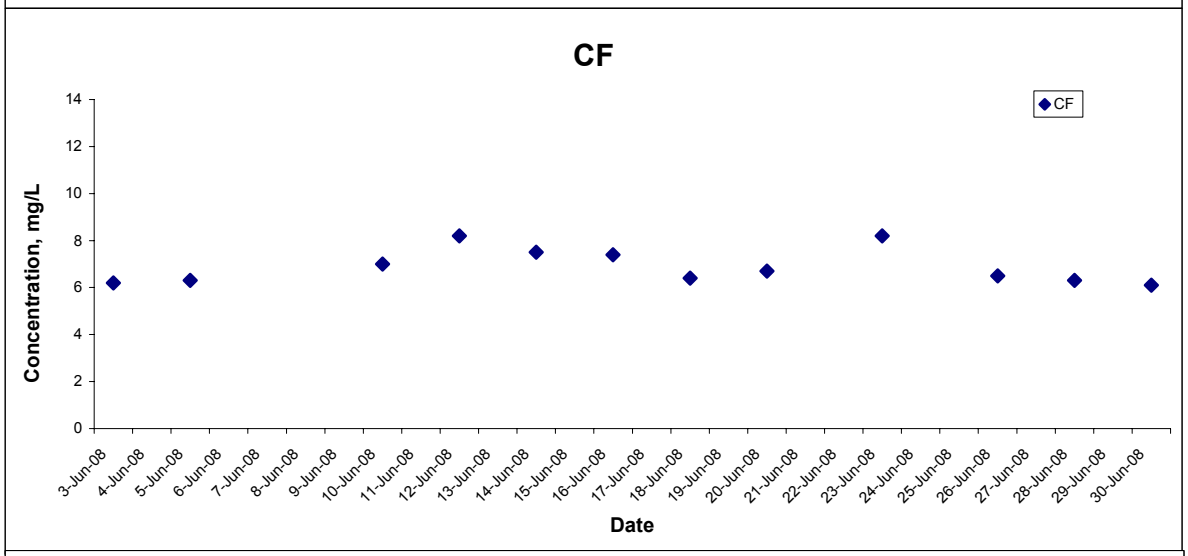


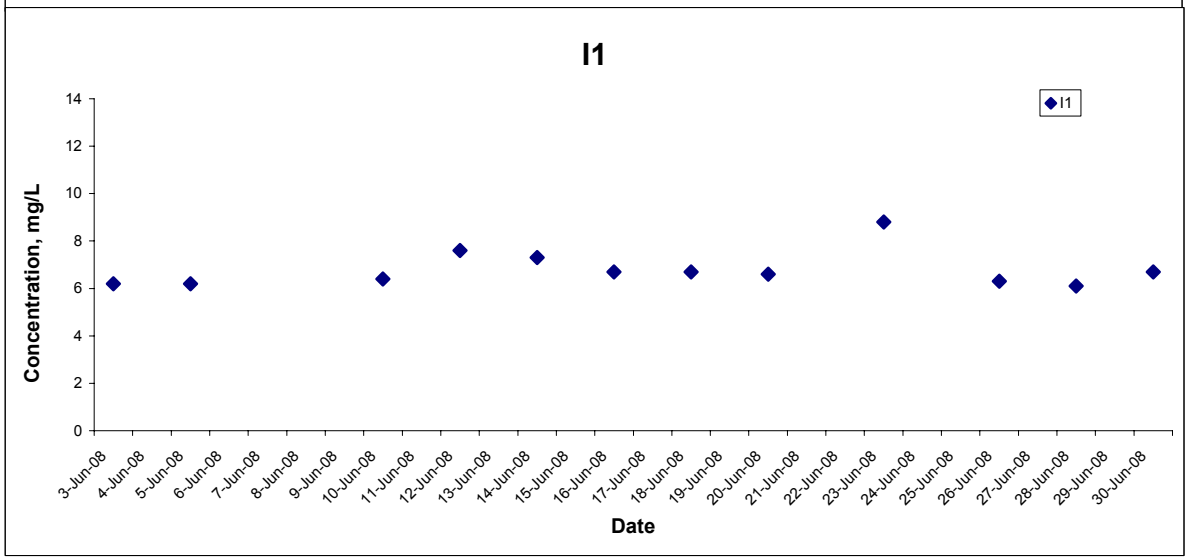
Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

CINOTECH

Dissolved Oxygen (Bottom) at Mid-Flood Tide



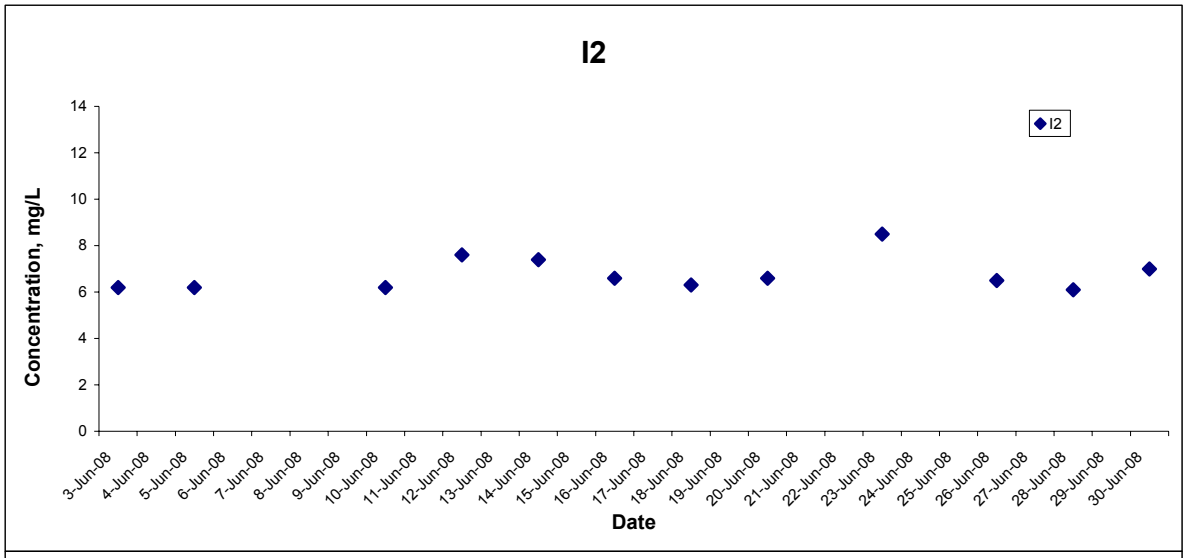


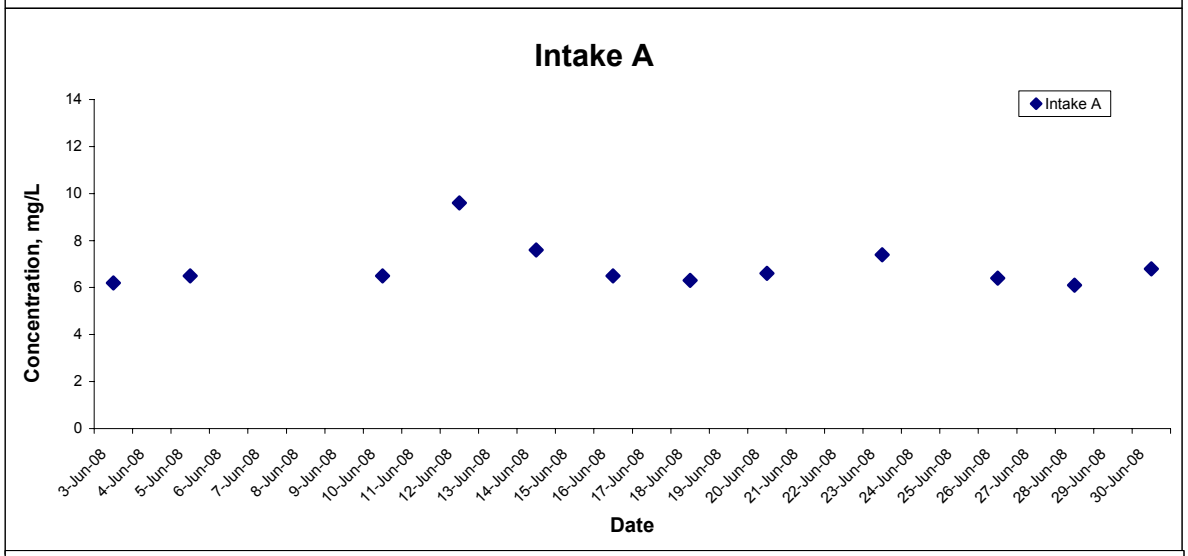


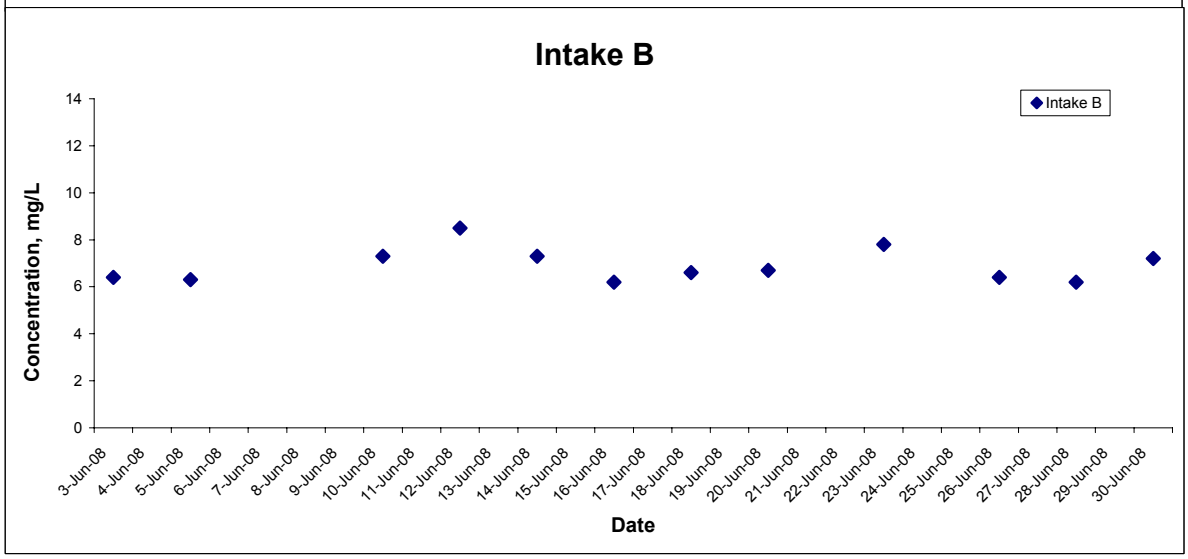
Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

CINOTECH

Dissolved Oxygen (Bottom) at Mid-Flood Tide



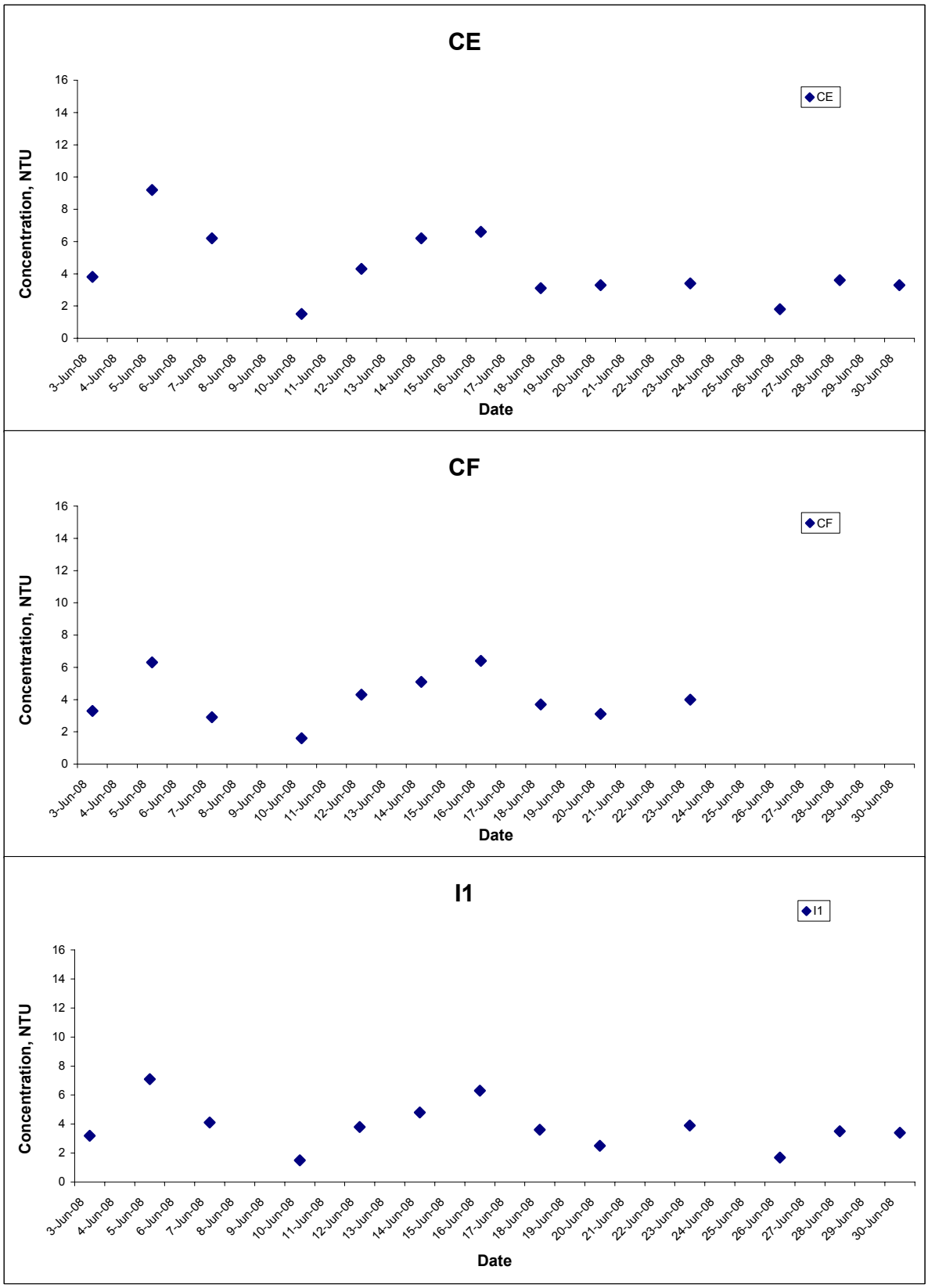




Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

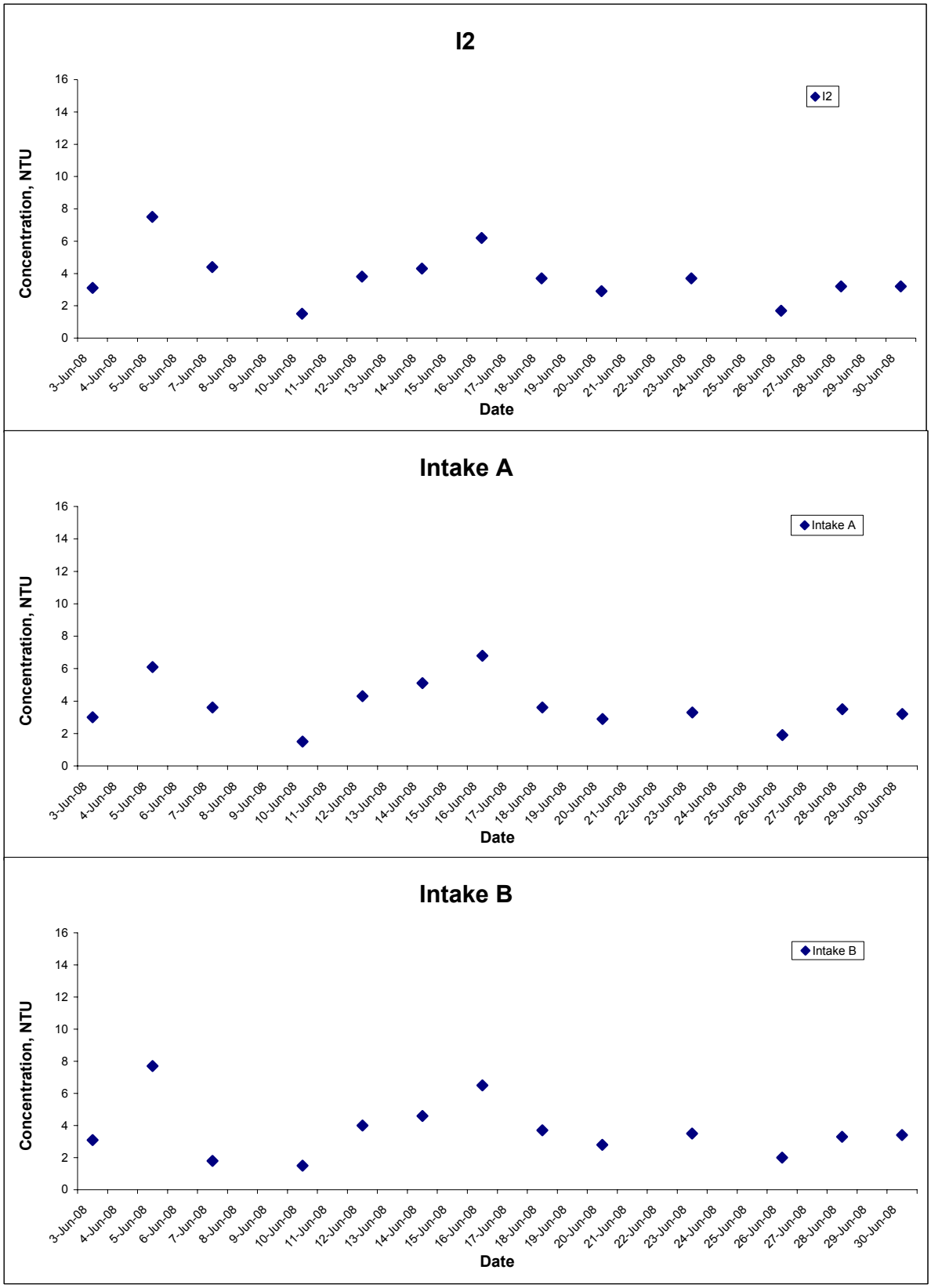
CINOTECH

Turbidity (Depth-averaged) at Mid-Ebb Tide



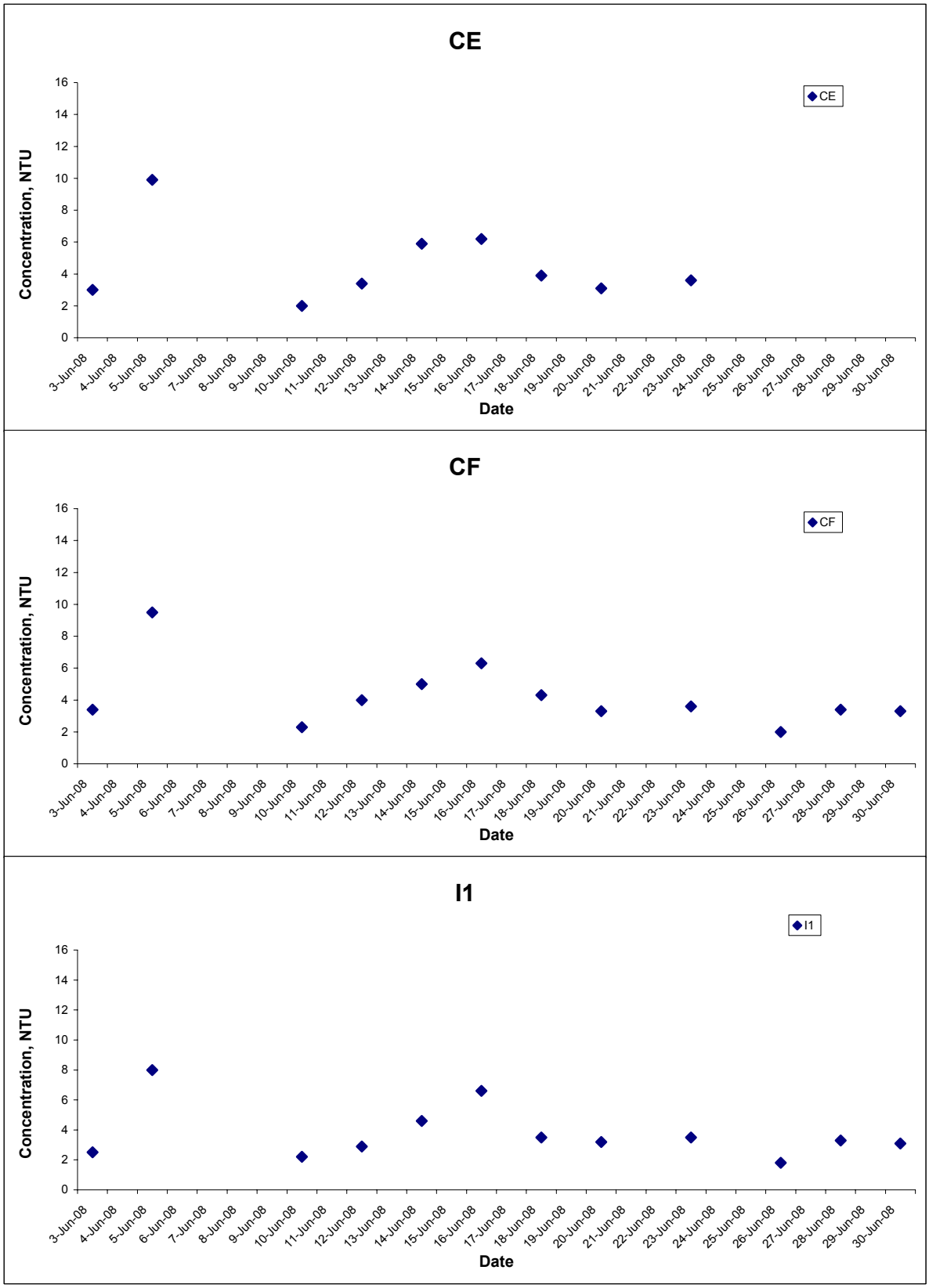
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

