

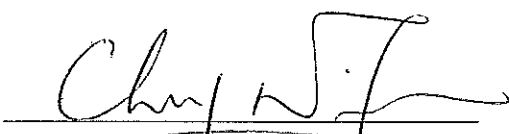
Dragages-Nishimatsu Joint Venture

Contract No. DC/2007/10

Design and Construction of Hong Kong West Drainage Tunnel

Monthly EM&A Report
(version 2.0)

29th April to 31st May 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 2nd 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 during the period between 29th April and 31st May 2008.
2. The site activities undertaken in the reporting month included:
 - Further establishment of project organization and staffing;
 - Boulder stabilization, soil nailing and pipe roofing works and installation of temporary facilities at Eastern Portal;
 - Erection of Contractor’s & SOR’s Site Offices, installation of temporary facilities, soil nailing and slope works at Western Portal;
 - Renovation works for SOR Principal Office at Mount Butler Area;
 - Approved in Principle (AIP) & Detailed Design Approval (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 approved 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

Eastern Portal

1-hour TSP Monitoring

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

24-hour TSP Monitoring

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

Construction Noise

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

24-hour TSP Monitoring

9. No 24-hour TSP monitoring was conducted in the reporting period.

Construction Noise

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

Environmental Licenses and Permits

11. 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.

12. Registration of Chemical Waste Producer (License: 5213-148-D2393-02 for Eastern Portal and No. 5213-172-D2393-01 for Western Portal) and Construction Noise Permit (License No.: GW-RS0114-08 for Eastern Portal and GW-RS0264-08 for Western Portal)

Key Information in the Reporting Month

13. 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	2	Noise	Complaint investigation	Investigation report was submitted	Closed
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	3	Baseline Environmental Monitoring Report_v.2.0 (for Eastern and Western Portal)	Submitted to EPD on 14 May 2008 (EP condition 3.2)	No comment from EPD	---
		Monthly EM&A Report (17 th April to 28 th April 08)	Submitted to EPD on 15 May 2008 (EP condition 3.3)	No comment from IEC	
		Baseline Environmental Monitoring Report_v.3.0 (for Western Portal)	Submitted to EPD on 22 May 2008 (EP condition 3.2)	Received comment from EPD on 29 May 2008	
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues:

Major site activities for the coming month include:

Both Eastern and Western Portal

- Utilities diversion;
- Soil nail works;
- Pipe roofing works and installation of temporary facilities;
- Boulder stabilization and soil slope.

Only at Western Portal

- Marine works;
- Site investigation;
- Erection of SOR's Site office;
- Excavation for slope cutting;
- Shallow excavation and temporary support.

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 2nd monthly EM&A report summarizing the EM&A works for the Project during the period between 29th April and 31st May 2008 in Eastern and Western Portal. No water quality monitoring was conducted in Western Portal in the reporting period.

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, soil nailing and pipe roofing works and installation of temporary facilities at Eastern Portal;
- Erection of Contractor's & SOR's Site Offices, installation of temporary facilities, soil nailing and slope works at Western Portal;
- Renovation works for SOR Principal Office at Mount Butler Area;

- 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, soil nailing and pipe roofing 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 Contractor’s & SOR’s Site Offices, installation of temporary facilities, soil nailing and slope works at Western Portal	Noise, dust impact and waste generation	Provided water spraying during soil nail work and slope works On-site waste sorting and implementation of trip ticket system
Renovation works for SOR Principal Office at Mount Butler Area	Waste generation	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 4 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 and noise levels and audit works for the Project during the period between 29th April and 31st May 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 3.1**.

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 period is shown in **Appendix C**.

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 m³/min. and 1.4 m³/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 period. No Action/Limit Level exceedance was recorded.
- 2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting period. No Action/Limit Level exceedance was recorded.

Western Portal (AQ2)

- 2.21 All 1-hour TSP monitoring was conducted as scheduled in the reporting period. No Action/Limit Level exceedance was recorded.
- 2.22 No 24-hour TSP monitoring was conducted in the reporting period.
- 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 G**.
- 2.24 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices D and E** 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 period between 29th April and 31st May 2008.