Turbidity (Depth-averaged) at Mid-Ebb Tide



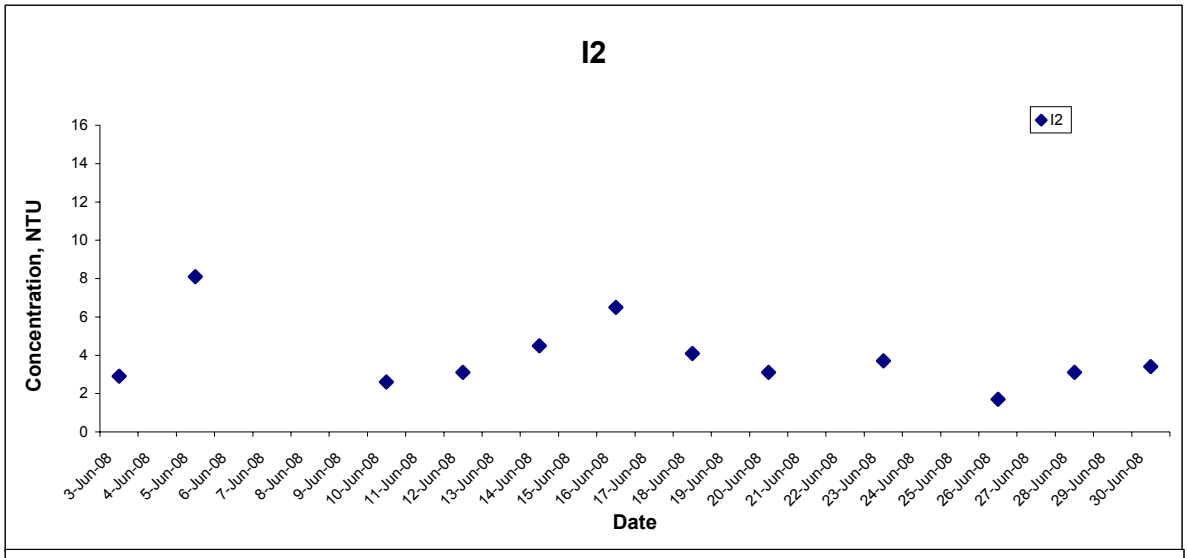
Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

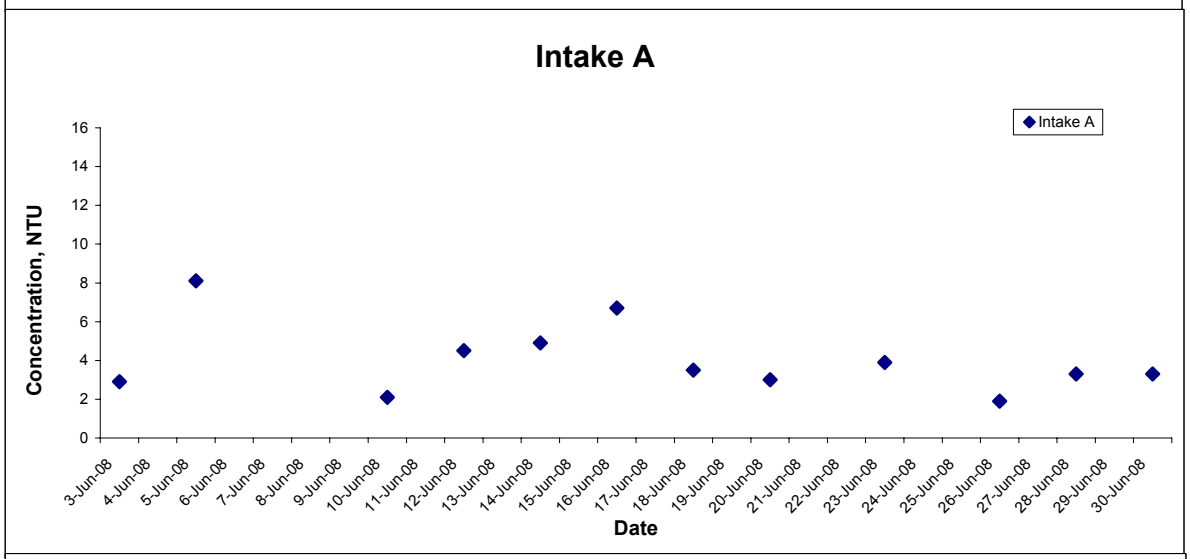
Turbidity (Depth-averaged) at Mid-Flood Tide

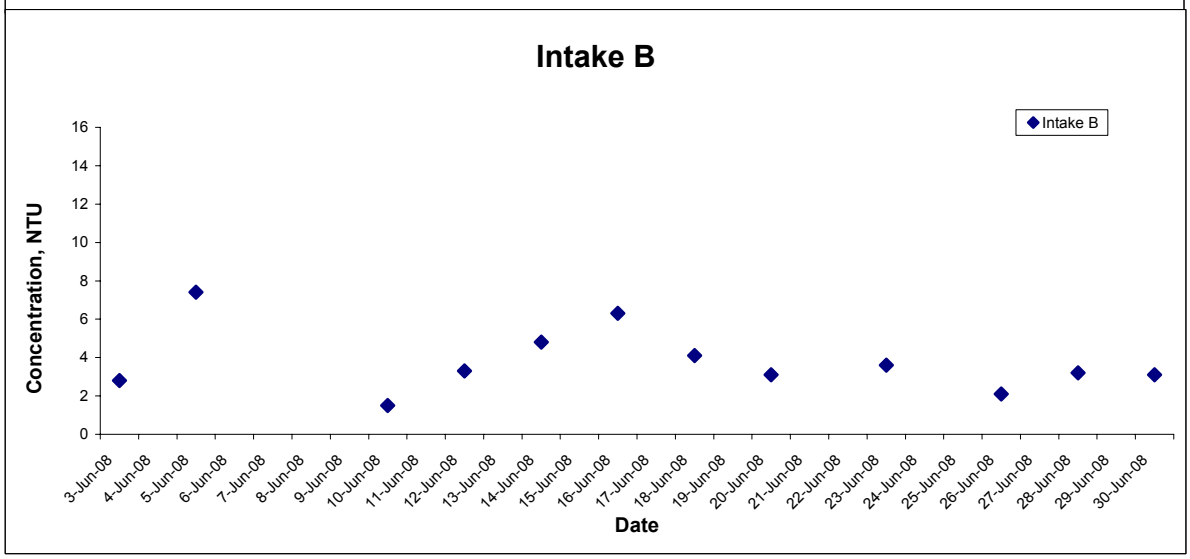


Title: Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

Turbidity (Depth-averaged) at Mid-Flood Tide

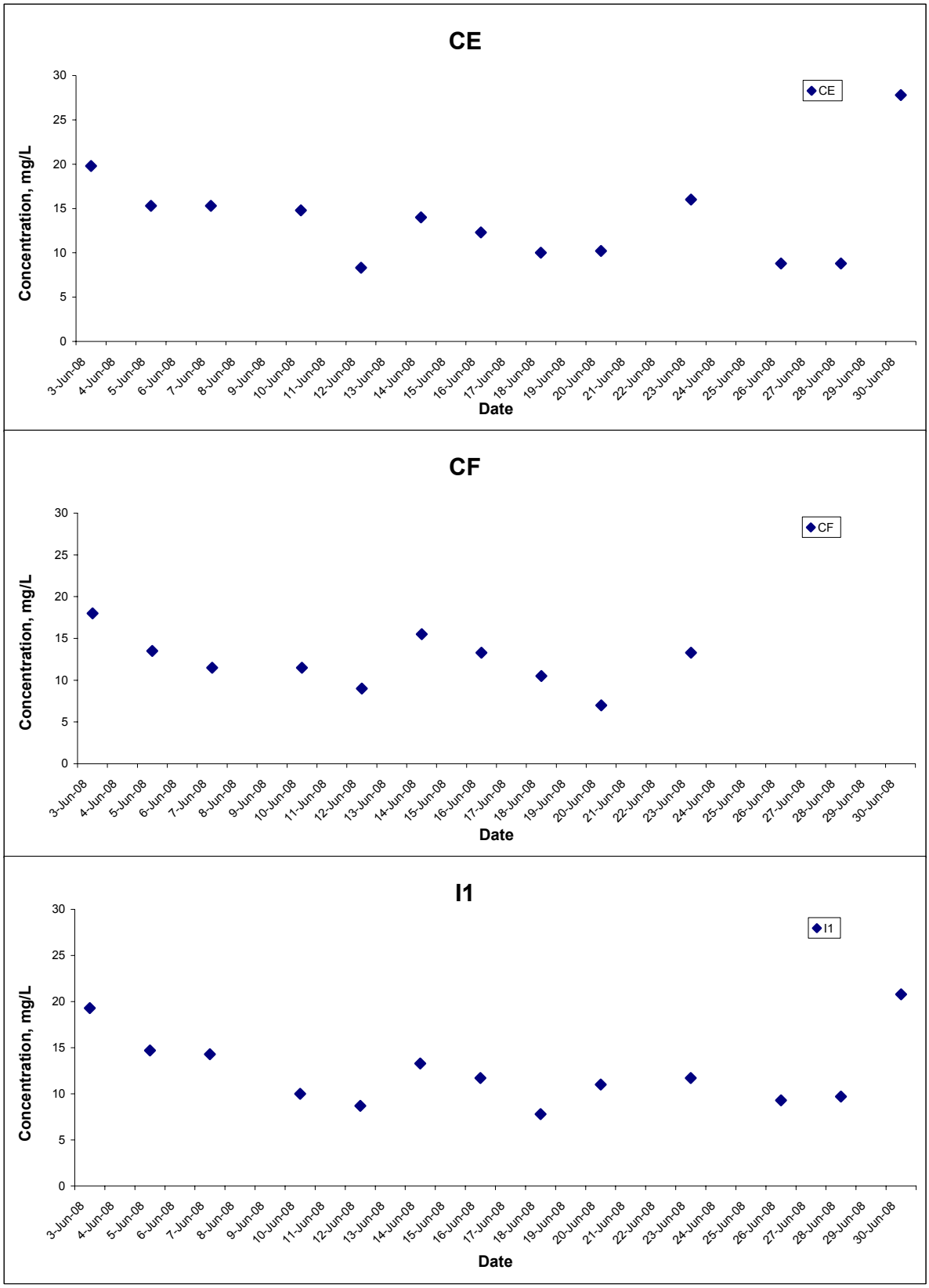






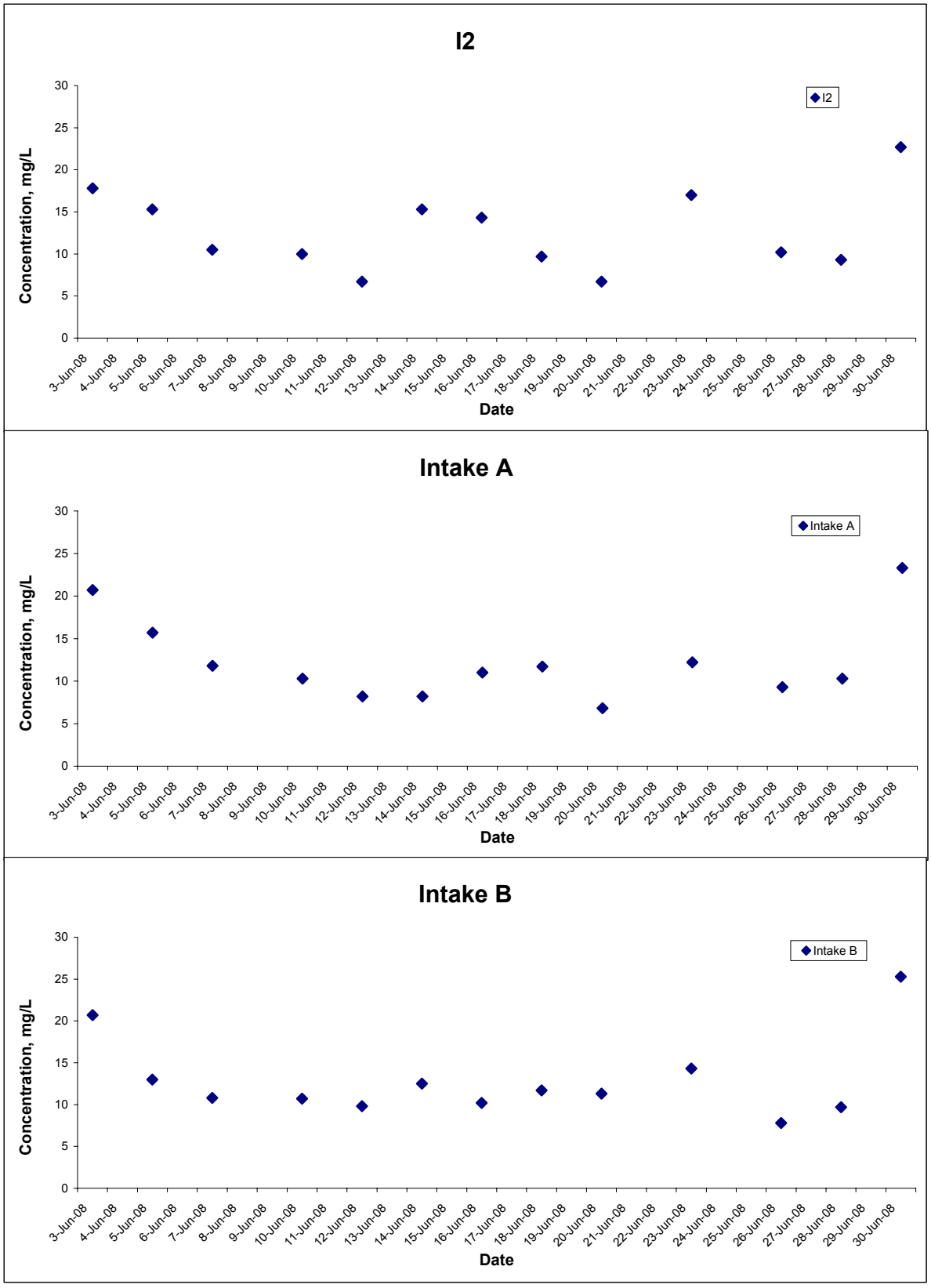
Title		Scale	Project No.	
	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	N.T.S	MA8001	CINOTECH
	Graphical Presentation of Baseline Water Quality Monitoring Results	Date: Jun 08	Appendix: H	

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



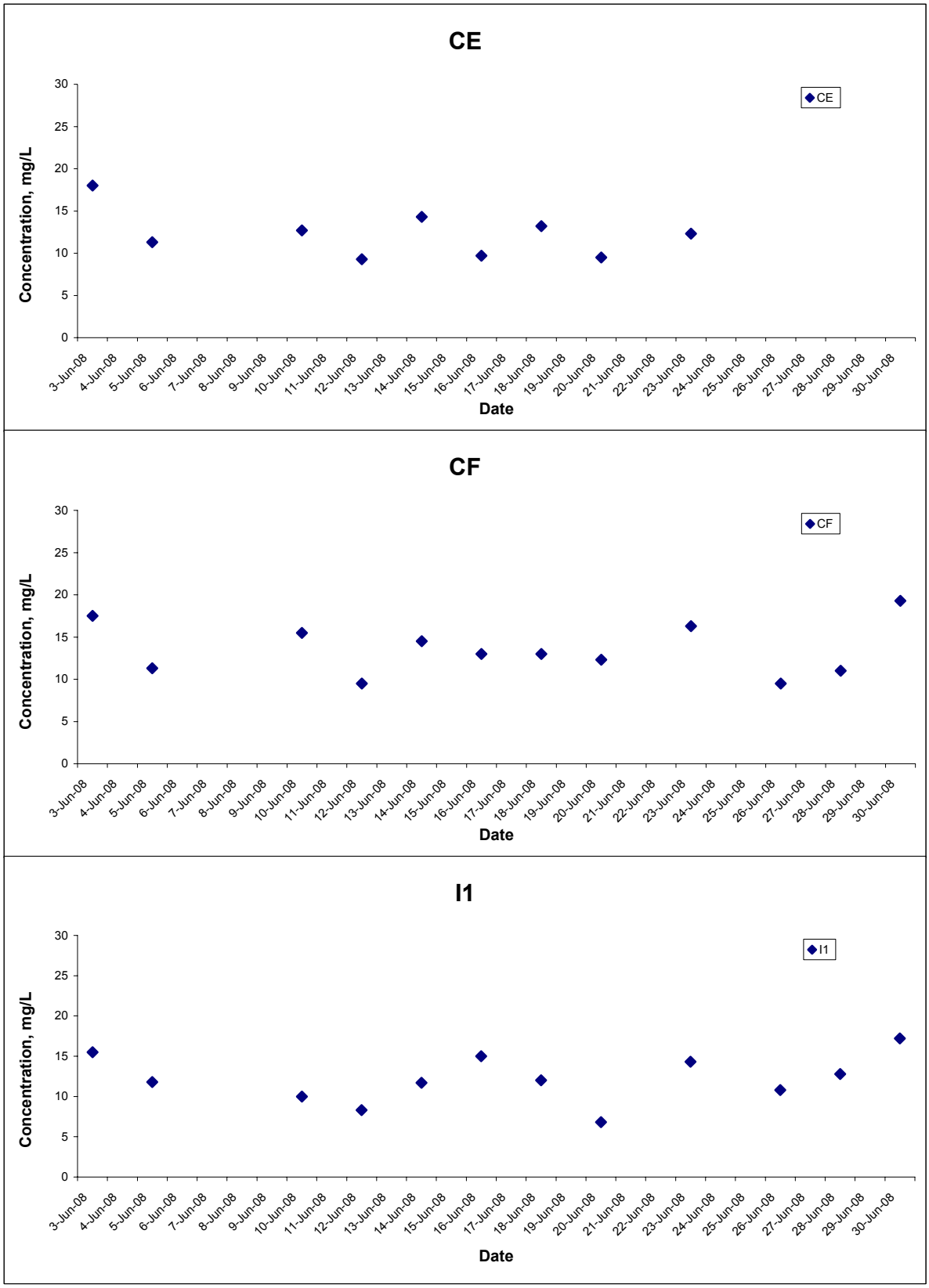
Title	Scale	Project No.	
Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel Graphical Presentation of Baseline Water Quality Monitoring Results	N.T.S	MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

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 Baseline Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA8001	CINOTECH
	Date: Jun 08	Appendix: H	

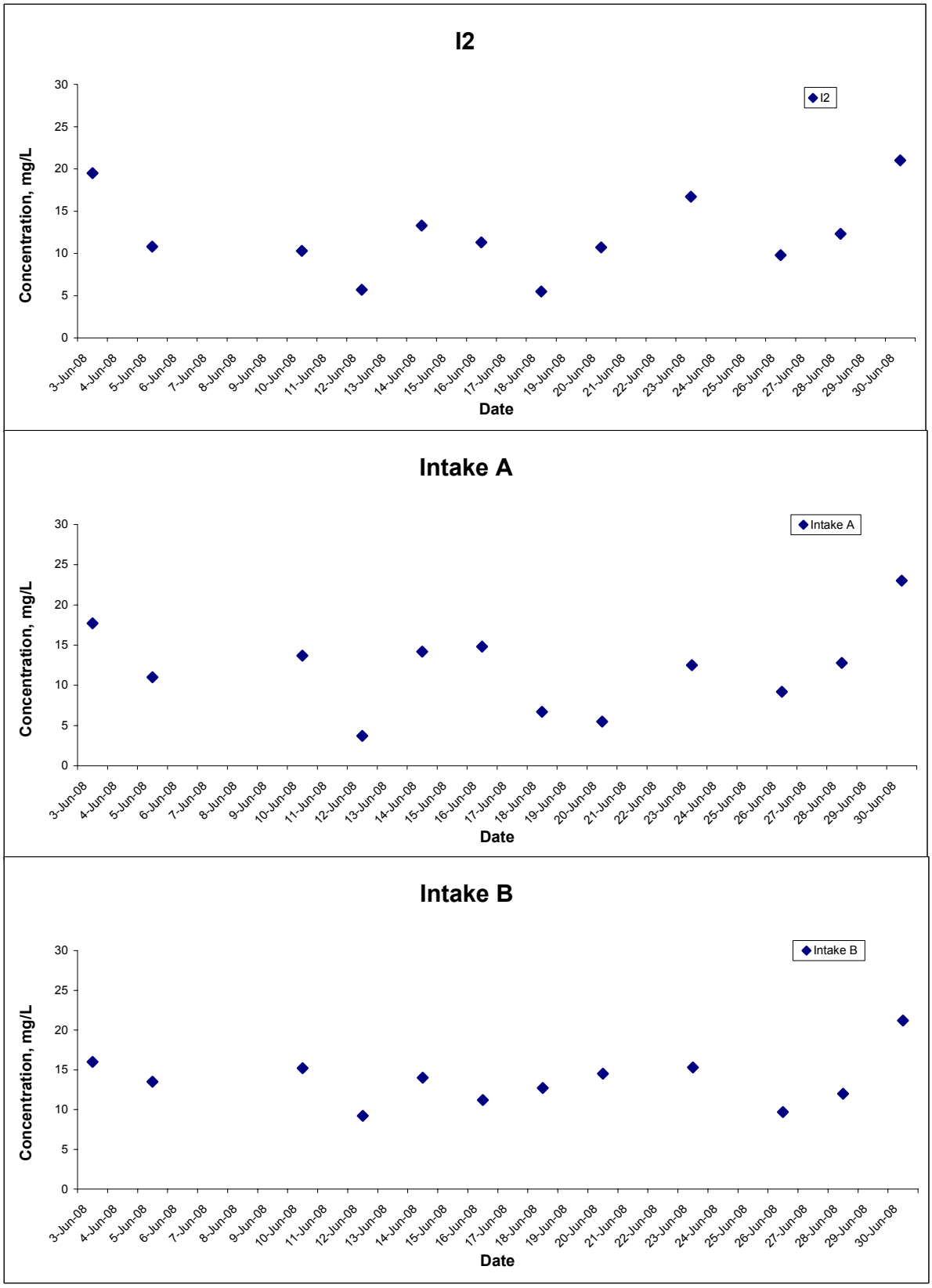
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