Parameter	Date	Concentration (µg/m3)	Action Level, µg/m3	Limit Level, µg/m3
Eastern Portal				
1-hr TSP (AQ1)	30-Apr-08	54.5	345	500
	2-May-08	233.2		
	6-May-08	148.8		
	7-May-08	143.1		
	9-May-08	125.6		
	13-May-08	170.3		
	14-May-08	247.2		
	15-May-08	195.2		
	19-May-08	122.8		
	21-May-08	171.6		
23-May-08	120.7			

	26-May-08	202.2		
	29-May-08	73.0		
	30-May-08	79.8		
24-hr TSP (AQ1)	29-April-08	68.4	201	260
	5-May-08	76.4		
	10-May-08	92.6		
	16-May-08	94.4		
	22-May-08	136.6		
	28-May-08	94.6		
Western Portal				
1-hr TSP (AQ2)	6-May-08	34.8	321	500
	7-May-08	43.7		
	9-May-08	37.8		
	13-May-08	54.5		
	14-May-08	33.6		
	15-May-08	45.0		
	19-May-08	32.7		
	21-May-08	41.1		
	23-May-08	28.5		
	26-May-08	41.5		
	29-May-08	47.6		
	30-May-08	61.3		

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 3.1** 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	2
Calibrator	B&K 4231	1

Monitoring Parameters, Frequency and Duration

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	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}, L₉₀ and L₁₀ 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 period.

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 F**. 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 period between 29th April and 31st May 2008.

Parameter	Date	Construction Noise Level : Leq(30min) dB (A)	Action Level	Limit Level,	
Eastern Portal					
NC1	30-Apr-08	69.7, measured \leq Baseline	When one documented compliant is received	70*dB(A)	
	6-May-08	65.2			
	13-May-08	69.3			
	19-May-08	70.1, measured \leq Baseline			
	26-May-08	69.7, measured \leq Baseline			
NC2	30-Apr-08	65.4		When one documented compliant is received	75dB(A)
	6-May-08	63.7			
	13-May-08	61.3			
	19-May-08	71.0			
	26-May-08	71.7			
Western Portal					
NC3	6-May-08	53.6, measured \leq Baseline	When one documented compliant is received		75dB(A)
	13-May-08	55.8, measured \leq Baseline			
	19-May-08	56.2, measured \leq Baseline			
	26-May-08	57.3, measured \leq Baseline			

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

4. ENVIRONMENTAL AUDIT

Site Audits

- 4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix H**.
- 4.2 Site audits were conducted on 30th April, 7th May, 14th May, 21st May and 29th May 2008. IEC site inspections were conducted on 30th April and 29th May 2008. No non-compliance was observed during the site audits.

Review of Environmental Monitoring Procedures

- 4.3 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.

Status of Environmental Licensing and Permitting

- 4.4 All permits/licenses obtained for the Project are summarized in Table 4.1.

Status of Waste Management

- 4.5 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.
- 4.6 During this reporting period, a total 7 nos. of dump trucks of waste were delivered to SENT and 101 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. No overloading case was recorded during this reporting period. No disposal of inert C&D material to public sorting facilities and no dump truck without cover were reported from CEDD. In respect of the dump truck cover, DNJV keeps on take record photos and

inspection to ensure that all dump trucks have fully covered the skip before leaving the site.

4.7 The amount of wastes generated by the activities of the Project during the period between 29th April and 31st May 2008 is shown in **Appendix M**.

Table 4.1 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				
NIL	NIL	NIL	NIL	In progress (waiting EPD's response)
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-RS0264-08	30/04/08	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

4.8 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 4.2.

Table 4.2 Observations and Recommendations of Site Inspections

Parameters	Date	Observations and Recommendations	Follow-up
<i>Water Quality</i>	30/04/2008	Exposed slope was observed at Western Portal. The Contractor was reminded to cover it with tarpaulin when it is not in works and raining especially.	Rectification/improvement was observed during the follow-up audit session.
	07/05/2008	Standing water was observed at the tank at Eastern Portal. The Contractor was reminded to dry it out to prevent mosquito breed.	Rectification/improvement was observed during the follow-up audit session.
	14/05/2008	Standing water was observed at both Eastern and Western Portal. The Contractor was	Rectification/improvement was observed during the