CINOTECH

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



Title: Graphical Presentation of Baseline Water Quality Monitoring Results	Contract No. DC/2007/10 Design and Construction of Hong Kong West Drainage Tunnel	Scale: N.T.S Date: Jun 08	Project No.: MA8001 Appendix: H

CINOTECH

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 Construction Noise
(NIL in the reporting month)

(F) Exceedance Report for Water Quality
(3, 23 and 30 June 2008 in the reporting month)

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel - Exceedance Report
Report No. 80604W-80603_S

Part A – Exceedance Summary Tables (3 June 2008)

Table 1: Parameter – Suspended Solids (mg/L)

Station No.	Tide	Baseline Action Level (mg/l)	Baseline Limit Level (mg/l)	Measured value (mg/l)	Control Station(s)	Measured Value at Control Stations (mg/l)	120% of Control Station Action Level (mg/l)	130% of Control Station Limit Level (mg/l)	Level Exceeded	Justification*
I1	Mid-ebb	15.7	16.4	19.3	CE	19.8	23.8	25.7	Limit	(3)
I2				17.8					Limit	(3)
Intake A				20.7					Limit	(1) & (3)
Intake B				20.7					Limit	(1) & (3)
I2	Mid-flood			19.5	CF	17.5	21.0	22.8	Limit	(3)
Intake A				17.7					Limit	(1) & (3)
Intake B				16.0					Action	(1) & (3)

*Remarks *(1) – No construction activity was observed.*
(2) – No pollution discharge from construction activity was observed.
(3) – *Control Station value already exceeded either the Baseline Action or Limit Levels.*

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel - Exceedance Report
Report No. 80625W-80623_S

Part A – Exceedance Summary Tables (23 June 2008)

Table 1: Parameter – Suspended Solids (mg/L)

Station No.	Tide	Baseline Action Level (mg/l)	Baseline Limit Level (mg/l)	Measured value (mg/l)	Control Station(s)	Measured Value at Control Stations (mg/l)	120% of Control Station Action Level (mg/l)	130% of Control Station Limit Level (mg/l)	Level Exceeded	Justification*
I2	Mid-ebb	15.7	16.4	17.0	CE	16.0	19.2	20.8	Limit	(2) & (3)
I2	Mid-flood			16.7	CF	16.3	19.6	21.2	Limit	(2) & (3)

*Remarks *(1) – No construction activity was observed.*
(2) – No pollution discharge from construction activity was observed.
(3) – *Control Station value already exceeded either the Baseline Action or Limit Levels.*

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel - Exceedance Report
Report No. 80703W-80630_S

Part A – Exceedance Summary Tables (30 June 2008)

Table 1: Parameter – Suspended Solids (mg/L)

Station No.	Tide	Baseline Action Level (mg/l)	Baseline Limit Level (mg/l)	Measured value (mg/l)	Control Station(s)	Measured Value at Control Stations (mg/l)	120% of Control Station Action Level (mg/l)	130% of Control Station Limit Level (mg/l)	Level Exceeded	Justification*
II	Mid-ebb	15.7	16.4	20.8	CE	27.8	33.4	36.1	Limit	(2) & (3)
I2				22.7						
Intake A				23.3						(1) & (3)
Intake B				25.3						
II	Mid-flood			17.2	CF	19.3	23.2	25.1	Limit	(2) & (3)
I2				21.0						
Intake A				23.0						(1) & (3)
Intake B				21.2						

*Remarks *(1) – No construction activity was observed.*
(2) – No pollution discharge from construction activity was observed.
(3) – *Control Station value already exceeded either the Baseline Action or Limit Levels.*

APPENDIX J
WIND DATA

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
1-Jun-2008	00:00	1.7	WNW
1-Jun-2008	01:00	2.0	NNW
1-Jun-2008	02:00	1.7	NW
1-Jun-2008	03:00	1.3	N
1-Jun-2008	04:00	1.1	NW
1-Jun-2008	05:00	1.1	N
1-Jun-2008	06:00	1.1	N
1-Jun-2008	07:00	0.9	N
1-Jun-2008	08:00	1.8	N
1-Jun-2008	09:00	1.3	NNE
1-Jun-2008	10:00	1.3	WNW
1-Jun-2008	11:00	1.7	W
1-Jun-2008	12:00	1.1	W
1-Jun-2008	13:00	1.3	S
1-Jun-2008	14:00	1.5	S
1-Jun-2008	15:00	1.1	S
1-Jun-2008	16:00	1.9	N
1-Jun-2008	17:00	1.8	NNE
1-Jun-2008	18:00	0.9	NNE
1-Jun-2008	19:00	0.6	NNE
1-Jun-2008	20:00	0.2	ENE
1-Jun-2008	21:00	0.0	E
1-Jun-2008	22:00	0.0	NE
1-Jun-2008	23:00	0.0	NE
2-Jun-2008	00:00	0.0	NE
2-Jun-2008	01:00	0.3	NE
2-Jun-2008	02:00	0.3	NE
2-Jun-2008	03:00	0.4	NNE
2-Jun-2008	04:00	0.4	N
2-Jun-2008	05:00	0.4	NE
2-Jun-2008	06:00	0.7	NE
2-Jun-2008	07:00	1.2	NE
2-Jun-2008	08:00	1.2	NE
2-Jun-2008	09:00	0.3	NE
2-Jun-2008	10:00	0.3	NE
2-Jun-2008	11:00	0.7	NE
2-Jun-2008	12:00	1.2	ENE
2-Jun-2008	13:00	1.0	NE
2-Jun-2008	14:00	0.7	NE
2-Jun-2008	15:00	1.2	WNW
2-Jun-2008	16:00	1.3	WNW
2-Jun-2008	17:00	1.3	W
2-Jun-2008	18:00	1.2	W
2-Jun-2008	19:00	0.7	W
2-Jun-2008	20:00	0.6	W
2-Jun-2008	21:00	0.1	WSW
2-Jun-2008	22:00	0.6	WSW
2-Jun-2008	23:00	1.0	WSW
3-Jun-2008	00:00	1.0	WSW
3-Jun-2008	01:00	0.9	WSW
3-Jun-2008	02:00	1.0	WSW
3-Jun-2008	03:00	0.9	SW
3-Jun-2008	04:00	0.4	WSW
3-Jun-2008	05:00	0.6	WSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
3-Jun-2008	06:00	0.0	WSW
3-Jun-2008	07:00	0.1	W
3-Jun-2008	08:00	0.0	WNW
3-Jun-2008	09:00	0.1	W
3-Jun-2008	10:00	0.6	WSW
3-Jun-2008	11:00	0.4	SW
3-Jun-2008	12:00	0.4	SSW
3-Jun-2008	13:00	0.4	W
3-Jun-2008	14:00	0.4	W
3-Jun-2008	15:00	0.1	SW
3-Jun-2008	16:00	0.0	SW
3-Jun-2008	17:00	0.0	SSW
3-Jun-2008	18:00	0.6	SE
3-Jun-2008	19:00	0.9	ENE
3-Jun-2008	20:00	0.9	SSE
3-Jun-2008	21:00	1.0	SSE
3-Jun-2008	22:00	1.2	SW
3-Jun-2008	23:00	1.3	SW
4-Jun-2008	00:00	1.2	WSW
4-Jun-2008	01:00	0.9	W
4-Jun-2008	02:00	0.7	WNW
4-Jun-2008	03:00	0.3	WNW
4-Jun-2008	04:00	0.4	SSW
4-Jun-2008	05:00	0.7	WSW
4-Jun-2008	06:00	0.7	W
4-Jun-2008	07:00	0.7	W
4-Jun-2008	08:00	0.7	WSW
4-Jun-2008	09:00	0.6	W
4-Jun-2008	10:00	0.7	W
4-Jun-2008	11:00	1.2	W
4-Jun-2008	12:00	1.2	W
4-Jun-2008	13:00	1.2	WSW
4-Jun-2008	14:00	0.9	WSW
4-Jun-2008	15:00	1.5	W
4-Jun-2008	16:00	1.3	SSW
4-Jun-2008	17:00	1.2	SW
4-Jun-2008	18:00	1.6	SW
4-Jun-2008	19:00	1.3	SW
4-Jun-2008	20:00	0.6	SW
4-Jun-2008	21:00	0.7	SW
4-Jun-2008	22:00	1.0	WNW
4-Jun-2008	23:00	0.9	WNW
5-Jun-2008	00:00	1.5	W
5-Jun-2008	01:00	1.3	SSW
5-Jun-2008	02:00	1.5	WNW
5-Jun-2008	03:00	1.6	WSW
5-Jun-2008	04:00	1.2	SW
5-Jun-2008	05:00	1.2	SW
5-Jun-2008	06:00	0.9	SSW
5-Jun-2008	07:00	0.1	SSW
5-Jun-2008	08:00	0.7	SW
5-Jun-2008	09:00	0.7	SW
5-Jun-2008	10:00	1.3	SW
5-Jun-2008	11:00	1.9	W

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
5-Jun-2008	12:00	1.9	WSW
5-Jun-2008	13:00	2.1	WNW
5-Jun-2008	14:00	2.7	W
5-Jun-2008	15:00	2.5	WNW
5-Jun-2008	16:00	1.8	WNW
5-Jun-2008	17:00	1.3	WNW
5-Jun-2008	18:00	1.5	WSW
5-Jun-2008	19:00	0.7	SW
5-Jun-2008	20:00	0.7	S
5-Jun-2008	21:00	0.4	S
5-Jun-2008	22:00	0.4	S
5-Jun-2008	23:00	0.3	SSW
6-Jun-2008	00:00	0.9	SSW
6-Jun-2008	01:00	1.0	SSW
6-Jun-2008	02:00	1.0	S
6-Jun-2008	03:00	0.9	SSW
6-Jun-2008	04:00	0.9	SSW
6-Jun-2008	05:00	0.9	SSW
6-Jun-2008	06:00	0.7	WNW
6-Jun-2008	07:00	1.0	W
6-Jun-2008	08:00	1.3	W
6-Jun-2008	09:00	1.3	WNW
6-Jun-2008	10:00	1.3	WNW
6-Jun-2008	11:00	1.6	WNW
6-Jun-2008	12:00	1.5	WNW
6-Jun-2008	13:00	1.6	WNW
6-Jun-2008	14:00	1.8	WNW
6-Jun-2008	15:00	1.2	W
6-Jun-2008	16:00	1.3	WNW
6-Jun-2008	17:00	0.9	W
6-Jun-2008	18:00	0.7	N
6-Jun-2008	19:00	0.7	NNE
6-Jun-2008	20:00	0.1	WNW
6-Jun-2008	21:00	0.4	SE
6-Jun-2008	22:00	0.3	SE
6-Jun-2008	23:00	0.3	ESE
7-Jun-2008	00:00	0.1	ESE
7-Jun-2008	01:00	0.3	WNW
7-Jun-2008	02:00	0.1	W
7-Jun-2008	03:00	0.4	WNW
7-Jun-2008	04:00	0.1	WNW
7-Jun-2008	05:00	0.1	WNW
7-Jun-2008	06:00	0.3	WNW
7-Jun-2008	07:00	0.3	W
7-Jun-2008	08:00	0.3	SW
7-Jun-2008	09:00	7.0	SSW
7-Jun-2008	10:00	0.4	SSW
7-Jun-2008	11:00	0.6	ENE
7-Jun-2008	12:00	0.7	SSW
7-Jun-2008	13:00	0.7	SW
7-Jun-2008	14:00	0.7	SW
7-Jun-2008	15:00	0.7	SSW
7-Jun-2008	16:00	0.6	SSW
7-Jun-2008	17:00	0.6	SSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
7-Jun-2008	18:00	1.2	SSW
7-Jun-2008	19:00	0.7	SSW
7-Jun-2008	20:00	1.1	SW
7-Jun-2008	21:00	0.6	WNW
7-Jun-2008	22:00	1.2	WNW
7-Jun-2008	23:00	0.7	WNW
8-Jun-2008	00:00	0.6	WNW
8-Jun-2008	01:00	0.4	W
8-Jun-2008	02:00	0.1	W
8-Jun-2008	03:00	0.7	WSW
8-Jun-2008	04:00	0.3	N
8-Jun-2008	05:00	1.2	N
8-Jun-2008	06:00	1.3	WNW
8-Jun-2008	07:00	1.6	NNE
8-Jun-2008	08:00	1.8	NNE
8-Jun-2008	09:00	1.6	ENE
8-Jun-2008	10:00	1.0	NE
8-Jun-2008	11:00	1.3	ENE
8-Jun-2008	12:00	1.8	NE
8-Jun-2008	13:00	1.6	ENE
8-Jun-2008	14:00	1.2	ENE
8-Jun-2008	15:00	0.7	E
8-Jun-2008	16:00	0.7	ENE
8-Jun-2008	17:00	0.7	E
8-Jun-2008	18:00	0.6	ENE
8-Jun-2008	19:00	0.6	ENE
8-Jun-2008	20:00	0.6	ENE
8-Jun-2008	21:00	0.3	ESE
8-Jun-2008	22:00	0.4	NE
8-Jun-2008	23:00	0.3	NE
9-Jun-2008	00:00	0.1	NE
9-Jun-2008	01:00	0.4	SSW
9-Jun-2008	02:00	0.3	SW
9-Jun-2008	03:00	0.1	SW
9-Jun-2008	04:00	0.1	SW
9-Jun-2008	05:00	0.4	SW
9-Jun-2008	06:00	0.6	SW
9-Jun-2008	07:00	0.4	WNW
9-Jun-2008	08:00	0.4	SW
9-Jun-2008	09:00	0.3	W
9-Jun-2008	10:00	1.0	WNW
9-Jun-2008	11:00	0.8	WNW
9-Jun-2008	12:00	0.9	WNW
9-Jun-2008	13:00	1.0	W
9-Jun-2008	14:00	1.0	WSW
9-Jun-2008	15:00	0.7	W
9-Jun-2008	16:00	0.7	ENE
9-Jun-2008	17:00	0.4	ENE
9-Jun-2008	18:00	0.4	ENE
9-Jun-2008	19:00	0.3	WSW
9-Jun-2008	20:00	0.3	WSW
9-Jun-2008	21:00	0.1	WSW
9-Jun-2008	22:00	0.3	WSW
9-Jun-2008	23:00	0.6	WSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
10-Jun-2008	00:00	0.3	WSW
10-Jun-2008	01:00	0.6	WSW
10-Jun-2008	02:00	0.6	WSW
10-Jun-2008	03:00	1.0	WSW
10-Jun-2008	04:00	0.9	WSW
10-Jun-2008	05:00	1.3	WSW
10-Jun-2008	06:00	1.5	WSW
10-Jun-2008	07:00	1.2	WSW
10-Jun-2008	08:00	1.3	SW
10-Jun-2008	09:00	1.6	WSW
10-Jun-2008	10:00	1.3	WSW
10-Jun-2008	11:00	1.2	WSW
10-Jun-2008	12:00	1.3	WSW
10-Jun-2008	13:00	1.5	WSW
10-Jun-2008	14:00	1.0	SW
10-Jun-2008	15:00	0.9	SW
10-Jun-2008	16:00	1.2	WSW
10-Jun-2008	17:00	1.5	WSW
10-Jun-2008	18:00	1.8	WSW
10-Jun-2008	19:00	0.9	SW
10-Jun-2008	20:00	0.9	SW
10-Jun-2008	21:00	1.0	WSW
10-Jun-2008	22:00	0.9	WSW
10-Jun-2008	23:00	0.7	WNW
11-Jun-2008	00:00	1.2	W
11-Jun-2008	01:00	1.6	WNW
11-Jun-2008	02:00	1.6	W
11-Jun-2008	03:00	1.5	WNW
11-Jun-2008	04:00	1.5	WNW
11-Jun-2008	05:00	1.3	WNW
11-Jun-2008	06:00	1.2	WNW
11-Jun-2008	07:00	1.2	WNW
11-Jun-2008	08:00	0.8	WNW
11-Jun-2008	09:00	0.8	W
11-Jun-2008	10:00	0.8	W
11-Jun-2008	11:00	1.0	W
11-Jun-2008	12:00	0.9	W
11-Jun-2008	13:00	0.7	S
11-Jun-2008	14:00	1.2	SSW
11-Jun-2008	15:00	1.0	SSW
11-Jun-2008	16:00	1.3	SW
11-Jun-2008	17:00	1.0	SW
11-Jun-2008	18:00	0.6	SW
11-Jun-2008	19:00	0.3	NNW
11-Jun-2008	20:00	0.4	NW
11-Jun-2008	21:00	0.1	WNW
11-Jun-2008	22:00	0.3	WNW
11-Jun-2008	23:00	0.1	N
12-Jun-2008	00:00	1.0	N
12-Jun-2008	01:00	1.0	N
12-Jun-2008	02:00	1.2	NNE
12-Jun-2008	03:00	0.3	NE
12-Jun-2008	04:00	0.4	ENE
12-Jun-2008	05:00	0.4	WSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
12-Jun-2008	06:00	0.6	W
12-Jun-2008	07:00	0.6	W
12-Jun-2008	08:00	0.7	WSW
12-Jun-2008	09:00	0.7	WSW
12-Jun-2008	10:00	0.7	W
12-Jun-2008	11:00	1.0	WNW
12-Jun-2008	12:00	0.9	WSW
12-Jun-2008	13:00	1.0	WSW
12-Jun-2008	14:00	1.5	WNW
12-Jun-2008	15:00	1.6	WNW
12-Jun-2008	16:00	1.0	W
12-Jun-2008	17:00	1.0	WNW
12-Jun-2008	18:00	1.0	WNW
12-Jun-2008	19:00	1.0	W
12-Jun-2008	20:00	1.3	WNW
12-Jun-2008	21:00	1.1	W
12-Jun-2008	22:00	1.2	W
12-Jun-2008	23:00	0.9	WNW
13-Jun-2008	00:00	0.9	WNW
13-Jun-2008	01:00	0.9	WNW
13-Jun-2008	02:00	1.2	WNW
13-Jun-2008	03:00	1.0	WNW
13-Jun-2008	04:00	0.7	W
13-Jun-2008	05:00	1.0	W
13-Jun-2008	06:00	0.6	WSW
13-Jun-2008	07:00	0.6	SSW
13-Jun-2008	08:00	0.9	NNW
13-Jun-2008	09:00	0.9	N
13-Jun-2008	10:00	0.7	N
13-Jun-2008	11:00	0.9	N
13-Jun-2008	12:00	1.5	N
13-Jun-2008	13:00	1.3	N
13-Jun-2008	14:00	1.2	ESE
13-Jun-2008	15:00	1.3	ESE
13-Jun-2008	16:00	1.2	ESE
13-Jun-2008	17:00	1.0	ESE
13-Jun-2008	18:00	0.1	NW
13-Jun-2008	19:00	0.3	ENE
13-Jun-2008	20:00	0.7	SSW
13-Jun-2008	21:00	0.4	WSW
13-Jun-2008	22:00	0.4	WNW
13-Jun-2008	23:00	0.3	WNW
14-Jun-2008	00:00	0.4	WNW
14-Jun-2008	01:00	0.4	W
14-Jun-2008	02:00	0.7	W
14-Jun-2008	03:00	0.9	WNW
14-Jun-2008	04:00	0.7	N
14-Jun-2008	05:00	0.4	N
14-Jun-2008	06:00	0.9	NE
14-Jun-2008	07:00	0.9	NE
14-Jun-2008	08:00	0.9	NE
14-Jun-2008	09:00	1.0	NE
14-Jun-2008	10:00	1.3	NE
14-Jun-2008	11:00	2.1	WSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
14-Jun-2008	12:00	2.4	W
14-Jun-2008	13:00	2.1	SSW
14-Jun-2008	14:00	1.6	SSW
14-Jun-2008	15:00	1.9	SW
14-Jun-2008	16:00	1.9	SW
14-Jun-2008	17:00	1.3	W
14-Jun-2008	18:00	0.6	W
14-Jun-2008	19:00	0.7	W
14-Jun-2008	20:00	1.2	W
14-Jun-2008	21:00	1.2	W
14-Jun-2008	22:00	1.2	WNW
14-Jun-2008	23:00	0.7	W
15-Jun-2008	00:00	0.4	W
15-Jun-2008	01:00	0.3	W
15-Jun-2008	02:00	0.1	W
15-Jun-2008	03:00	0.1	W
15-Jun-2008	04:00	0.6	WSW
15-Jun-2008	05:00	0.6	ESE
15-Jun-2008	06:00	0.6	SSE
15-Jun-2008	07:00	0.6	WSW
15-Jun-2008	08:00	0.4	WSW
15-Jun-2008	09:00	0.4	NW
15-Jun-2008	10:00	0.7	WSW
15-Jun-2008	11:00	0.7	N
15-Jun-2008	12:00	0.6	WSW
15-Jun-2008	13:00	0.6	SSW
15-Jun-2008	14:00	0.7	WSW
15-Jun-2008	15:00	1.0	WSW
15-Jun-2008	16:00	1.5	WSW
15-Jun-2008	17:00	1.6	SSW
15-Jun-2008	18:00	1.5	SSW
15-Jun-2008	19:00	1.5	S
15-Jun-2008	20:00	1.2	SSW
15-Jun-2008	21:00	1.2	W
15-Jun-2008	22:00	1.5	WNW
15-Jun-2008	23:00	1.0	WNW
16-Jun-2008	00:00	1.6	WSW
16-Jun-2008	01:00	1.6	WSW
16-Jun-2008	02:00	1.5	W
16-Jun-2008	03:00	1.3	W
16-Jun-2008	04:00	1.2	W
16-Jun-2008	05:00	1.1	WSW
16-Jun-2008	06:00	0.6	W
16-Jun-2008	07:00	0.7	WSW
16-Jun-2008	08:00	0.9	WSW
16-Jun-2008	09:00	1.5	WSW
16-Jun-2008	10:00	2.7	SW
16-Jun-2008	11:00	2.8	WSW
16-Jun-2008	12:00	3.1	N
16-Jun-2008	13:00	3.4	E
16-Jun-2008	14:00	3.0	W
16-Jun-2008	15:00	3.4	W
16-Jun-2008	16:00	3.0	W
16-Jun-2008	17:00	2.4	WNW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
16-Jun-2008	18:00	1.6	W
16-Jun-2008	19:00	1.3	W
16-Jun-2008	20:00	1.3	W
16-Jun-2008	21:00	1.9	W
16-Jun-2008	22:00	1.9	W
16-Jun-2008	23:00	1.2	W
17-Jun-2008	00:00	0.6	WSW
17-Jun-2008	01:00	0.4	W
17-Jun-2008	02:00	0.6	W
17-Jun-2008	03:00	0.9	W
17-Jun-2008	04:00	0.9	W
17-Jun-2008	05:00	0.9	W
17-Jun-2008	06:00	0.9	W
17-Jun-2008	07:00	1.3	WNW
17-Jun-2008	08:00	1.3	W
17-Jun-2008	09:00	0.9	W
17-Jun-2008	10:00	1.5	WNW
17-Jun-2008	11:00	2.1	SSW
17-Jun-2008	12:00	2.2	SSW
17-Jun-2008	13:00	3.3	SW
17-Jun-2008	14:00	2.5	SSW
17-Jun-2008	15:00	1.8	W
17-Jun-2008	16:00	1.9	W
17-Jun-2008	17:00	1.3	SW
17-Jun-2008	18:00	1.0	SSW
17-Jun-2008	19:00	1.3	SSW
17-Jun-2008	20:00	1.2	W
17-Jun-2008	21:00	1.0	WNW
17-Jun-2008	22:00	2.4	W
17-Jun-2008	23:00	2.8	W
18-Jun-2008	00:00	2.7	WSW
18-Jun-2008	01:00	2.2	W
18-Jun-2008	02:00	2.2	WSW
18-Jun-2008	03:00	2.1	SSW
18-Jun-2008	04:00	2.5	SSW
18-Jun-2008	05:00	2.5	SSW
18-Jun-2008	06:00	2.5	WSW
18-Jun-2008	07:00	2.5	WSW
18-Jun-2008	08:00	2.2	W
18-Jun-2008	09:00	2.0	SW
18-Jun-2008	10:00	1.9	WSW
18-Jun-2008	11:00	1.2	WNW
18-Jun-2008	12:00	1.6	WSW
18-Jun-2008	13:00	1.6	W
18-Jun-2008	14:00	1.6	SSW
18-Jun-2008	15:00	1.3	WSW
18-Jun-2008	16:00	1.5	WSW
18-Jun-2008	17:00	1.5	WSW
18-Jun-2008	18:00	1.6	W
18-Jun-2008	19:00	1.0	WSW
18-Jun-2008	20:00	1.2	WSW
18-Jun-2008	21:00	1.5	WSW
18-Jun-2008	22:00	1.3	WSW
18-Jun-2008	23:00	1.0	WSW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
19-Jun-2008	00:00	1.3	WSW
19-Jun-2008	01:00	1.0	W
19-Jun-2008	02:00	0.7	W
19-Jun-2008	03:00	1.3	N
19-Jun-2008	04:00	1.0	WSW
19-Jun-2008	05:00	1.5	WSW
19-Jun-2008	06:00	1.5	SW
19-Jun-2008	07:00	1.3	WSW
19-Jun-2008	08:00	1.6	WSW
19-Jun-2008	09:00	1.5	W
19-Jun-2008	10:00	1.5	W
19-Jun-2008	11:00	1.6	WNW
19-Jun-2008	12:00	1.5	W
19-Jun-2008	13:00	1.3	W
19-Jun-2008	14:00	1.2	WSW
19-Jun-2008	15:00	1.6	W
19-Jun-2008	16:00	1.5	WNW
19-Jun-2008	17:00	1.5	W
19-Jun-2008	18:00	1.2	WSW
19-Jun-2008	19:00	1.6	WSW
19-Jun-2008	20:00	0.9	WSW
19-Jun-2008	21:00	1.0	WSW
19-Jun-2008	22:00	0.9	WSW
19-Jun-2008	23:00	1.0	W
20-Jun-2008	00:00	1.1	WNW
20-Jun-2008	01:00	1.2	W
20-Jun-2008	02:00	1.3	WSW
20-Jun-2008	03:00	1.2	W
20-Jun-2008	04:00	1.3	WNW
20-Jun-2008	05:00	1.2	W
20-Jun-2008	06:00	1.3	W
20-Jun-2008	07:00	0.7	W
20-Jun-2008	08:00	0.7	WSW
20-Jun-2008	09:00	0.7	WSW
20-Jun-2008	10:00	0.7	W
20-Jun-2008	11:00	1.0	WSW
20-Jun-2008	12:00	0.9	W
20-Jun-2008	13:00	1.2	W
20-Jun-2008	14:00	1.6	W
20-Jun-2008	15:00	1.5	WSW
20-Jun-2008	16:00	1.2	WSW
20-Jun-2008	17:00	1.5	S
20-Jun-2008	18:00	1.8	S
20-Jun-2008	19:00	1.0	SSW
20-Jun-2008	20:00	1.0	SSW
20-Jun-2008	21:00	1.0	SSW
20-Jun-2008	22:00	1.1	S
20-Jun-2008	23:00	0.9	SW
21-Jun-2008	00:00	0.7	W
21-Jun-2008	01:00	0.4	SSW
21-Jun-2008	02:00	0.3	S
21-Jun-2008	03:00	0.3	S
21-Jun-2008	04:00	0.9	WSW
21-Jun-2008	05:00	0.4	W

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
21-Jun-2008	06:00	0.4	SSW
21-Jun-2008	07:00	0.6	SW
21-Jun-2008	08:00	0.3	SW
21-Jun-2008	09:00	0.6	SW
21-Jun-2008	10:00	1.5	SW
21-Jun-2008	11:00	1.2	SW
21-Jun-2008	12:00	1.5	SW
21-Jun-2008	13:00	1.5	SW
21-Jun-2008	14:00	1.8	SW
21-Jun-2008	15:00	2.8	SSW
21-Jun-2008	16:00	2.1	SSW
21-Jun-2008	17:00	2.0	SW
21-Jun-2008	18:00	1.9	SW
21-Jun-2008	19:00	1.5	SW
21-Jun-2008	20:00	1.3	W
21-Jun-2008	21:00	0.7	WSW
21-Jun-2008	22:00	0.7	WNW
21-Jun-2008	23:00	0.7	W
22-Jun-2008	00:00	1.6	WNW
22-Jun-2008	01:00	1.8	WNW
22-Jun-2008	02:00	1.6	WNW
22-Jun-2008	03:00	1.8	WNW
22-Jun-2008	04:00	1.2	SW
22-Jun-2008	05:00	1.0	S
22-Jun-2008	06:00	1.2	S
22-Jun-2008	07:00	1.3	S
22-Jun-2008	08:00	1.6	S
22-Jun-2008	09:00	1.6	S
22-Jun-2008	10:00	1.5	SSW
22-Jun-2008	11:00	1.6	S
22-Jun-2008	12:00	1.3	SSW
22-Jun-2008	13:00	1.2	SSW
22-Jun-2008	14:00	0.7	SSW
22-Jun-2008	15:00	1.5	WNW
22-Jun-2008	16:00	1.2	W
22-Jun-2008	17:00	0.9	W
22-Jun-2008	18:00	0.3	WNW
22-Jun-2008	19:00	0.0	WNW
22-Jun-2008	20:00	0.1	WNW
22-Jun-2008	21:00	0.1	WNW
22-Jun-2008	22:00	0.4	WNW
22-Jun-2008	23:00	0.3	WNW
23-Jun-2008	00:00	0.4	WNW
23-Jun-2008	01:00	0.4	WNW
23-Jun-2008	02:00	0.6	W
23-Jun-2008	03:00	0.3	N
23-Jun-2008	04:00	0.1	NNE
23-Jun-2008	05:00	0.7	WNW
23-Jun-2008	06:00	0.9	SE
23-Jun-2008	07:00	1.2	SE
23-Jun-2008	08:00	1.0	ESE
23-Jun-2008	09:00	0.9	ESE
23-Jun-2008	10:00	1.5	ESE
23-Jun-2008	11:00	1.5	W

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
23-Jun-2008	12:00	1.9	SSW
23-Jun-2008	13:00	2.2	SSW
23-Jun-2008	14:00	1.5	SSW
23-Jun-2008	15:00	1.5	SSW
23-Jun-2008	16:00	1.5	SSW
23-Jun-2008	17:00	1.6	SSW
23-Jun-2008	18:00	1.6	WNW
23-Jun-2008	19:00	1.2	WNW
23-Jun-2008	20:00	1.0	WNW
23-Jun-2008	21:00	1.0	W
23-Jun-2008	22:00	1.2	W
23-Jun-2008	23:00	1.3	WSW
24-Jun-2008	00:00	1.9	WSW
24-Jun-2008	01:00	0.7	WSW
24-Jun-2008	02:00	0.6	WSW
24-Jun-2008	03:00	0.9	ENE
24-Jun-2008	04:00	0.9	ENE
24-Jun-2008	05:00	1.2	ENE
24-Jun-2008	06:00	1.0	ENE
24-Jun-2008	07:00	1.0	WNW
24-Jun-2008	08:00	1.0	WNW
24-Jun-2008	09:00	1.2	WNW
24-Jun-2008	10:00	1.5	WNW
24-Jun-2008	11:00	1.9	WNW
24-Jun-2008	12:00	2.1	NW
24-Jun-2008	13:00	2.4	WNW
24-Jun-2008	14:00	2.2	SW
24-Jun-2008	15:00	2.1	N
24-Jun-2008	16:00	2.4	N
24-Jun-2008	17:00	2.2	NNE
24-Jun-2008	18:00	1.3	NNE
24-Jun-2008	19:00	1.6	ENE
24-Jun-2008	20:00	1.2	ENE
24-Jun-2008	21:00	4.2	ENE
24-Jun-2008	22:00	4.2	E
24-Jun-2008	23:00	4.0	E
25-Jun-2008	00:00	4.0	SSW
25-Jun-2008	01:00	3.9	WNW
25-Jun-2008	02:00	3.9	W
25-Jun-2008	03:00	4.2	SSW
25-Jun-2008	04:00	3.6	W
25-Jun-2008	05:00	3.7	WNW
25-Jun-2008	06:00	3.6	W
25-Jun-2008	07:00	3.9	WSW
25-Jun-2008	08:00	4.0	SSW
25-Jun-2008	09:00	4.3	SW
25-Jun-2008	10:00	4.3	SW
25-Jun-2008	11:00	4.5	SSW
25-Jun-2008	12:00	4.5	W
25-Jun-2008	13:00	4.9	WNW
25-Jun-2008	14:00	4.6	S
25-Jun-2008	15:00	4.8	WSW
25-Jun-2008	16:00	4.8	W
25-Jun-2008	17:00	4.3	S

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
25-Jun-2008	18:00	4.6	SW
25-Jun-2008	19:00	4.8	W
25-Jun-2008	20:00	4.6	WSW
25-Jun-2008	21:00	3.8	WSW
25-Jun-2008	22:00	3.9	SSW
25-Jun-2008	23:00	3.7	SW
26-Jun-2008	00:00	3.7	SW
26-Jun-2008	01:00	4.0	SW
26-Jun-2008	02:00	3.4	SW
26-Jun-2008	03:00	3.6	SSW
26-Jun-2008	04:00	3.6	SSW
26-Jun-2008	05:00	3.7	S
26-Jun-2008	06:00	6.6	S
26-Jun-2008	07:00	7.6	S
26-Jun-2008	08:00	7.5	W
26-Jun-2008	09:00	7.6	WSW
26-Jun-2008	10:00	4.9	WNW
26-Jun-2008	11:00	4.5	SSW
26-Jun-2008	12:00	4.8	SSW
26-Jun-2008	13:00	5.0	SW
26-Jun-2008	14:00	4.9	W
26-Jun-2008	15:00	4.6	WNW
26-Jun-2008	16:00	4.6	WNW
26-Jun-2008	17:00	4.5	WNW
26-Jun-2008	18:00	4.0	WNW
26-Jun-2008	19:00	4.2	WNW
26-Jun-2008	20:00	4.1	W
26-Jun-2008	21:00	3.6	W
26-Jun-2008	22:00	3.6	WSW
26-Jun-2008	23:00	3.5	SW
27-Jun-2008	00:00	3.5	WSW
27-Jun-2008	01:00	0.9	SW
27-Jun-2008	02:00	0.9	SW
27-Jun-2008	03:00	0.8	W
27-Jun-2008	04:00	0.7	WNW
27-Jun-2008	05:00	0.7	WNW
27-Jun-2008	06:00	0.6	W
27-Jun-2008	07:00	0.7	W
27-Jun-2008	08:00	0.7	WNW
27-Jun-2008	09:00	2.2	SW
27-Jun-2008	10:00	1.9	SSW
27-Jun-2008	11:00	2.2	SSW
27-Jun-2008	12:00	2.4	W
27-Jun-2008	13:00	1.9	W
27-Jun-2008	14:00	1.8	W
27-Jun-2008	15:00	1.3	SW
27-Jun-2008	16:00	1.0	SW
27-Jun-2008	17:00	1.7	SSW
27-Jun-2008	18:00	1.1	W
27-Jun-2008	19:00	1.3	SW
27-Jun-2008	20:00	0.0	SSW
27-Jun-2008	21:00	0.0	SW
27-Jun-2008	22:00	0.0	W
27-Jun-2008	23:00	0.0	W

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
28-Jun-2008	00:00	0.0	W
28-Jun-2008	01:00	0.3	W
28-Jun-2008	02:00	0.3	WNW
28-Jun-2008	03:00	0.4	W
28-Jun-2008	04:00	0.5	WNW
28-Jun-2008	05:00	0.6	WNW
28-Jun-2008	06:00	0.6	WNW
28-Jun-2008	07:00	0.7	WNW
28-Jun-2008	08:00	1.0	WSW
28-Jun-2008	09:00	0.8	WSW
28-Jun-2008	10:00	0.3	SW
28-Jun-2008	11:00	0.9	WSW
28-Jun-2008	12:00	1.2	WSW
28-Jun-2008	13:00	1.6	SW
28-Jun-2008	14:00	1.3	WSW
28-Jun-2008	15:00	1.9	SW
28-Jun-2008	16:00	1.8	WSW
28-Jun-2008	17:00	1.5	W
28-Jun-2008	18:00	1.6	WSW
28-Jun-2008	19:00	0.8	WNW
28-Jun-2008	20:00	0.9	W
28-Jun-2008	21:00	0.9	W
28-Jun-2008	22:00	0.4	W
28-Jun-2008	23:00	0.9	W
29-Jun-2008	00:00	0.9	WNW
29-Jun-2008	01:00	1.0	W
29-Jun-2008	02:00	1.3	W
29-Jun-2008	03:00	1.0	WNW
29-Jun-2008	04:00	0.4	SW
29-Jun-2008	05:00	0.4	W
29-Jun-2008	06:00	0.8	WSW
29-Jun-2008	07:00	0.1	W
29-Jun-2008	08:00	0.4	W
29-Jun-2008	09:00	0.1	WSW
29-Jun-2008	10:00	0.6	WSW
29-Jun-2008	11:00	1.0	SW
29-Jun-2008	12:00	1.3	SSW
29-Jun-2008	13:00	1.2	SSW
29-Jun-2008	14:00	1.3	SW
29-Jun-2008	15:00	1.5	WSW
29-Jun-2008	16:00	1.7	SW
29-Jun-2008	17:00	0.9	WSW
29-Jun-2008	18:00	1.5	WNW
29-Jun-2008	19:00	1.8	WNW
29-Jun-2008	20:00	1.6	W
29-Jun-2008	21:00	2.4	WNW
29-Jun-2008	22:00	2.4	W
29-Jun-2008	23:00	2.5	SSW
30-Jun-2008	00:00	1.8	W
30-Jun-2008	01:00	1.8	W
30-Jun-2008	02:00	1.5	W
30-Jun-2008	03:00	1.8	W
30-Jun-2008	04:00	1.8	W
30-Jun-2008	05:00	0.6	WNW

Appendix J - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
30-Jun-2008	06:00	0.6	SSW
30-Jun-2008	07:00	0.7	SSW
30-Jun-2008	08:00	0.9	W
30-Jun-2008	09:00	0.8	WNW
30-Jun-2008	10:00	1.5	WSW
30-Jun-2008	11:00	1.6	WSW
30-Jun-2008	12:00	1.8	W
30-Jun-2008	13:00	2.0	S
30-Jun-2008	14:00	2.1	WNW
30-Jun-2008	15:00	2.1	WNW
30-Jun-2008	16:00	2.2	W
30-Jun-2008	17:00	1.8	W
30-Jun-2008	18:00	1.5	WNW
30-Jun-2008	19:00	2.5	WNW
30-Jun-2008	20:00	2.5	WNW
30-Jun-2008	21:00	1.5	W
30-Jun-2008	22:00	1.8	W
30-Jun-2008	23:00	1.9	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
1-Jun-2008	00:00	0.1	N
1-Jun-2008	01:00	0.4	N
1-Jun-2008	02:00	0.6	W
1-Jun-2008	03:00	0.7	W
1-Jun-2008	04:00	0.7	W
1-Jun-2008	05:00	0.6	W
1-Jun-2008	06:00	0.4	W
1-Jun-2008	07:00	0.4	W
1-Jun-2008	08:00	0.4	W
1-Jun-2008	09:00	0.1	W
1-Jun-2008	10:00	1.0	W
1-Jun-2008	11:00	1.6	SW
1-Jun-2008	12:00	1.3	SW
1-Jun-2008	13:00	1.6	WSW
1-Jun-2008	14:00	0.9	W
1-Jun-2008	15:00	1.0	WSW
1-Jun-2008	16:00	1.2	NE
1-Jun-2008	17:00	0.4	SSW
1-Jun-2008	18:00	0.4	WSW
1-Jun-2008	19:00	0.6	WSW
1-Jun-2008	20:00	0.6	WSW
1-Jun-2008	21:00	0.3	WSW
1-Jun-2008	22:00	0.3	SW
1-Jun-2008	23:00	0.4	SSW
2-Jun-2008	00:00	1.0	SSW
2-Jun-2008	01:00	1.0	SSW
2-Jun-2008	02:00	0.7	SSW
2-Jun-2008	03:00	0.9	S
2-Jun-2008	04:00	0.9	NE
2-Jun-2008	05:00	0.9	NE
2-Jun-2008	06:00	0.7	WNW
2-Jun-2008	07:00	1.5	SW
2-Jun-2008	08:00	1.2	WNW
2-Jun-2008	09:00	1.0	WNW
2-Jun-2008	10:00	1.3	W
2-Jun-2008	11:00	1.9	W
2-Jun-2008	12:00	2.2	WNW
2-Jun-2008	13:00	2.5	WSW
2-Jun-2008	14:00	2.5	WSW
2-Jun-2008	15:00	2.6	SW
2-Jun-2008	16:00	2.1	WSW
2-Jun-2008	17:00	1.9	WSW
2-Jun-2008	18:00	2.1	SW
2-Jun-2008	19:00	1.3	SSW
2-Jun-2008	20:00	0.9	SW
2-Jun-2008	21:00	1.0	SW
2-Jun-2008	22:00	1.6	WSW
2-Jun-2008	23:00	2.1	SW
3-Jun-2008	00:00	2.4	SW
3-Jun-2008	01:00	2.0	WSW
3-Jun-2008	02:00	2.0	WSW
3-Jun-2008	03:00	1.8	SW
3-Jun-2008	04:00	2.4	SW
3-Jun-2008	05:00	2.2	SW

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
3-Jun-2008	06:00	1.8	SW
3-Jun-2008	07:00	2.8	SW
3-Jun-2008	08:00	3.0	SSW
3-Jun-2008	09:00	2.5	SW
3-Jun-2008	10:00	1.6	SW
3-Jun-2008	11:00	2.2	WSW
3-Jun-2008	12:00	2.1	W
3-Jun-2008	13:00	1.0	WNW
3-Jun-2008	14:00	1.5	NE
3-Jun-2008	15:00	1.6	E
3-Jun-2008	16:00	1.6	ENE
3-Jun-2008	17:00	0.9	E
3-Jun-2008	18:00	1.2	ENE
3-Jun-2008	19:00	1.0	E
3-Jun-2008	20:00	0.7	E
3-Jun-2008	21:00	0.4	E
3-Jun-2008	22:00	0.6	W
3-Jun-2008	23:00	1.2	WSW
4-Jun-2008	00:00	1.0	W
4-Jun-2008	01:00	1.2	WNW
4-Jun-2008	02:00	0.6	ENE
4-Jun-2008	03:00	1.0	E
4-Jun-2008	04:00	0.6	E
4-Jun-2008	05:00	1.5	ENE
4-Jun-2008	06:00	1.5	ENE
4-Jun-2008	07:00	1.3	ENE
4-Jun-2008	08:00	1.6	NE
4-Jun-2008	09:00	1.8	N
4-Jun-2008	10:00	2.4	NNE
4-Jun-2008	11:00	2.7	NE
4-Jun-2008	12:00	2.5	NE
4-Jun-2008	13:00	2.1	NE
4-Jun-2008	14:00	1.5	NNE
4-Jun-2008	15:00	1.9	NE
4-Jun-2008	16:00	1.9	NE
4-Jun-2008	17:00	2.1	NNE
4-Jun-2008	18:00	1.3	W
4-Jun-2008	19:00	1.5	W
4-Jun-2008	20:00	0.6	WNW
4-Jun-2008	21:00	0.3	WNW
4-Jun-2008	22:00	0.9	WNW
4-Jun-2008	23:00	1.3	WSW
5-Jun-2008	00:00	0.9	W
5-Jun-2008	01:00	0.9	WNW
5-Jun-2008	02:00	1.6	WNW
5-Jun-2008	03:00	1.5	WSW
5-Jun-2008	04:00	1.2	WSW
5-Jun-2008	05:00	1.2	WNW
5-Jun-2008	06:00	1.0	SSW
5-Jun-2008	07:00	0.5	S
5-Jun-2008	08:00	0.7	S
5-Jun-2008	09:00	0.9	WSW
5-Jun-2008	10:00	0.7	WSW
5-Jun-2008	11:00	1.5	WNW

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
5-Jun-2008	12:00	1.6	NW
5-Jun-2008	13:00	2.1	SSW
5-Jun-2008	14:00	2.8	S
5-Jun-2008	15:00	2.4	WSW
5-Jun-2008	16:00	2.4	WNW
5-Jun-2008	17:00	2.2	N
5-Jun-2008	18:00	2.1	SSW
5-Jun-2008	19:00	1.2	S
5-Jun-2008	20:00	1.2	SSW
5-Jun-2008	21:00	0.9	S
5-Jun-2008	22:00	0.4	SSW
5-Jun-2008	23:00	0.6	WNW
6-Jun-2008	00:00	0.4	N
6-Jun-2008	01:00	0.6	NE
6-Jun-2008	02:00	0.3	E
6-Jun-2008	03:00	0.6	ENE
6-Jun-2008	04:00	0.9	ENE
6-Jun-2008	05:00	0.4	ENE
6-Jun-2008	06:00	0.6	ENE
6-Jun-2008	07:00	0.6	NE
6-Jun-2008	08:00	0.3	ENE
6-Jun-2008	09:00	0.7	ENE
6-Jun-2008	10:00	1.3	WSW
6-Jun-2008	11:00	1.2	WSW
6-Jun-2008	12:00	1.3	W
6-Jun-2008	13:00	1.3	W
6-Jun-2008	14:00	1.3	WSW
6-Jun-2008	15:00	2.2	W
6-Jun-2008	16:00	1.8	WSW
6-Jun-2008	17:00	1.8	WSW
6-Jun-2008	18:00	1.0	SSW
6-Jun-2008	19:00	1.2	W
6-Jun-2008	20:00	0.6	WSW
6-Jun-2008	21:00	0.4	SW
6-Jun-2008	22:00	0.3	WSW
6-Jun-2008	23:00	0.4	SW
7-Jun-2008	00:00	0.9	SW
7-Jun-2008	01:00	0.7	S
7-Jun-2008	02:00	0.7	WSW
7-Jun-2008	03:00	1.0	W
7-Jun-2008	04:00	1.2	SSW
7-Jun-2008	05:00	1.2	WNW
7-Jun-2008	06:00	1.2	WNW
7-Jun-2008	07:00	0.9	WNW
7-Jun-2008	08:00	0.9	WNW
7-Jun-2008	09:00	1.0	WNW
7-Jun-2008	10:00	0.9	WNW
7-Jun-2008	11:00	1.2	WNW
7-Jun-2008	12:00	1.0	WNW
7-Jun-2008	13:00	1.0	NW
7-Jun-2008	14:00	0.7	WNW
7-Jun-2008	15:00	0.9	WNW
7-Jun-2008	16:00	0.7	NNE
7-Jun-2008	17:00	0.6	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
7-Jun-2008	18:00	0.4	W
7-Jun-2008	19:00	0.0	WNW
7-Jun-2008	20:00	0.0	S
7-Jun-2008	21:00	0.0	S
7-Jun-2008	22:00	0.0	SSW
7-Jun-2008	23:00	0.0	SW
8-Jun-2008	00:00	0.0	W
8-Jun-2008	01:00	0.0	W
8-Jun-2008	02:00	0.0	SSW
8-Jun-2008	03:00	0.0	SW
8-Jun-2008	04:00	0.0	W
8-Jun-2008	05:00	0.6	W
8-Jun-2008	06:00	0.5	WNW
8-Jun-2008	07:00	1.0	WNW
8-Jun-2008	08:00	1.0	N
8-Jun-2008	09:00	0.7	N
8-Jun-2008	10:00	1.0	N
8-Jun-2008	11:00	0.6	NW
8-Jun-2008	12:00	0.7	NW
8-Jun-2008	13:00	0.9	NW
8-Jun-2008	14:00	0.7	NW
8-Jun-2008	15:00	1.2	S
8-Jun-2008	16:00	1.2	SSW
8-Jun-2008	17:00	1.2	SSW
8-Jun-2008	18:00	0.7	WSW
8-Jun-2008	19:00	0.9	W
8-Jun-2008	20:00	0.9	W
8-Jun-2008	21:00	0.9	SSW
8-Jun-2008	22:00	0.9	SSW
8-Jun-2008	23:00	0.6	S
9-Jun-2008	00:00	0.3	S
9-Jun-2008	01:00	0.6	S
9-Jun-2008	02:00	0.6	S
9-Jun-2008	03:00	0.9	WNW
9-Jun-2008	04:00	0.9	W
9-Jun-2008	05:00	1.2	NW
9-Jun-2008	06:00	1.2	W
9-Jun-2008	07:00	1.2	N
9-Jun-2008	08:00	1.0	NNE
9-Jun-2008	09:00	0.9	NNE
9-Jun-2008	10:00	0.9	ENE
9-Jun-2008	11:00	1.0	ESE
9-Jun-2008	12:00	1.3	NNE
9-Jun-2008	13:00	1.3	ENE
9-Jun-2008	14:00	1.3	NE
9-Jun-2008	15:00	1.3	NNE
9-Jun-2008	16:00	1.2	E
9-Jun-2008	17:00	1.0	ESE
9-Jun-2008	18:00	0.4	ESE
9-Jun-2008	19:00	0.3	ESE
9-Jun-2008	20:00	0.3	W
9-Jun-2008	21:00	0.1	W
9-Jun-2008	22:00	0.1	W
9-Jun-2008	23:00	0.3	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
10-Jun-2008	00:00	0.1	WSW
10-Jun-2008	01:00	0.1	WSW
10-Jun-2008	02:00	0.0	W
10-Jun-2008	03:00	0.1	SSW
10-Jun-2008	04:00	0.0	SSW
10-Jun-2008	05:00	0.0	SSW
10-Jun-2008	06:00	0.0	W
10-Jun-2008	07:00	0.3	W
10-Jun-2008	08:00	0.6	WSW
10-Jun-2008	09:00	1.0	W
10-Jun-2008	10:00	1.2	WSW
10-Jun-2008	11:00	1.2	WSW
10-Jun-2008	12:00	1.5	WSW
10-Jun-2008	13:00	1.5	W
10-Jun-2008	14:00	1.3	WNW
10-Jun-2008	15:00	1.2	WNW
10-Jun-2008	16:00	1.7	WSW
10-Jun-2008	17:00	0.9	SW
10-Jun-2008	18:00	0.8	WSW
10-Jun-2008	19:00	0.7	SW
10-Jun-2008	20:00	0.7	SSW
10-Jun-2008	21:00	0.4	WNW
10-Jun-2008	22:00	1.2	WNW
10-Jun-2008	23:00	0.3	WNW
11-Jun-2008	00:00	0.3	WNW
11-Jun-2008	01:00	0.4	WNW
11-Jun-2008	02:00	0.4	WNW
11-Jun-2008	03:00	0.6	WNW
11-Jun-2008	04:00	0.6	WNW
11-Jun-2008	05:00	0.7	WNW
11-Jun-2008	06:00	0.4	WNW
11-Jun-2008	07:00	0.6	WNW
11-Jun-2008	08:00	0.3	WNW
11-Jun-2008	09:00	0.7	WNW
11-Jun-2008	10:00	1.2	W
11-Jun-2008	11:00	1.3	W
11-Jun-2008	12:00	1.8	W
11-Jun-2008	13:00	1.6	WSW
11-Jun-2008	14:00	1.0	SW
11-Jun-2008	15:00	1.0	SW
11-Jun-2008	16:00	0.4	WSW
11-Jun-2008	17:00	0.4	W
11-Jun-2008	18:00	0.4	W
11-Jun-2008	19:00	0.6	WNW
11-Jun-2008	20:00	0.4	WNW
11-Jun-2008	21:00	1.1	W
11-Jun-2008	22:00	1.2	W
11-Jun-2008	23:00	1.2	W
12-Jun-2008	00:00	1.1	W
12-Jun-2008	01:00	1.1	WNW
12-Jun-2008	02:00	0.5	WNW
12-Jun-2008	03:00	0.4	WNW
12-Jun-2008	04:00	0.5	W
12-Jun-2008	05:00	0.6	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
12-Jun-2008	06:00	0.6	WNW
12-Jun-2008	07:00	0.4	W
12-Jun-2008	08:00	0.6	NNE
12-Jun-2008	09:00	1.2	NNE
12-Jun-2008	10:00	1.0	NNE
12-Jun-2008	11:00	1.3	NE
12-Jun-2008	12:00	1.2	NE
12-Jun-2008	13:00	0.6	NNE
12-Jun-2008	14:00	0.7	NE
12-Jun-2008	15:00	0.9	ENE
12-Jun-2008	16:00	0.1	ENE
12-Jun-2008	17:00	0.3	NE
12-Jun-2008	18:00	0.1	NE
12-Jun-2008	19:00	0.0	NE
12-Jun-2008	20:00	0.0	NE
12-Jun-2008	21:00	0.0	ENE
12-Jun-2008	22:00	0.0	ENE
12-Jun-2008	23:00	0.0	ESE
13-Jun-2008	00:00	0.4	SE
13-Jun-2008	01:00	1.8	SE
13-Jun-2008	02:00	0.4	SSE
13-Jun-2008	03:00	0.4	SSE
13-Jun-2008	04:00	0.0	SE
13-Jun-2008	05:00	0.0	W
13-Jun-2008	06:00	0.0	S
13-Jun-2008	07:00	0.0	S
13-Jun-2008	08:00	2.2	WSW
13-Jun-2008	09:00	2.2	W
13-Jun-2008	10:00	2.7	WSW
13-Jun-2008	11:00	0.0	S
13-Jun-2008	12:00	0.0	---
13-Jun-2008	13:00	0.0	S
13-Jun-2008	14:00	0.0	---
13-Jun-2008	15:00	1.8	E
13-Jun-2008	16:00	2.2	SSE
13-Jun-2008	17:00	4.5	SSE
13-Jun-2008	18:00	0.4	E
13-Jun-2008	19:00	0.4	SSW
13-Jun-2008	20:00	3.6	SSE
13-Jun-2008	21:00	0.4	WSW
13-Jun-2008	22:00	0.0	W
13-Jun-2008	23:00	0.0	S
14-Jun-2008	00:00	0.0	S
14-Jun-2008	01:00	2.2	WSW
14-Jun-2008	02:00	2.2	W
14-Jun-2008	03:00	2.7	WSW
14-Jun-2008	04:00	0.0	S
14-Jun-2008	05:00	0.0	---
14-Jun-2008	06:00	0.0	S
14-Jun-2008	07:00	0.0	---
14-Jun-2008	08:00	1.8	E
14-Jun-2008	09:00	2.2	SSE
14-Jun-2008	10:00	4.5	SSE
14-Jun-2008	11:00	0.4	E

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
14-Jun-2008	12:00	0.4	SSW
14-Jun-2008	13:00	3.6	SSE
14-Jun-2008	14:00	0.4	WSW
14-Jun-2008	15:00	1.3	W
14-Jun-2008	16:00	2.2	WSW
14-Jun-2008	17:00	0.0	WSW
14-Jun-2008	18:00	1.3	SSE
14-Jun-2008	19:00	3.6	S
14-Jun-2008	20:00	1.3	WSW
14-Jun-2008	21:00	1.3	S
14-Jun-2008	22:00	2.2	SW
14-Jun-2008	23:00	0.9	W
15-Jun-2008	00:00	2.2	SW
15-Jun-2008	01:00	2.2	SW
15-Jun-2008	02:00	1.3	W
15-Jun-2008	03:00	1.3	W
15-Jun-2008	04:00	0.4	WSW
15-Jun-2008	05:00	0.9	W
15-Jun-2008	06:00	2.2	SW
15-Jun-2008	07:00	2.2	SW
15-Jun-2008	08:00	1.3	W
15-Jun-2008	09:00	1.3	W
15-Jun-2008	10:00	0.4	WSW
15-Jun-2008	11:00	2.7	SW
15-Jun-2008	12:00	0.9	E
15-Jun-2008	13:00	1.3	S
15-Jun-2008	14:00	1.8	SE
15-Jun-2008	15:00	0.4	SSE
15-Jun-2008	16:00	0.4	SE
15-Jun-2008	17:00	2.2	W
15-Jun-2008	18:00	1.8	W
15-Jun-2008	19:00	1.3	S
15-Jun-2008	20:00	3.1	SW
15-Jun-2008	21:00	2.7	WSW
15-Jun-2008	22:00	2.7	SSE
15-Jun-2008	23:00	2.2	SSE
16-Jun-2008	00:00	3.6	SSE
16-Jun-2008	01:00	1.8	W
16-Jun-2008	02:00	2.7	S
16-Jun-2008	03:00	1.3	SSE
16-Jun-2008	04:00	0.9	SSE
16-Jun-2008	05:00	1.8	S
16-Jun-2008	06:00	1.3	S
16-Jun-2008	07:00	0.4	ESE
16-Jun-2008	08:00	1.3	W
16-Jun-2008	09:00	0.4	W
16-Jun-2008	10:00	2.2	SSW
16-Jun-2008	11:00	2.2	W
16-Jun-2008	12:00	0.9	ESE
16-Jun-2008	13:00	1.3	S
16-Jun-2008	14:00	0.0	W
16-Jun-2008	15:00	0.9	SE
16-Jun-2008	16:00	2.2	W
16-Jun-2008	17:00	1.8	E

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
16-Jun-2008	18:00	4.5	SSE
16-Jun-2008	19:00	2.2	WSW
16-Jun-2008	20:00	0.4	SSW
16-Jun-2008	21:00	2.2	ESE
16-Jun-2008	22:00	1.3	WSW
16-Jun-2008	23:00	0.4	S
17-Jun-2008	00:00	2.2	SW
17-Jun-2008	01:00	2.7	SE
17-Jun-2008	02:00	4.9	SSE
17-Jun-2008	03:00	3.6	S
17-Jun-2008	04:00	0.4	ESE
17-Jun-2008	05:00	1.3	WSW
17-Jun-2008	06:00	0.4	S
17-Jun-2008	07:00	1.3	W
17-Jun-2008	08:00	0.9	WSW
17-Jun-2008	09:00	0.9	S
17-Jun-2008	10:00	0.9	SE
17-Jun-2008	11:00	2.2	WSW
17-Jun-2008	12:00	1.8	WSW
17-Jun-2008	13:00	0.4	NE
17-Jun-2008	14:00	4.5	SSE
17-Jun-2008	15:00	0.4	NE
17-Jun-2008	16:00	1.8	SSW
17-Jun-2008	17:00	1.8	W
17-Jun-2008	18:00	1.3	S
17-Jun-2008	19:00	1.8	S
17-Jun-2008	20:00	1.8	SSE
17-Jun-2008	21:00	0.0	NNE
17-Jun-2008	22:00	0.0	---
17-Jun-2008	23:00	2.7	SW
18-Jun-2008	00:00	0.4	SSE
18-Jun-2008	01:00	0.0	NE
18-Jun-2008	02:00	2.2	NNE
18-Jun-2008	03:00	1.8	ESE
18-Jun-2008	04:00	3.1	ESE
18-Jun-2008	05:00	0.4	SE
18-Jun-2008	06:00	0.9	SSE
18-Jun-2008	07:00	0.4	S
18-Jun-2008	08:00	0.0	---
18-Jun-2008	09:00	0.4	W
18-Jun-2008	10:00	1.8	S
18-Jun-2008	11:00	2.7	SW
18-Jun-2008	12:00	1.3	S
18-Jun-2008	13:00	2.2	SW
18-Jun-2008	14:00	1.3	W
18-Jun-2008	15:00	1.8	W
18-Jun-2008	16:00	2.7	SSE
18-Jun-2008	17:00	2.2	ESE
18-Jun-2008	18:00	1.8	WSW
18-Jun-2008	19:00	0.4	WSW
18-Jun-2008	20:00	0.0	W
18-Jun-2008	21:00	0.4	NE
18-Jun-2008	22:00	4.0	SSE
18-Jun-2008	23:00	2.2	NNE

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
19-Jun-2008	00:00	0.4	NE
19-Jun-2008	01:00	4.0	S
19-Jun-2008	02:00	4.5	SSE
19-Jun-2008	03:00	1.8	S
19-Jun-2008	04:00	0.0	---
19-Jun-2008	05:00	1.8	WSW
19-Jun-2008	06:00	3.6	WSW
19-Jun-2008	07:00	2.7	WSW
19-Jun-2008	08:00	2.2	W
19-Jun-2008	09:00	0.9	WSW
19-Jun-2008	10:00	0.4	SSW
19-Jun-2008	11:00	0.0	S
19-Jun-2008	12:00	2.2	SW
19-Jun-2008	13:00	0.4	SSE
19-Jun-2008	14:00	0.4	SSE
19-Jun-2008	15:00	0.4	WSW
19-Jun-2008	16:00	0.9	WSW
19-Jun-2008	17:00	0.9	SW
19-Jun-2008	18:00	1.8	SW
19-Jun-2008	19:00	0.0	S
19-Jun-2008	20:00	0.0	S
19-Jun-2008	21:00	0.0	---
19-Jun-2008	22:00	0.9	N
19-Jun-2008	23:00	0.4	SW
20-Jun-2008	00:00	1.3	N
20-Jun-2008	01:00	1.8	SSE
20-Jun-2008	02:00	2.2	SSE
20-Jun-2008	03:00	0.0	---
20-Jun-2008	04:00	0.0	---
20-Jun-2008	05:00	0.0	NNE
20-Jun-2008	06:00	1.3	E
20-Jun-2008	07:00	0.9	SSE
20-Jun-2008	08:00	0.4	SSE
20-Jun-2008	09:00	0.9	SSE
20-Jun-2008	10:00	1.8	SW
20-Jun-2008	11:00	0.4	ESE
20-Jun-2008	12:00	2.7	S
20-Jun-2008	13:00	1.3	SE
20-Jun-2008	14:00	0.4	S
20-Jun-2008	15:00	3.1	SW
20-Jun-2008	16:00	1.3	ESE
20-Jun-2008	17:00	0.0	---
20-Jun-2008	18:00	0.4	NE
20-Jun-2008	19:00	2.2	SSE
20-Jun-2008	20:00	3.1	WSW
20-Jun-2008	21:00	2.7	S
20-Jun-2008	22:00	1.3	ENE
20-Jun-2008	23:00	2.7	S
21-Jun-2008	00:00	1.3	SE
21-Jun-2008	01:00	0.9	SE
21-Jun-2008	02:00	1.8	W
21-Jun-2008	03:00	1.3	W
21-Jun-2008	04:00	0.4	S
21-Jun-2008	05:00	0.0	---

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
21-Jun-2008	06:00	0.9	W
21-Jun-2008	07:00	1.3	WSW
21-Jun-2008	08:00	0.9	WSW
21-Jun-2008	09:00	1.3	W
21-Jun-2008	10:00	0.9	W
21-Jun-2008	11:00	2.2	W
21-Jun-2008	12:00	1.3	W
21-Jun-2008	13:00	1.3	W
21-Jun-2008	14:00	3.6	SW
21-Jun-2008	15:00	0.9	SE
21-Jun-2008	16:00	1.3	S
21-Jun-2008	17:00	3.6	NNE
21-Jun-2008	18:00	3.1	NNE
21-Jun-2008	19:00	3.1	NNE
21-Jun-2008	20:00	4.0	NNE
21-Jun-2008	21:00	3.6	NE
21-Jun-2008	22:00	3.6	NNE
21-Jun-2008	23:00	4.0	NNE
22-Jun-2008	00:00	1.8	NE
22-Jun-2008	01:00	1.3	WNW
22-Jun-2008	02:00	0.9	ENE
22-Jun-2008	03:00	0.4	ENE
22-Jun-2008	04:00	0.9	W
22-Jun-2008	05:00	0.0	WSW
22-Jun-2008	06:00	3.6	WSW
22-Jun-2008	07:00	0.0	---
22-Jun-2008	08:00	1.3	NE
22-Jun-2008	09:00	3.6	NE
22-Jun-2008	10:00	2.2	ENE
22-Jun-2008	11:00	2.2	NE
22-Jun-2008	12:00	4.0	WNW
22-Jun-2008	13:00	1.8	ENE
22-Jun-2008	14:00	1.3	E
22-Jun-2008	15:00	1.8	N
22-Jun-2008	16:00	2.7	WNW
22-Jun-2008	17:00	1.8	WNW
22-Jun-2008	18:00	1.8	WNW
22-Jun-2008	19:00	2.7	W
22-Jun-2008	20:00	0.9	SSW
22-Jun-2008	21:00	4.5	W
22-Jun-2008	22:00	1.8	ENE
22-Jun-2008	23:00	2.7	NE
23-Jun-2008	00:00	3.6	NNE
23-Jun-2008	01:00	3.1	NE
23-Jun-2008	02:00	3.1	NE
23-Jun-2008	03:00	3.6	NE
23-Jun-2008	04:00	0.9	ENE
23-Jun-2008	05:00	0.4	ENE
23-Jun-2008	06:00	0.9	ENE
23-Jun-2008	07:00	0.4	WNW
23-Jun-2008	08:00	2.2	E
23-Jun-2008	09:00	0.4	SE
23-Jun-2008	10:00	2.7	SE
23-Jun-2008	11:00	1.8	N

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
23-Jun-2008	12:00	1.3	ESE
23-Jun-2008	13:00	0.9	NW
23-Jun-2008	14:00	2.2	ENE
23-Jun-2008	15:00	3.1	NE
23-Jun-2008	16:00	2.7	ENE
23-Jun-2008	17:00	1.3	W
23-Jun-2008	18:00	1.3	W
23-Jun-2008	19:00	2.7	WNW
23-Jun-2008	20:00	2.2	N
23-Jun-2008	21:00	0.9	ENE
23-Jun-2008	22:00	0.9	N
23-Jun-2008	23:00	0.4	E
24-Jun-2008	00:00	0.4	ENE
24-Jun-2008	01:00	3.1	N
24-Jun-2008	02:00	3.1	NNE
24-Jun-2008	03:00	3.1	NE
24-Jun-2008	04:00	3.6	NNE
24-Jun-2008	05:00	3.1	NE
24-Jun-2008	06:00	2.2	NE
24-Jun-2008	07:00	0.4	E
24-Jun-2008	08:00	0.4	WNW
24-Jun-2008	09:00	1.3	N
24-Jun-2008	10:00	1.8	WNW
24-Jun-2008	11:00	2.7	WNW
24-Jun-2008	12:00	2.7	WSW
24-Jun-2008	13:00	2.9	ENE
24-Jun-2008	14:00	3.1	ENE
24-Jun-2008	15:00	3.1	ENE
24-Jun-2008	16:00	3.5	NE
24-Jun-2008	17:00	2.8	NE
24-Jun-2008	18:00	2.9	ENE
24-Jun-2008	19:00	2.9	NE
24-Jun-2008	20:00	1.3	NE
24-Jun-2008	21:00	7.8	SW
24-Jun-2008	22:00	5.0	SSW
24-Jun-2008	23:00	4.2	SSW
25-Jun-2008	00:00	6.4	WNW
25-Jun-2008	01:00	4.4	N
25-Jun-2008	02:00	3.6	WNW
25-Jun-2008	03:00	8.9	WNW
25-Jun-2008	04:00	6.6	WSW
25-Jun-2008	05:00	4.7	SW
25-Jun-2008	06:00	7.2	SW
25-Jun-2008	07:00	7.2	SW
25-Jun-2008	08:00	4.4	WSW
25-Jun-2008	09:00	3.9	SW
25-Jun-2008	10:00	4.7	WSW
25-Jun-2008	11:00	5.8	WSW
25-Jun-2008	12:00	3.6	SW
25-Jun-2008	13:00	3.9	SW
25-Jun-2008	14:00	4.2	WSW
25-Jun-2008	15:00	3.3	SW
25-Jun-2008	16:00	5.0	WNW
25-Jun-2008	17:00	1.9	WNW

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
25-Jun-2008	18:00	3.1	SW
25-Jun-2008	19:00	5.3	SW
25-Jun-2008	20:00	0.8	SW
25-Jun-2008	21:00	3.6	SW
25-Jun-2008	22:00	2.2	SW
25-Jun-2008	23:00	1.9	SW
26-Jun-2008	00:00	0.3	W
26-Jun-2008	01:00	0.8	WSW
26-Jun-2008	02:00	2.8	SW
26-Jun-2008	03:00	3.6	SW
26-Jun-2008	04:00	3.1	SW
26-Jun-2008	05:00	2.4	NE
26-Jun-2008	06:00	3.0	NE
26-Jun-2008	07:00	1.7	NE
26-Jun-2008	08:00	2.3	NE
26-Jun-2008	09:00	3.6	W
26-Jun-2008	10:00	2.1	W
26-Jun-2008	11:00	2.4	WNW
26-Jun-2008	12:00	1.5	WNW
26-Jun-2008	13:00	1.5	WNW
26-Jun-2008	14:00	2.1	WNW
26-Jun-2008	15:00	2.1	WNW
26-Jun-2008	16:00	1.9	W
26-Jun-2008	17:00	2.1	W
26-Jun-2008	18:00	1.4	W
26-Jun-2008	19:00	1.1	SW
26-Jun-2008	20:00	0.8	SSE
26-Jun-2008	21:00	0.9	ENE
26-Jun-2008	22:00	0.4	WSW
26-Jun-2008	23:00	0.2	WSW
27-Jun-2008	00:00	1.2	SSW
27-Jun-2008	01:00	1.2	SSW
27-Jun-2008	02:00	1.6	W
27-Jun-2008	03:00	1.6	W
27-Jun-2008	04:00	1.8	NW
27-Jun-2008	05:00	1.5	WNW
27-Jun-2008	06:00	1.2	W
27-Jun-2008	07:00	1.2	WNW
27-Jun-2008	08:00	1.0	WSW
27-Jun-2008	09:00	1.0	SW
27-Jun-2008	10:00	1.2	W
27-Jun-2008	11:00	1.0	SW
27-Jun-2008	12:00	1.0	SW
27-Jun-2008	13:00	1.2	SW
27-Jun-2008	14:00	1.2	WNW
27-Jun-2008	15:00	1.3	WNW
27-Jun-2008	16:00	0.9	W
27-Jun-2008	17:00	0.7	WSW
27-Jun-2008	18:00	0.6	WSW
27-Jun-2008	19:00	0.6	WSW
27-Jun-2008	20:00	0.6	WNW
27-Jun-2008	21:00	0.3	WNW
27-Jun-2008	22:00	0.0	WNW
27-Jun-2008	23:00	0.1	WNW

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
28-Jun-2008	00:00	0.3	WSW
28-Jun-2008	01:00	0.3	WNW
28-Jun-2008	02:00	0.3	WNW
28-Jun-2008	03:00	0.3	WNW
28-Jun-2008	04:00	0.1	WNW
28-Jun-2008	05:00	0.6	W
28-Jun-2008	06:00	0.9	W
28-Jun-2008	07:00	0.9	W
28-Jun-2008	08:00	0.9	W
28-Jun-2008	09:00	0.9	WNW
28-Jun-2008	10:00	0.9	WNW
28-Jun-2008	11:00	1.3	WNW
28-Jun-2008	12:00	1.2	NW
28-Jun-2008	13:00	1.2	WNW
28-Jun-2008	14:00	1.5	WNW
28-Jun-2008	15:00	1.0	WNW
28-Jun-2008	16:00	1.2	WNW
28-Jun-2008	17:00	1.0	W
28-Jun-2008	18:00	1.0	W
28-Jun-2008	19:00	1.0	W
28-Jun-2008	20:00	0.7	W
28-Jun-2008	21:00	1.0	WNW
28-Jun-2008	22:00	0.7	WNW
28-Jun-2008	23:00	1.3	W
29-Jun-2008	00:00	1.2	NE
29-Jun-2008	01:00	1.6	N
29-Jun-2008	02:00	1.6	NNE
29-Jun-2008	03:00	1.3	NE
29-Jun-2008	04:00	1.2	ESE
29-Jun-2008	05:00	1.5	NE
29-Jun-2008	06:00	1.5	N
29-Jun-2008	07:00	1.2	N
29-Jun-2008	08:00	1.0	WNW
29-Jun-2008	09:00	0.9	NNE
29-Jun-2008	10:00	1.2	SW
29-Jun-2008	11:00	1.5	SSW
29-Jun-2008	12:00	1.5	SSW
29-Jun-2008	13:00	1.6	SW
29-Jun-2008	14:00	1.3	SSW
29-Jun-2008	15:00	1.5	SSW
29-Jun-2008	16:00	1.5	ENE
29-Jun-2008	17:00	1.2	ENE
29-Jun-2008	18:00	1.0	E
29-Jun-2008	19:00	0.7	ESE
29-Jun-2008	20:00	0.4	E
29-Jun-2008	21:00	0.4	WNW
29-Jun-2008	22:00	0.3	WSW
29-Jun-2008	23:00	0.3	SW
30-Jun-2008	00:00	0.3	SSE
30-Jun-2008	01:00	0.1	SSE
30-Jun-2008	02:00	0.0	SSE
30-Jun-2008	03:00	0.0	WSW
30-Jun-2008	04:00	0.0	SW
30-Jun-2008	05:00	0.0	W

Appendix J - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
30-Jun-2008	06:00	0.1	W
30-Jun-2008	07:00	0.0	N
30-Jun-2008	08:00	0.0	N
30-Jun-2008	09:00	0.3	N
30-Jun-2008	10:00	0.3	N
30-Jun-2008	11:00	0.4	N
30-Jun-2008	12:00	0.7	N
30-Jun-2008	13:00	0.7	N
30-Jun-2008	14:00	0.7	NE
30-Jun-2008	15:00	0.7	NE
30-Jun-2008	16:00	0.4	NE
30-Jun-2008	17:00	0.6	N
30-Jun-2008	18:00	0.7	N
30-Jun-2008	19:00	0.6	N
30-Jun-2008	20:00	0.4	N
30-Jun-2008	21:00	0.4	N
30-Jun-2008	22:00	0.9	N
30-Jun-2008	23:00	0.9	N

APPENDIX K
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80604
Date	4 June 2008 (Wednesday)
Time	10:00 – 12:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
80604-O04	*Marine Works* • Excess material was observed from the decks at Western Portal. The Contractor was reminded to clear them to prevent it from contaminating the sea.	B21
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
80604-O03	• Oil leakage was observed at Eastern Portal. The Contractor was reminded to clear them as soon as possible and clear the standing water in drip tray regularly to prevent overflow.	F8
	E. Ecology	
80604-O01	• Silt was observed at the access road at Eastern Portal. The Contractor was reminded to clear them regularly to prevent any silt from discharging into the stream.	G1
80604-O02	• Worn sand bags were observed at the access road at Eastern Portal. The Contractor was reminded to replace them.	G1
	F. Reminders	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous audit section (Ref. No.:80529), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80529-O03). Follow-up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ivy Tam	Ivy	4 June 2008
Checked by	Dr. Priscilla Choy		4 June 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80613
Date	13 June 2008 (Friday)
Time	14:30 – 18:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
80613-O01	• Standing water was observed in the drip tray at Eastern Portal. The Contractor was reminded to dry it out and provide suitable storage area for the chemical waste.	B15
80613-O02	*Marine Works* • Excess material was observed from the decks at Western Portal. The Contractor was reminded to clear them more frequently.	B21
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
80613-O01	• Standing water was observed in the drip tray at Eastern Portal. The Contractor was reminded to dry it out and provide suitable storage area for the chemical waste.	F3&3iii.
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Reminders	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous audit section (Ref. No.:80604), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80604-O03 and O04). Follow-up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ivy Tam		13 June 2008
Checked by	Dr. Priscilla Choy		13 June 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80620
Date	20 June 2008 (Friday)
Time	15:30 – 17:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
80620-O02	• Silty water was observed running to the U-Channel at Eastern Portal. The Contractor was reminded to provide the mitigation measures to prevent any silty water from discharging to the drainage system.	B2
80620-O03	• Standing water was observed in the tank. The Contractor was reminded to dry it out to prevent mosquito breed.	B15
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
80620-O01	• Chemical waste was observed without suitable storage area at Eastern Portal. The Contractor was reminded to provide the storage area which should be enclosed on at least three sides by a wall and covering etc.	F3
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Reminders	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous audit section (Ref. No.:80613), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80613-O01). Follow-up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ivy Tam	Ivy	20 June 2008
Checked by	Dr. Priscilla Choy		20 June 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80627
Date	27 June 2008 (Friday)
Time	14:00 – 17:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	A. Water Quality	
80627-O01	• Standing water was observed in the tank, drip tray and the valley at Eastern Portal. The Contractor was reminded to dry it out and pave the valley to prevent mosquito breed.	B15
80627-O02	• Worn sand bags were observed at Eastern Portal. The Contractor was reminded to replace them.	B2
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Noise	
	• No environmental deficiency was identified during site inspection.	
	D. Waste / Chemical Management	
80620-O03	• Chemical waste was observed covered with tarpaulin but without the storage area that is enclosed on at least three sides by a wall etc at Eastern Portal. The Contractor was reminded to provide it as soon as possible.	F3
80627-O04	• Oil spillage was observed at the sedimentation tank at Western Portal. The Contractor was reminded to clear them and disposed through the licensed chemical waste collector.	F8
	E. Ecology	
	• No environmental deficiency was identified during site inspection.	
	F. Reminders	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous audit section (Ref. No.:80620), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80620-O01 and O03). Follow-up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ivy Tam		27 June 2008
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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).	N/A
	• 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

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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.	N/A
	• 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.	^

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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 ^ ^ ^ ^ N/A ^ ^ ^

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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 ^ ^ ^

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	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

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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.	^ ^ ^ ^ * ^ ^

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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.	N/A
	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.	N/A
	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.	N/A
	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.	N/A
	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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	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.	N/A
	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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	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.	N/A
	<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.	^
	• The by-pass system comprises an approach link and a trapezoidal channel.	^
	• 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.	^
	• 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.	^
	• 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.	^
	• 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.	

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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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	• 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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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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# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

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 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
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	 ^ ^ ^ ^ ^ ^ ^

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
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.	^ ^ ^ ^

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
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.	^

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.

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

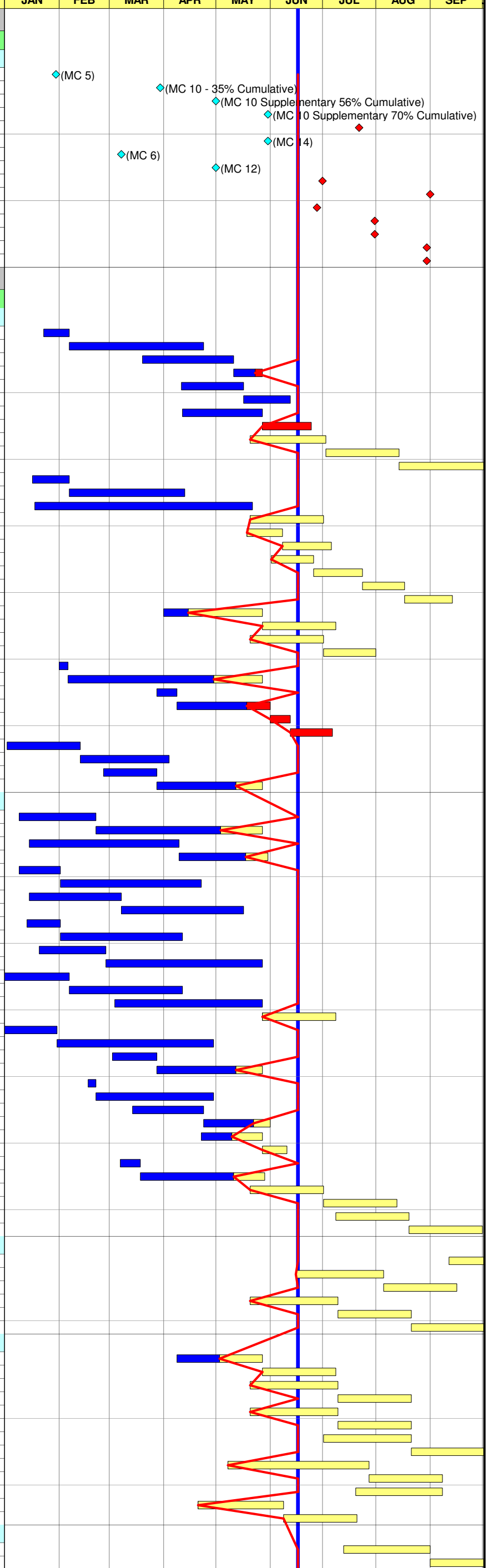
APPENDIX N – COMPLAINT LOG

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 (3) 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. Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				noise monitoring results was recorded in May and (3) no non-compliance or observation on noise was recorded.	

APPENDIX O
CONSTRUCTION PROGRAMME

Activity ID	Activity Description	Current or Forecast Duration	Current or Forecast Early Start	Current or Forecast Early Finish	Baseline Total Float	Progress Total Float as of 17-Jun-08	% Comp
CC01 - PRELIMINARIES & GENERAL REQUIREMENTS							
Milestone							
General							
M1-1020	1.02-Provide All Required Survey Equip't	0		29/JAN/08A			100
M1-1030	1.03-Comp SO's Accom's Equipt Furnishings(35%)	0		29/MAR/08A			100
M1-1032	1.03A-Comp SO's Accom's Equipt Furnishings(56%)	0		30/APR/08A			100
M1-1034	1.03B-Comp SO's Accom's Equip't Furnishings(70%)	0		30/MAY/08A			100
M1-1036	1.03C-Complete So's Accom's Equip't Furnishings	0		21/JUL/08*	0	0	0
M1-1040	1.04-Complete the Setting Up of TDMS	0		30/MAY/08A			100
M1-1050	1.05-Complete of All Obligat's From 31to90d	0		07/MAR/08A			100
M1-1060	1.06-Complete of All Obligat's From 91to150d	0		30/APR/08A			100
M1-1070	1.07-Complete of All Obligat's From 151to210d	0		30/JUN/08*	0	0	0
M1-1080	1.08-Complete of All Obligat's From 211to270d	0		31/AUG/08*	0	0	0
M1-1300	1.30-Acceptance of Monthly Report on TDMS(1M)	0		27/JUN/08*	0	0	0
M1-1310	1.31-Acceptance of Monthly Report on TDMS(2M)	0		30/JUL/08*	0	0	0
M1-1320	1.32-Acceptance of Monthly Report on TDMS(3M)	0		30/JUL/08*	0	0	0
M1-1330	1.33-Acceptance of Monthly Report on TDMS(4M)	0		29/AUG/08*	0	0	0
M1-1340	1.34-Acceptance of Monthly Report on TDMS(5M)	0		29/AUG/08*	0	0	0
CC02 - DESIGN & DESIGN CHECKING OF THE WORKS							
Design Stage							
Secton 1 (Eastern Portal)							
D00220	P&S EP Temp Excav&SG&Maint Chamber Tunl Sup AIP	15	23/JAN/08A	06/FEB/08A			100
D00225	APP EP Temp Excav&SG&Maint Chamber Tunl Sup AIP	42	07/FEB/08A	23/APR/08A			100
D00230	P&S EP Temp Excav&SG&Maint Chamber Tunl Sup	42	20/MAR/08A	10/MAY/08A			100
D00235	APP EP Temp Excav&SG&Maint Chamber Tunl Sup	30	11/MAY/08A	23/JUN/08	0	-13	75
D00236	P&S EP Temp Portal Slope for Maint Chamber AIP	15	11/APR/08A	16/MAY/08A			100
D00237	APP EP Temp Portal Slope for Maint Chamber AIP	28	17/MAY/08A	26/MAY/08A	12		100
D00238	P&S EP Temp Portal Slope for Maint Chamber DDA	21	12/APR/08A	21/MAY/08A	0		100
D00239	APP EP Temp Portal Slope for Maint Chamber DDA	28	22/MAY/08A	23/JUN/08	0	-13	0
D00240	P&S East P Temp Drainage Divrsn Main Stream AIP	43	17/JUN/08*	29/JUL/08	608	581	0
D00245	APP East P Temp Drainage Divrsn Main Stream AIP	42	30/JUL/08	09/SEP/08	608	581	0
D00250	P&S East P Temp Drainage Divrsn Main Stream DDA	84	10/SEP/08	02/DEC/08	608	581	0
D00260	P&S Cofferdam for Intake Shaft AIP	15	17/JAN/08A	06/FEB/08A			100
D00265	APP Cofferdam for Intake Shaft AIP	42	07/FEB/08A	12/APR/08A			100
D00270	P&S Cofferdam for Intake Shaft DDA	15	18/JAN/08A	21/MAY/08A			100
D00275	APP Cofferdam for Intake Shaft DDA	42	21/MAY/08A	01/JUL/08	41	41	0
D00280	P&S Temp&Perm Supt EP Non-TBM Tunl to ch200 AIP	43	19/MAY/08A	26/JUN/08	59	40	0
D00282	APP Temp&Perm Supt EP Non-TBM Tunl to ch200 AIP	28	27/JUN/08	24/JUL/08	77	58	0
D00283	P&S Temp Supt EP Non-TBM Tunnel to Ch200 - DDA	24	21/JUN/08	14/JUL/08	59	40	0
D00284	APP Temp Supt EP Non-TBM Tunnel to Ch200 - DDA	28	15/JUL/08	11/AUG/08	59	40	0
D00286	P&S Perm Supt EP Non-TBM Tunnel to Ch200 - DDA	24	12/AUG/08	04/SEP/08	59	40	0
D00287	APP Perm Supt EP Non-TBM Tunnel to Ch200 - DDA	28	05/SEP/08	02/OCT/08	59	40	0
D00291	P&S EP Intake Tunnel&Intake Chamber Temp Sup AIP	15	01/APR/08A	23/JUN/08	55	28	25
D00292	APP EP Intake Tunnel&Intake Chamber Temp Sup AIP	42	24/JUN/08	04/AUG/08	76	49	0
D00293	P&S EP Intake Tunnel&Intake Chamber Temp Sup DDA	42	17/JUN/08	28/JUL/08	53	26	0
D00294	APP EP Intake Tunnel&Intake Chamber Temp Sup DDA	30	29/JUL/08	27/AUG/08	53	26	0
D00316	P&S Boulder Assess Rep(EP)-inside Bound Stage 1	16	01/FEB/08A	05/FEB/08A			100
D00317	APP Boulder Assess Rep(EP)-inside Bound Stage 1	23	06/FEB/08A	23/JUN/08	20	20	75
D00318	P&S Boulder Assess Rep(EP)-outside Bound Stage 2	12	28/MAR/08A	08/APR/08A			100
D00319	APP Boulder Assess Rep(EP)-outside Bound Stage 2	24	09/APR/08A	23/JUN/08	3	0	75
D00321	P&S Boulder Assess Rep(EP)-outside Bound Stage 3	12	24/JUN/08	05/JUL/08	3	0	0
D00322	APP Boulder Assess Rep(EP)-outside Bound Stage 3	24	06/JUL/08	29/JUL/08	3	0	0
D02331	P&S East P Temp Drainage Divn Side Stream-AIP	24	02/JAN/08A	12/FEB/08A			100
D02332	APP East P Temp Drainage Divn Side Stream-AIP	38	13/FEB/08A	03/APR/08A			100
D02333	P&S East P Temp Drainage Divn Side Stream-DDA	24	27/FEB/08A	27/MAR/08A			100
D02334	APP East P Temp Drainage Divn Side Stream-DDA	76	28/MAR/08A	23/JUN/08	108	81	75
Section 1 (Western Portal)							
D00300	P&S West Portal Temp Slope AIP	42	09/JAN/08A	21/FEB/08A			100
D00305	APP West Portal Temp Slope AIP	42	22/FEB/08A	23/JUN/08	69	42	75
D00310	P&S West Portal Temp Slope DDA	22	15/JAN/08A	09/APR/08A			100
D00315	APP West Portal Temp Slope DDA	42	10/APR/08A	26/JUN/08	66	39	75
D00320	P&S West Portal Marine Works AIP	15	09/JAN/08A	01/FEB/08A			100
D00325	APP West Portal Marine Works AIP	42	02/FEB/08A	22/APR/08A			100
D00330	P&S West Portal Marine Works DDA	37	15/JAN/08A	07/MAR/08A			100
D00335	APP West Portal Marine Works DDA	26	08/MAR/08A	16/MAY/08A			100
D00340	P&S West Portal Temp Drainage Diversion AIP	15	14/JAN/08A	01/FEB/08A			100
D00345	APP West Portal Temp Drainage Diversion AIP	42	02/FEB/08A	11/APR/08A			100
D00350	P&S West Portal Temp Drainage Diversion DDA	15	21/JAN/08A	27/FEB/08A			100
D00355	APP West Portal Temp Drainage Diversion DDA	37	28/FEB/08A	23/MAY/08A	21		100
D00360	P&S West Portal ELS for Soft Ground Tunnel - AIP	43	19/DEC/07A	06/FEB/08A			100
D00365	APP West Portal ELS for Soft Ground Tunnel - AIP	42	07/FEB/08A	11/APR/08A			100
D00370	P&S West Portal ELS for Soft Ground Tunnel DDA	43	04/MAR/08A	11/JUN/08A	70		100
D00375	APP West Portal ELS for Soft Ground Tunnel DDA	42	12/JUN/08A	23/JUL/08	70	55	0
D00380	P&S Temp ELS West P Shalw Struc(Transl Tun) AIP	43	24/DEC/07A	30/JAN/08A			100
D00385	APP Temp ELS West P Shalw Struc(Transl Tun) AIP	42	31/JAN/08A	29/APR/08A			100
D00390	P&S Temp ELS West P Shalw Struc(Transl Tun) DDA	43	03/MAR/08A	27/MAR/08A			100
D00395	APP Temp ELS West P Shalw Struc(Transl Tun) DDA	43	28/MAR/08A	23/JUN/08	58	31	75
D00400	P&S Temp ELS West P Deep Structure (Basin) AIP	34	18/FEB/08A	21/FEB/08A			100
D00405	APP Temp ELS West P Deep Structure (Basin) AIP	42	22/FEB/08A	29/APR/08A			100
D00410	P&S Temp ELS WP Deep Struct (Basin)Double SP DDA	45	14/MAR/08A	23/APR/08A			100
D00412	APP Temp ELS WP Deep Struct (Basin)Double SP DDA	42	24/APR/08A	23/JUN/08	38	30	75
D00413	P&S Temp ELS WP Deep Struct (Basin)Single SP DDA	7	23/APR/08A	23/JUN/08	44	17	50
D00414	APP Temp ELS WP Deep Struct (Basin)Single SP DDA	14	24/JUN/08	07/JUL/08	44	17	0
D00416	P&S Boulder Assess Report(Western Portal)	42	07/MAR/08A	18/MAR/08A			100
D00417	APP Boulder Assess Report(Western Portal)	42	19/MAR/08A	24/JUN/08	98	71	75
D00421	P&S Temp Suppt Western Portal NON-TBM Tunnel-AIP	42	17/JUN/08*	28/JUL/08	44	17	0
D00422	APP Temp Suppt Western Portal NON-TBM Tunnel-AIP	42	29/JUL/08	08/SEP/08	93	66	0
D0423	P&S Temp Suppt Western Portal NON-TBM Tunnel-DDA	42	05/AUG/08	15/SEP/08	44	17	0
D0424	APP Temp Suppt Western Portal NON-TBM Tunnel-DDA	42	16/SEP/08	27/OCT/08	44	17	0
Section 1 (Portion W0) - Shaft							
D00600	P&S Dropshaft Temp Rock Supt (Excl. W0) AIP	50	12/SEP/08*	31/OCT/08	387	387	0
D00640	P&S Shaft & SC at W0 Temp Rock Supt AIP	50	17/JUN/08*	05/AUG/08	3	2	0
D00645	APP Shaft & SC at W0 Temp Rock Supt AIP	42	06/AUG/08	16/SEP/08	3	2	0
D00660	P&S Shaft & SC at W0 Permanent Lining AIP	50	17/JUN/08*	05/AUG/08	38	11	0
D00665	APP Shaft & SC at W0 Permanent Lining AIP	42	06/AUG/08	16/SEP/08	38	11	0
D00670	P&S Shaft & SC at W0 Permanent Lining DDA	50	17/SEP/08	05/NOV/08	38	11	0
Section 1 (Portion W0)							
D01140	P&S W0-Permanent Works Intake AIP	50	09/APR/08A	23/JUN/08	71	44	50
D01145	APP W0-Permanent Works Intake AIP	42	24/JUN/08	04/AUG/08	111	84	0
D01150	P&S W0-Permanent Works Intake DDA	50	17/JUN/08	05/AUG/08	68	41	0
D01155	APP W0-Permanent Works Intake DDA	42	06/AUG/08	16/SEP/08	68	41	0
D01156	P&S W0-Temp Drainage Diversion Works AIP	50	17/JUN/08*	05/AUG/08	60	33	0
D01157	APP W0-Temp Drainage Diversion Works AIP	42	06/AUG/08	16/SEP/08	60	33	0
D01158	P&S W0-Temp Drainage Diversion Works DDA	50	29/JUL/08	16/SEP/08	60	33	0
D01159	APP W0-Temp Drainage Diversion Works DDA	42	17/SEP/08	28/OCT/08	60	33	0
D01160	P&S W0-Temp ELS for Intake Const AIP	50	08/MAY/08A	16/AUG/08	70	50	0
D01165	APP W0-Temp ELS for Intake Const AIP	42	17/AUG/08	27/SEP/08	70	50	0
D01170	P&S W0-Temp ELS for Intake Const DDA	50	09/AUG/08	27/SEP/08	70	50	0
D01180	P&S W0-Permanent Slopeworks AIP	50	21/APR/08A	05/JUL/08	70	50	0
D01185	APP W0-Permanent Slopeworks AIP	42	06/JUL/08	16/AUG/08	70	50	0
Section 7 (Portion THR2)							
D00940	P&S THR2-Permanent Works Intake AIP	50	13/JUL/08*	31/AUG/08	90	90	0
D00945	APP THR2-Permanent Works Intake AIP	42	01/SEP/08	12/OCT/08	90	90	0



Start Date 23/NOV/07
Finish Date 08/FEB/12
Data Date 17/JUN/08
Run Date 19/JUN/08 01:59

Target Bar
Progress Bar
Critical Activity

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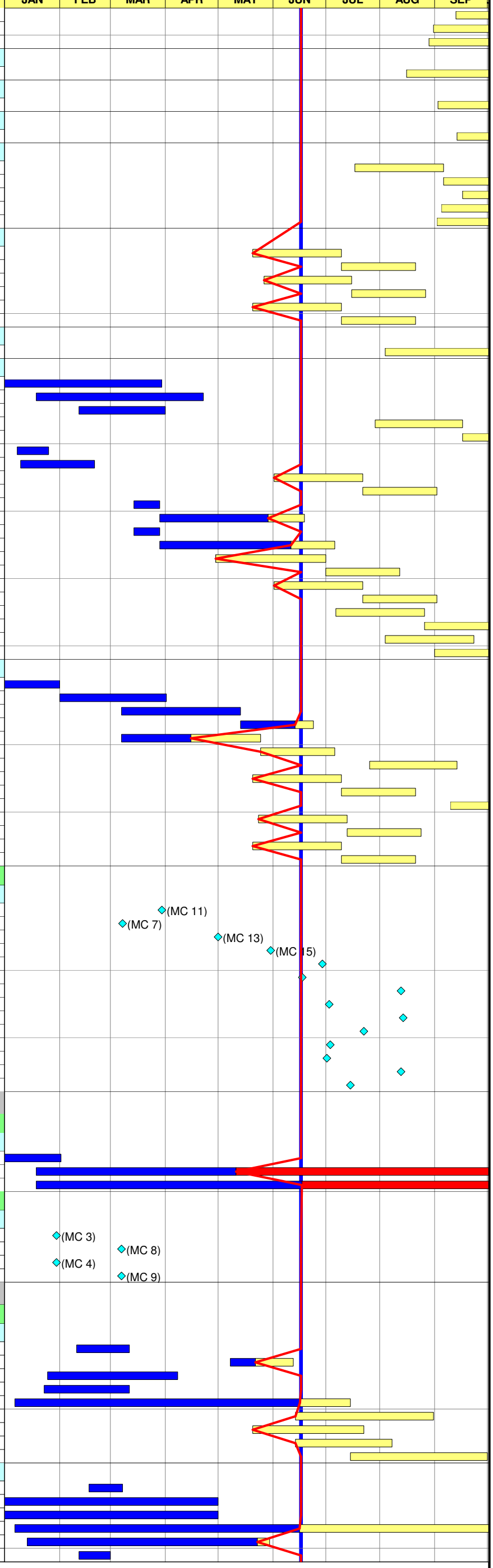
Design & Construction of Hong Kong West Drainage Tunnel
Contract No. DC/2007/10
Works Programme
3 Monthly Rolling Programme
JUNE MONTHLY REPORT

Dragages - Nishimatsu Joint Venture

Date	Revision	Checked	Approved
18/JUN/08	7th Monthly Update		
	23May07 - 17Jun08		

Activity ID	Activity Description	Current or Forecast Duration	Current or Forecast Early Start	Current or Forecast Early Finish	Baseline Total Float	Progress Total Float as of 17-Jun-08	% Comp
D00950	P&S THR2-Permanent Works Intake DDA	50	13/SEP/08	01/NOV/08	90	90	0
D00956	P&S THR2-Temp Drainage Diversion Works AIP	50	31/AUG/08*	19/OCT/08	90	90	0
D00980	P&S THR2-Permanent Slopeworks AIP	50	29/AUG/08*	17/OCT/08	90	90	0
Section 4 (Portion MB16)							
D00780	P&S MB16-Permanent Works Intake AIP	50	16/AUG/08*	04/OCT/08	90	90	0
Section 31 (Portion PFLR1)							
D02250	P&S PFLR1-Permanent Works Intake AIP	50	03/SEP/08*	22/OCT/08	90	90	0
Section30 (Portion HKU1)							
D02200	P&S HKU1-Permanent Works Intake AIP	50	14/SEP/08*	02/NOV/08	94	94	0
Section 32 (Portion SM1)							
D02300	P&S SM1-Permanent Works Intake AIP	50	18/JUL/08*	05/SEP/08	90	90	0
D02305	APP SM1-Permanent Works Intake AIP	42	06/SEP/08	17/OCT/08	90	90	0
D02310	P&S SM1-Permanent Works Intake DDA	50	17/SEP/08	05/NOV/08	90	90	0
D02316	P&S SM1-Temp Drainage Diversion Works AIP	50	05/SEP/08*	24/OCT/08	90	90	0
D02340	P&S SM1-Permanent Slopeworks AIP	50	02/SEP/08*	21/OCT/08	90	90	0
Adits & Stilling Chambers							
D00540	P&S Adits Permanent Lining AIP	50	17/JUN/08*	05/AUG/08	334	307	0
D00545	APP Adits Permanent Lining AIP	42	06/AUG/08	16/SEP/08	334	307	0
D00560	P&S SCs Temp Suppot AIP	50	17/JUN/08*	05/AUG/08	314	293	0
D00565	APP SCs Temp Suppot AIP	42	06/AUG/08	16/SEP/08	314	293	0
D00580	P&S SCs Permanent Lining AIP	50	17/JUN/08*	05/AUG/08	320	293	0
D00585	APP SCs Permanent Lining AIP	42	06/AUG/08	16/SEP/08	320	293	0
E&M							
D02350	P&S E&M AIP	93	04/AUG/08*	04/NOV/08	655	655	0
Project Wide							
D00105	APP Project Design Plan	35	25/DEC/07A	29/MAR/08A			100
D00115	APP Prel Const Risk Assess (Portals) AIP	42	19/JAN/08A	22/APR/08A			100
D00120	P&S Prel Const Risk Assess (excl Portals) AIP	43	12/FEB/08A	31/MAR/08A			100
D00140	P&S Detailed Const Risk Assess DDA	50	29/JUL/08*	16/SEP/08	11	11	0
D00145	APP Detailed Const Risk Assess DDA	42	17/SEP/08	28/OCT/08	11	11	0
D00150	P&S Addl Ground Investigation (Portals)	18	08/JAN/08A	25/JAN/08A			100
D00155	APP Addl Ground Investigation (Portals)	42	10/JAN/08A	20/FEB/08A			100
D00170	P&S Impact Assess Reps on Waterwork Fac	50	17/JUN/08*	05/AUG/08	19	4	0
D00175	APP Impact Assess Reps on Waterwork Fac	42	06/AUG/08	16/SEP/08	19	4	0
D00176	P&S Blasting Assessment - Volume 1	50	14/MAR/08A	28/MAR/08A			100
D00177	APP Blasting Assessment - Volume 1	42	29/MAR/08A	05/JUL/08	146	129	75
D00178	P&S Blasting Assessment - Vol 2A(Eastern Portal)	50	14/MAR/08A	28/MAR/08A			100
D00179	APP Blasting Assessment - Vol 2A(Eastern Portal)	42	29/MAR/08A	11/JUL/08	129	123	75
D00180	P&S Blasting Assessment - Volume 2B(Adit W0)	50	30/APR/08A	27/JUL/08	441	414	0
D00181	APP Blasting Assessment - Volume 2B(Adit W0)	42	28/JUL/08	07/SEP/08	441	414	0
D00182	P&S BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	50	17/JUN/08*	05/AUG/08	487	472	0
D00183	APP BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	42	06/AUG/08	16/SEP/08	487	472	0
D00184	P&S BA-Vol 3B	50	07/JUL/08*	25/AUG/08	389	389	0
D00185	APP BA-Vol 3B	42	26/AUG/08	06/OCT/08	389	389	0
D00186	P&S BA - Vol 3C (W5,CR1,RR1,W8,P5,W10)	50	04/AUG/08*	22/SEP/08	396	396	0
D00188	P&S BA - Vol 3D (DG1,BR4,W1)	50	01/SEP/08*	20/OCT/08	675	675	0
Main Tunnel							
D00420	P&S Main Tunnel Permanent Lining AIP	50	07/DEC/07A	31/JAN/08A			100
D00425	APP Main Tunnel Permanent Lining AIP	42	01/FEB/08A	01/APR/08A			100
D00430	P&S Main Tunnel Permanent Lining DDA	50	07/MAR/08A	13/MAY/08A			100
D00435	APP Main Tunnel Permanent Lining DDA	42	14/MAY/08A	23/JUN/08	5	5	75
D00460	P&S Adit/main tun intrct Perm Ling(exc W0) AIP	50	06/JUN/08A	20/JUN/08	370	343	50
D00465	APP Adit/main tun intrct Perm Ling(exc W0) AIP	42	21/JUN/08	01/AUG/08	370	343	0
D00470	P&S Adit/main tun intrct Perm Ling(exc W0) DDA	50	22/AUG/08	10/OCT/08	370	343	0
D00480	P&S Adit/main tun intrct Perm Ling at W0 AIP	50	17/JUN/08*	05/AUG/08	18	11	0
D00485	APP Adit/main tun intrct Perm Ling at W0 AIP	42	06/AUG/08	16/SEP/08	18	11	0
D00490	P&S Adit/main tunl intrsct Perm Ling at W0 DDA	50	17/SEP/08	05/NOV/08	18	11	0
D00500	P&S TBM Dismantle Chamber Temp Supt at W0 AIP	50	17/JUN/08*	05/AUG/08	29	5	0
D00505	APP TBM Dismantle Chamber Temp Supt at W0 AIP	42	06/AUG/08	16/SEP/08	29	5	0
D00517	P&S Tunnel Segment Durability Report - AIP	50	17/JUN/08*	05/AUG/08	105	78	0
D00518	APP Tunnel Segment Durability Report - AIP	42	06/AUG/08	16/SEP/08	105	78	0
Milestone							
Design Submission							
M2-1020	2.02-Approval of Project Design Plan	0		29/MAR/08A			100
M2-1030	2.03-AIP-MainTunnel Submission	0		07/MAR/08A			100
M2-1040	2.04-AIP-MainTunnel Consent	0		30/APR/08A			100
M2-1050	2.05-DDA-MainTunnel Submission	0		30/MAY/08A			100
M2-1060	2.06-DDA-MainTunnel Consent	0		28/JUN/08*	1,320	1,320	0
M2-1070	2.07-AIP-Adits&Stilling Chambers Submission	0		17/JUN/08	1,331	1,331	0
M2-1080	2.08-AIP-Adits&Stilling Chambers Consent	0		12/AUG/08	1,275	1,275	0
M2-1110	2.11-AIP-Dropshaft Submission	0		02/JUL/08	1,316	1,316	0
M2-1120	2.12-AIP-Dropshaft Consent	0		13/AUG/08	1,274	1,274	0
M2-1150	2.15-AIP-Intakes Submission	0		22/JUL/08*	1,296	1,296	0
M2-1160	2.16-AIP-Intakes Consent	0		03/JUL/08	1,315	1,315	0
M2-1170	2.17-DDA-Intakes Submission	0		01/JUL/08	1,317	1,317	0
M2-1180	2.18-DDA-Intakes Consent	0		12/AUG/08	1,275	1,275	0
M2-1200	2.20-AIP Slope Consent (other than E&W Portals)	0		14/JUL/08	1,304	1,304	0
CC03-PART OF SECTION 1 OF THE WORKS(MAIN TUNNEL)							
Preliminary and General Requirements							
TBM Procurement & Delivery							
B2010	TBM Procurement	63	01/DEC/07A	01/FEB/08A			100
B2023	TBM Fabrication for 6.25m ID (Eastern Tunnel)	361	19/JAN/08A	30/JAN/09	-35	-35	30
B2030	TBM Fabrication for 7.25m ID (Western Tunnel)	336	19/JAN/08A	03/JAN/09	0	0	43
Milestone							
Section 1 (Main Tunnel)							
M3-1010	3.01-Selection&Purchase of TBM(6.25m dia.)	0		29/JAN/08A			100
M3-1020	3.02-Commencement ofTBM byManufacturer(6.25mDia)	0	07/MAR/08A				100
M3-1060	3.06-Select'n&Purchase of TBM(7.25m dia.)	0		29/JAN/08A			100
M3-1070	3.07-Commencement ofTBM byManufacturer(7.25mDia)	0	07/MAR/08A				100
CC5-PART OF SECTION 1 OF THE WORKS (EAST PORTAL)							
Construction							
Preliminary Works							
EPA0130	Site Clearance & Temporary Access	81	11/FEB/08A	11/MAR/08A			100
EPA0150	Office & Workshop setup (2nd Stage)	51	08/MAY/08A	02/JUL/08	57	57	40
EPA0160	Utilities Diversion-(EP)	50	25/JAN/08A	07/APR/08A			100
EPA0170	Noise Barriers / Hoarding	71	23/JAN/08A	11/MAR/08A			100
EPA0175	Provision of High Voltage line by HEC (Pillar 1)	133	07/JAN/08A	14/JUL/08	77	77	85
EPA0180	Noise Enclosure for Temporary Stockpile Yard	46	28/JUL/08	26/SEP/08	57	37	0
EPA0190	Noise Enclosure for Wastewater Treatment PLant	48	17/JUN/08	18/AUG/08	57	37	0
EPA0200	Noise Enclosure at Tunnel Entrance	42	17/JUN/08	11/AUG/08	75	73	0
EPA0220	Tower Crane Installation	60	18/JUL/08	04/OCT/08	77	74	0
Application for Permit / Licences / Supplies							
EPB0120	Permit for Tree Felling & Transplanting	47	18/FEB/08A	07/MAR/08A			100
EPB0140	Water Supply-(EP)	66	10/DEC/07A	30/APR/08A			100
EPB0150	Power Supply for External Works (Low Voltage)	66	10/DEC/07A	30/APR/08A			100
EPB0160	Power Supply for Tunnel Works	279	07/JAN/08A	30/DEC/08	3	3	45
EPB0170	Boulder Survey Report to GEO for Approval	37	14/JAN/08A	26/JUN/08	49	33	95
EPB0180	Environmental Baseline Monitoring	10	12/FEB/08A	29/FEB/08A			100



Start Date 23/NOV/07
Finish Date 08/FEB/12
Data Date 17/JUN/08
Run Date 19/JUN/08 01:59

Target Bar
Progress Bar
Critical Activity

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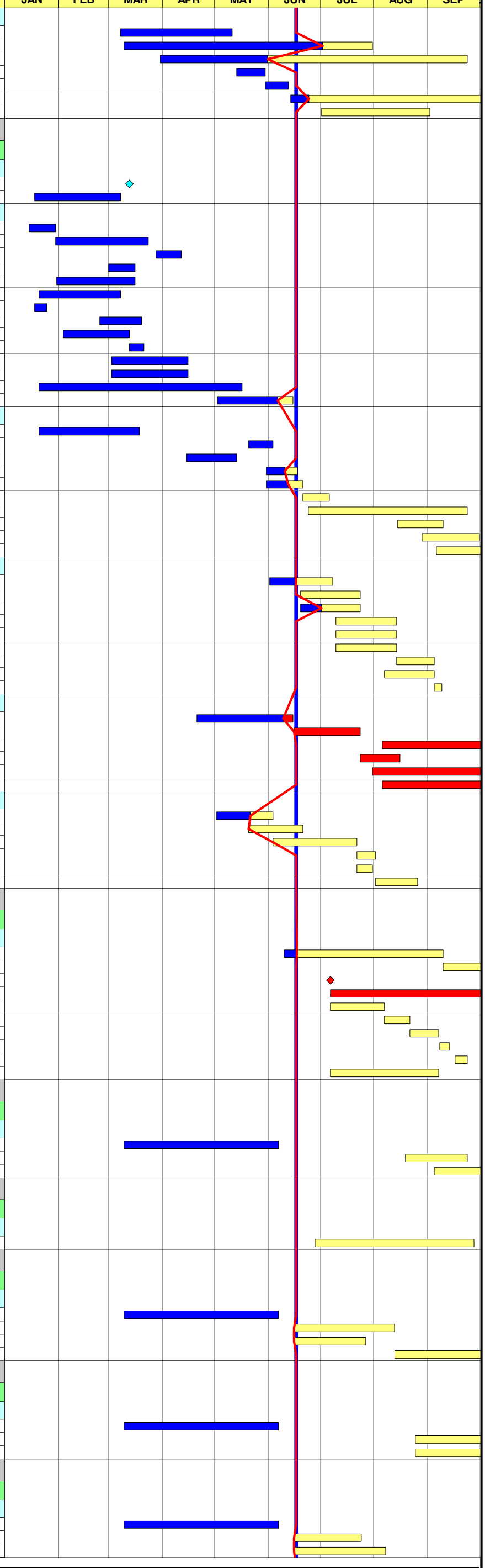
Design & Construction of Hong Kong West Drainage Tunnel
Contract No. DC/2007/10
Works Programme
3 Monthly Rolling Programme
JUNE MONTHLY REPORT

Date	Revision	Checked	Approved
18/JUN/07	7th Monthly Update		
	23May07 - 17Jun08		

Appendix D1

Activity ID	Activity Description	Current or Forecast Duration	Current or Forecast Early Start	Current or Forecast Early Finish	Baseline Total Float	Progress Total Float as of 17-Jun-08	% Comp
Stage 1 (Before TBM Drive)							
EPC0100	Tree Felling & Transplanting-(EP)	43	08/MAR/08A	10/MAY/08A			100
EPC0110	Boulder Splitting & Stablization-(EP)	100	10/MAR/08A	22/AUG/08	3	22	80
EPC0120	Slope Upgrading Works (Feature No. 11SE-A/C850)	122	31/MAR/08A	16/OCT/08	40	22	35
EPC0130	Portal Excav Includ pipe roofing(strength works)	46	14/MAY/08A	20/MAY/08A	0		100
EPC0140	Formation of Tunnel Portal	16	21/MAY/08A	10/JUN/08A	0		100
EPC0150	Ini Excav-Launch Tunl Non-Blast Method (0-CH43)	117	11/JUN/08A	08/NOV/08	0	2	7
EPC0190	Temp Cofferdam for Access for Segment Delivery	48	02/JUL/08	01/SEP/08	31	31	0
CC6-PART OF SECTION 1 OF THE WORKS (WEST PORTAL)							
Construction							
Preliminary Works							
WPA0120	Possession of Site Part II	0	13/MAR/08A				100
WPA0180	Site Clearance	38	18/JAN/08A	07/MAR/08A			100
Site Installation - Phase 1							
WPB0050	Obtain permit Install Env Base Monitor Inst(WP)	12	15/JAN/08A	29/JAN/08A			100
WPB0052	Install ENV Instruments & start monitor(WP)	12	30/JAN/08A	23/MAR/08A			100
WPB0054	P & S Environmental Base Monitoring Report(WP)	12	28/MAR/08A	11/APR/08A			100
WPB0058	P & S Tree Survey Report (WP)	6	01/MAR/08A	15/MAR/08A			100
WPB0100	TTMS for Site Entrance-(WP)	27	31/JAN/08A	15/MAR/08A			100
WPB0120	Site Hoarding , Fencing and Entrance	15	21/JAN/08A	07/MAR/08A			100
WPB0140	Removal portion of DSD wall	6	18/JAN/08A	24/JAN/08A			100
WPB0160	Sedimentation Tank - external work & wheel wash	27	25/FEB/08A	19/MAR/08A			100
WPB0180	Site Haul Road & Temporary Drainage	30	04/FEB/08A	12/MAR/08A			100
WPB0220	Utilities Diversion-(WP)	21	13/MAR/08A	20/MAR/08A			100
WPB0240	Water Connection Dia.100mm	21	03/MAR/08A	15/APR/08A			100
WPB0260	400 KVA Power (External Works) Supply	21	03/MAR/08A	15/APR/08A			100
WPB0280	Contractor Office Erection-(WP)	34	21/JAN/08A	16/MAY/08A			100
WPB0300	Engineer Office Erection	32	03/MAY/08A	22/JUL/08	15	4	80
Sea Wall & Termporary Pier Construction							
WPE0120	Mobilisation of Marine Work Subcon-(WP)	15	21/JAN/08A	18/MAR/08A			100
WPE0140	Silt Curtain Installation	5	24/MAY/08A	29/MAY/08A	52		100
WPE0160	Diversion of DSD Stream-(WP)	21	15/APR/08A	13/MAY/08A			100
WPE0180	Remove Armour Rock from Existing Seawall	12	30/MAY/08A	26/JUN/08	52	50	60
WPE0200	Seabed formation prepartation to -10.7mpd	15	30/MAY/08A	24/JUN/08	52	50	60
WPE0220	Level Seabed w/ rock Fill	11	25/JUN/08	08/JUL/08	52	50	0
WPE0240	Install Precast Seawall Blocks & Armour Rock	70	26/JUN/08	25/SEP/08	52	50	0
WPE0260	Installation of Geotextile	20	18/AUG/08	11/SEP/08	52	50	0
WPE0280	Backfill with Rockfill to Top	25	01/SEP/08	03/OCT/08	52	50	0
WPE0300	Construction of 10T Bollard and In-situ Coping	25	09/SEP/08	11/OCT/08	52	50	0
Stilling Basin & TBM Launch Shaft Construction							
WPF0080	Cut platform to +4mpD	26	24/MAY/08A	10/JUL/08	27	24	42
WPF0100	Predrill and Fill Hole for Single Sheetpile	26	08/JUL/08	11/AUG/08	27	14	0
WPF0160	Drive Pipe pile upto Exist Shore Line	26	02/JUN/08A	07/JUL/08	27	29	35
WPF0180	ELS - 1st Layer of Strut	26	26/JUL/08	29/AUG/08	27	14	0
WPF0200	Excavation 1st Layer & Temp. Ramp for Dump Truck	26	08/JUL/08	11/AUG/08	27	29	0
WPF0220	ELS - Remaining Strutting and Excavation.	26	08/JUL/08	11/AUG/08	27	29	0
WPF0240	Construct 1m Tk. Upper Perm. Base Slab & Wall	17	30/AUG/08	22/SEP/08	27	14	0
WPF0280	ELS - Slab Zone (Sloping)	22	05/AUG/08	01/SEP/08	27	29	0
WPF0300	Blinding for Slab(Sloping)	3	03/SEP/08	05/SEP/08	27	29	0
Site Installation - Phase 2							
WPC0100	Workshop-(WP)	13	21/APR/08A	10/JUL/08	2	0	90
WPC0120	Transformer Room for 11KV	30	11/JUL/08	19/AUG/08	2	0	0
WPC0140	Spoil Basin-(WP)	48	01/SEP/08	31/OCT/08	2	0	0
WPC0200	Tower Crane Footing	17	20/AUG/08	10/SEP/08	2	0	0
WPC0240	Other Temp. Facilities for TMB Operation	147	27/AUG/08	26/FEB/09	12	0	0
WPC0260	Noise Enclosure	143	01/SEP/08	26/FEB/09	8	0	0
Slope Stabilization							
WPD0120	Permanent Slope Trimming at +22 & +14.9 mpd	24	02/MAY/08A	02/JUL/08	33	13	60
WPD0140	Berms Construction	24	17/JUN/08	17/JUL/08	33	13	0
WPD0160	Permanent Soil Nail Installation T4-T8	35	03/JUL/08	16/AUG/08	33	13	0
WPD0180	Temporary Soil Nail Installation at +12 mpd	9	18/AUG/08	28/AUG/08	33	13	0
WPD0200	Construct Concrete Beam Panels at +12 mpd	7	18/AUG/08	26/AUG/08	35	15	0
WPD0220	Install Horizontal Pipe Pile Tunnel Portal Crown	17	29/AUG/08	20/SEP/08	33	13	0
CC7 -PART OF SECTION 1 OF THE WORKS (PORTION W0)							
Construction							
Preliminary Works							
S010020	Prepare Utility Diversion Plans - W0	70	10/JUN/08A	09/SEP/08	14	14	8
S010030	Notify,Coord&Obtain Permit-Utility Prov - W0	74	10/SEP/08	09/DEC/08	14	14	0
S010100	Notify SO for Portion Possession - W0	0	07/JUL/08*		0	0	0
S010110	25 wks prior to Portion Possess Date-(W0)	175	07/JUL/08	28/DEC/08	0	0	0
S010112	Obtain permit Env Baseline Monitor Inst(W0)	24	07/JUL/08	06/AUG/08	78	78	0
S010114	Install ENV Instruments & start monitor-(W0)	12	07/AUG/08	21/AUG/08	78	78	0
S010116	P&S Environmental Baseline Monitoring Report(W0)	12	22/AUG/08	06/SEP/08	78	78	0
S010118	Conduct Tree Survey-(W0)	6	08/SEP/08	13/SEP/08	78	78	0
S010119	P & S Tree Survey Report-(W0)	6	17/SEP/08	23/SEP/08	78	78	0
S010121	TMLG submission, coordination & Approval - W0	48	07/JUL/08	06/SEP/08	90	90	0
CC8 - SECTION 2 OF THE WORKS (PORTION E5A)							
Construction							
Preliminary Works							
S020010	12 Wk SO notify of Site Investigation Work -E5A	90	10/MAR/08A	06/JUN/08A	45		100
S020020	Conduct Ground Investigation Works - E5A	27	19/AUG/08	23/SEP/08	116	116	0
S020025	Conduct Utility Identification Works - E5A	43	05/SEP/08	29/OCT/08	116	116	0
CC9 - SECTION 3 OF THE WORKS (PORTION E5B)							
Construction							
Preliminary Works							
S030010	Prepare Utility Diversion Plans - E5B	70	28/JUN/08*	27/SEP/08	209	209	0
CC10-SECTION 4 OF THE WORKS (PORTION MB16)							
Construction							
Preliminary Works							
S040005	12 Wk SO notify of Site Investigation Work -MB16	90	10/MAR/08A	06/JUN/08A	36		100
S040010	Conduct Ground Investigation Works - MB16	44	17/JUN/08	13/AUG/08	28	27	0
S040015	Conduct Utility Identification Works - MB16	33	17/JUN/08	28/JUL/08	39	38	0
S040020	Prepare Utility Diversion Plans - MB16	70	14/AUG/08	10/NOV/08	28	27	0
CC11-SECTION 5 OF THE WORKS (PORTION MBD2)							
Construction							
Preliminary Works							
S050005	12 Wk SO notify of Site Investigation Work -MBD2	90	10/MAR/08A	06/JUN/08A	100		100
S050010	Conduct Ground Investigation Works - MBD2	30	25/AUG/08	02/OCT/08	91	91	0
S050015	Conduct Utility Identification Works - MBD2	40	25/AUG/08	15/OCT/08	81	81	0
CC12-SECTION 6 OF THE WORKS (PORTION E7)							
Construction							
Preliminary Works							
S060005	12 Wk SO notify of Site Investigation Work -E7	90	10/MAR/08A	06/JUN/08A	101		100
S060010	Conduct Ground Investigation Works - E7	31	17/JUN/08	25/JUL/08	86	85	0
S060015	Conduct Utility Indentification Works - E7	41	17/JUN/08	08/AUG/08	76	75	0



Start Date 23/NOV/07
Finish Date 08/FEB/12
Data Date 17/JUN/08
Run Date 19/JUN/08 01:59

Target Bar
Progress Bar
Critical Activity

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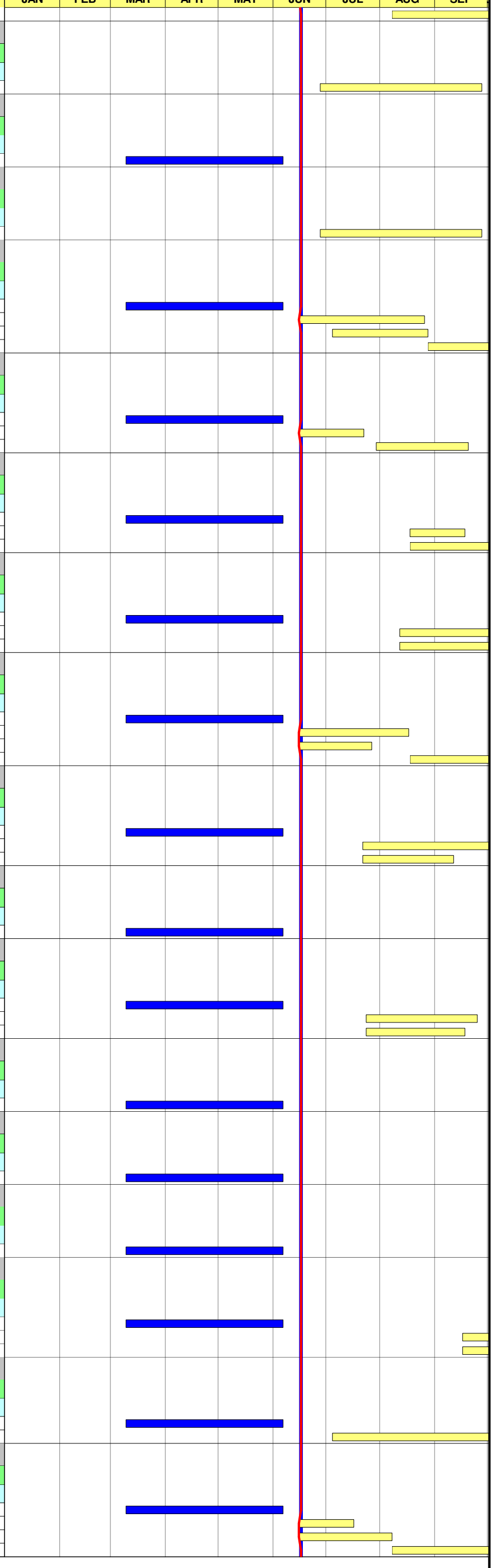
Sheet 3 of 5

Design & Construction of Hong Kong
West Drainage Tunnel
Contract No. DC/2007/10
Works Programme
3 Monthly Rolling Programme
JUNE MONTHLY REPORT

Dragages - Nishimatsu Joint Venture

Date	Revision	Checked	Approved
18/JUN/07	7th Monthly Update		
	23May07 - 17Jun08		

Activity ID	Activity Description	Current or Forecast Duration	Current or Forecast Early Start	Current or Forecast Early Finish	Baseline Total Float	Progress Total Float as of 17-Jun-08	% Comp
S060020	Prepare Utility Diversion Plans - E7	70	11/AUG/08	06/NOV/08	76	75	0
CC13-SECTION 7 OF THE WORKS (PORTION THR2)							
Construction							
Preliminary Works							
S070010	Prepare Utility Diversion Plans - THR2	70	28/JUN/08*	27/SEP/08	52	52	0
CC14-SECTION 8 OF THE WORKS (PORTION GL1)							
Construction							
Preliminary Works							
S080005	12 Wk SO notify of Site Investigation Work -GL1	90	10/MAR/08A	06/JUN/08A	279		100
CC15-SECTION9 OF THE WORKS(PORTION HR1)							
Construction							
Preliminary Works							
S090020	Prepare Utility Diversion Plans - HR1	70	28/JUN/08*	27/SEP/08	329	329	0
CC16-SECTION 10 OF THE WORKS (PORTION DG1)							
Construction							
Preliminary Works							
S100005	12 Wk SO notify of Site Investigation Work -DG1	90	10/MAR/08A	06/JUN/08A	297		100
S100010	Conduct Ground Investigation Works - DG1	54	17/JUN/08	26/AUG/08	236	235	0
S100015	Conduct Utility Identification Works - DG1	41	05/JUL/08	27/AUG/08	234	234	0
S100020	Prepare Utility Diversion Plans - DG1	70	28/AUG/08	22/NOV/08	234	234	0
CC20-SECTION 14 OF THE WORKS (PORTION BR6)							
Construction							
Preliminary Works							
S140005	12 Wk SO notify of Site Investigation Work -BR6	90	10/MAR/08A	06/JUN/08A	323		100
S140010	Conduct Ground Investigation Works - BR6	29	17/JUN/08	23/JUL/08	251	250	0
S140015	Conduct Utility Identification Works - BR6	39	31/JUL/08	20/SEP/08	251	250	0
CC21-SECTION 15 OF THE WORKS (PORTION W3)							
Construction							
Preliminary Works							
S150005	12 Wk SO notify of Site Investigation Work -W3	90	10/MAR/08A	06/JUN/08A	97		100
S150010	Conduct Ground Investigation Works - W3	23	18/AUG/08	17/SEP/08	77	77	0
S150015	Conduct Utility Identification Works - W3	39	18/AUG/08	08/OCT/08	215	215	0
CC25-SECTION 19 OF THE WORKS (PORTION MA17)							
Construction							
Preliminary Works							
S190005	12 Wk SO notify of Site Investigation Work -MA17	90	10/MAR/08A	06/JUN/08A	177		100
S190010	Conduct Ground Investigation Works - MA17	54	12/AUG/08	20/OCT/08	159	159	0
S190015	Conduct Utility Identification Works - MA17	73	12/AUG/08	11/NOV/08	140	140	0
CC26-SECTION 20 OF THE WORKS (PORTION M3)							
Construction							
Preliminary Works							
S200005	12 Wk SO notify of Site Investigation Work -M3	90	10/MAR/08A	06/JUN/08A	253		100
S200010	Conduct G Investigation Works - M3	48	17/JUN/08	18/AUG/08	199	198	0
S200015	Conduct Utility Identification Works - M3	33	17/JUN/08	28/JUL/08	214	213	0
S200020	Prepare Utility Diversion Plans - M3	70	19/AUG/08	14/NOV/08	199	198	0
CC27-SECTION 21 OF THE WORKS (PORTION TP789)							
Construction							
Preliminary Works							
S210005	12 Wk SO notify of Site Investigation Work-TP789	90	10/MAR/08A	06/JUN/08A	125		100
S210010	Conduct Ground Investigation Works -TP789	63	22/JUL/08	13/OCT/08	98	98	0
S210015	Conduct Utility Identification Works - TP789	40	22/JUL/08	11/SEP/08	121	121	0
CC28-SECTION 22 OF THE WORKS (PORTION TP5)							
Construction							
Preliminary Works							
S220005	12 Wk SO notify of Site Investigation Work -TP5	90	10/MAR/08A	06/JUN/08A	70		100
CC29-SECTION 23 OF THE WORKS (PORTION TP4)							
Construction							
Preliminary Works							
S230005	12 Wk SO notify of Site Investigation Work -TP4	90	10/MAR/08A	06/JUN/08A	111		100
S230010	Conduct Ground Investigation Works -TP4	47	24/JUL/08	24/SEP/08	86	86	0
S230015	Conduct Utility Identification Works - TP4	41	24/JUL/08	17/SEP/08	92	92	0
CC30-SECTION 24 OF THE WORKS (PORTION W5)							
Construction							
Preliminary Works							
S240005	12 Wk SO notify of Site Investigation Work -W5	90	10/MAR/08A	06/JUN/08A	106		100
CC31-SECTION 25 OF THE WORKS (PORTION CR1)							
Construction							
Preliminary Works							
S250005	12 Wk SO notify of Site Investigation Work -CR1	90	10/MAR/08A	06/JUN/08A	293		100
CC32-SECTION 26 OF THE WORKS (PORTION RR1)							
Construction							
Preliminary Works							
S260005	12 Wk SO notify of Site Investigation Work -RR1	90	10/MAR/08A	06/JUN/08A	39		100
CC33-SECTION 27 OF THE WORKS (PORTION W8)							
Construction							
Preliminary Works							
S270005	12 Wk SO notify of Site Investigation Work -E5B	90	10/MAR/08A	06/JUN/08A	143		100
S270010	Conduct Ground Investigation Works -W8	20	17/SEP/08	11/OCT/08	138	138	0
S270015	Conduct Utility Identification Works - W8	44	17/SEP/08	08/NOV/08	114	114	0
CC34-SECTION 28 OF THE WORKS (PORTION P5)							
Construction							
Preliminary Works							
S280005	12 Wk SO notify of Site Investigation Work -P5	90	10/MAR/08A	06/JUN/08A	107		100
S280015	Conduct Utility Identification Works - P5	91	05/JUL/08	30/OCT/08	93	93	0
CC35-SECTION 29 OF THE WORKS (PORTION W10)							
Construction							
Preliminary Works							
S290005	12 Wk SO notify of Site Investigation Work -W10	90	10/MAR/08A	06/JUN/08A	201		100
S290010	Conduct GI & Utility Identification Works - W10	24	17/JUN/08	17/JUL/08	175	174	0
S290015	Conduct Utility Identification Works - W10	41	17/JUN/08	08/AUG/08	158	157	0
S290020	Prepare Utility Diversion Plans - W10	70	11/AUG/08	06/NOV/08	158	157	0



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Activity ID	Activity Description	Current or Forecast Duration	Current or Forecast Early Start	Current or Forecast Early Finish	Baseline Total Float	Progress Total Float as of 17-Jun-08	% Comp
CC36-SECTION 30 OF THE WORKS (PORTION HKU1)							
Construction							
Preliminary Works							
S300010	Prepare Utility Diversion Plans - HKU1	70	30/JUN/08*	29/SEP/08	101	101	0
CC37-SECTION 31 OF THE WORKS (PORTION PFLR1)							
Construction							
Preliminary Works							
S310905	Prepare Utility Diversion Plans - PFLR1	70	30/JUN/08*	29/SEP/08	74	74	0
CC38-SECTION 32 OF THE WORKS (PORTION SM1)							
Construction							
Preliminary Works							
S320905	Prepare Utility Diversion Plans - SM1	70	30/JUN/08*	29/SEP/08	39	39	0

2008

JAN FEB MAR APR MAY JUN JUL AUG SEP

Start Date 23/NOV/07
Finish Date 08/FEB/12
Data Date 17/JUN/08
Run Date 19/JUN/08 01:59

Target Bar
Progress Bar
Critical Activity

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Design & Construction of Hong Kong
West Drainage Tunnel
Contract No. DC/2007/10
Works Programme
3 Monthly Rolling Programme
JUNE MONTHLY REPORT

Dragages - Nishimatsu Joint Venture

Date	Revision	Checked	Approved
18/JUN/07	7th Monthly Update		
	23May07 - 17Jun08		

APPENDIX P
WASTE GENERATED QUANTITY

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

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 2008											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 m3
Jun-08					486 m^3					0.4 m^3	6 m3
Jul-08											
Aug-08											
Oct-08											
Nov-08											
Dec-08											
Total	0	0	0	0	1092 m^3	0	0	2 m^3	0	0.4 m^3	203m^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 June 2008 are as of 30-06-08.