Parameters	Date	Observations and Recommendations	Follow-up
		reminded to dry it out to prevent mosquito breed.	follow-up audit session.
	21/05/2008	<i>Eastern Portal</i> Standing water was observed in the drip tray and at the site boundary. The Contractor was reminded to dry it out to prevent mosquito breed.	Rectification/improvement was observed during the follow-up audit session.
	21/05/2008	<i>Western Portal</i> Standing water was observed on the haul road after rainstorm. The Contractor was reminded to pave it to prevent accumulate of stagnant water.	*Follow-up action was needed for the item.
	29/05/2008	Standing water was still observed at the unpaved road at Western Portal. The Contractor was reminded to pave it after rainstorm as soon as possible.	Rectification/improvement was observed during the follow-up audit session.
	29/05/2008	C&D waste and sediment were observed at the drainage channel at Western Portal. The Contractor was reminded to clear them and well maintain the drainage system.	Rectification/improvement was observed during the follow-up audit session.
<i>Air Quality</i>	30/04/2008	Stockpile was observed at Eastern Portal (next to existing stream). The Contractor was reminded to cover it with tarpaulin when it is not in works.	Rectification/improvement was observed during the follow-up audit session.
	07/05/2008	Stockpile was observed next to RE site office at Western Portal. The Contractor was reminded to cover it with tarpaulin.	Rectification/improvement was observed during the follow-up audit session.
	14/05/2008	Stockpile more than 20m ³ was observed at Western Portal. The Contractor was reminded to cover it with tarpaulin.	*Follow-up action was needed for the item.
<i>Waste / Chemical Management</i>	21/05/2008	Discarded leaves were observed at the site boundary near the U-Channel. The Contractor was reminded to clear them to prevent from blocking the U-Channel.	Rectification/improvement was observed during the follow-up audit session.
	29/05/2008	C&D waste and sediment were observed at the drainage channel at Western Portal. The Contractor was reminded to clear them and well maintain the drainage system.	Rectification/improvement was observed during the follow-up audit session.
<i>Ecology</i>	07/05/2008	Worn sand bag was observed at the access road at Eastern Portal. The Contractor was reminded to replace it to prevent any silt from getting to the existing stream.	Rectification/improvement was observed during the follow-up audit session.
	29/05/2008	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.	*Follow-up action was needed for the item.
<i>Reminders</i>	30/04/2008	The Contractor was reminded of the followings: - Spray mosquito oil on the standing water regularly to prevent mosquito breed. - Ensure the C&D waste that has been sorted before disposing to the public fill.	Rectification/improvement was observed during the follow-up audit session.
	21/05/2008	The Contractor was reminded of the followings: - Ensure the open stockpile more than 20m ³ was covered with tarpaulin after finishing	This item was not rectified during the follow-up audit session. Follow-up action was needed for the outstanding

Parameters	Date	Observations and Recommendations	Follow-up
		the works.	item.
	29/05/2008	The Contractor was reminded of the followings: - Ensure the open stockpile more than 20 m ³ was covered with tarpaulin when it is not in works.	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.

4.9 The monthly IEC audit was carried out on 30th April and 29th May 2008, the observations were recorded and they are presented as follows:

30th April 2008

General

- ET logbook was not ready on site yet.

Eastern Portal

- Surface drain near the slope within the site was not blocked to avoid untreated runoff being discharged.
- Mosquito from refuse skip were observed.
- Soil exposed at water stream due to undertaking of diversion works. The work site should be surrounded to avoid discharge of muddy runoff into the stream.

Western Portal

- Paper and plastic waste were mixed in the refuse skip. Waste sorting should be performed.
- Unpaved area was dry. More frequent watering is required.

Both sites

- Information demonstrating the sound power level of PME on-site in compliance with EP condition was not available on-site. Noise label for each PME should be provided.

4.10 Rectification/improvement was observed for all observations above by IEC during the follow-up audit session.

29th May 2008

Eastern Portal

- The paved area near Tai Hang Nullah was silty. Cleaning up is necessary.

Western Portal

- Soil and silt were observed at the surface channels near the slope. Proper protection measures and frequent cleaning up of channels are required.

4.11 The Contractor agreed to clear the silt on the paved area near Tain Hang Nullah and provide proper protection measures (cover exposed slope with tarpaulin) and cleaning up the channels frequently.

Non-compliance Recorded during Site Inspections

- 4.12 No non-compliance was recorded in the reporting period.

Summary of Mitigation Measures Implemented

- 4.13 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 I.
- 4.14 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.
- 4.15 The actual implementation status of major mitigation measures required under the EP is as follows:
- The preparation work of the marine works – installation of silt curtain commenced from 26 May 2008.
 - Design of noise enclosure at Eastern Portal.
- 4.16 An updated summary of the EMIS is provided in **Appendix I**.

Implementation Status of Event Action Plans

- 4.17 The Event Action Plans for air quality and noise are presented in **Appendix J**.

*Eastern Portal*1-hr TSP Monitoring

- 4.18 No Action/Limit Level exceedance was recorded in the reporting period.

24-hr TSP Monitoring

- 4.19 No Action/Limit Level exceedance was recorded in the reporting period.

Construction Noise

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

*Western Portal*1-hr TSP Monitoring

- 4.21 No Action/Limit Level exceedance was recorded in the reporting period.

24-hr TSP Monitoring

- 4.22 No 24-hour TSP monitoring was conducted in the reporting period.

Construction Noise

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

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

- 4.24 Total of 2 environmental complaints were received in the reporting period.
- 4.25 The complaint was referred to the ETL by the Contractor on 22nd May 2008. It was lodged by Ms. Ng regarding the noise nuisance generated from the construction activities at the construction site of Eastern Portal in early morning on 22 May 2008. 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, which 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.
- 4.26 The complaint was referred to the ETL by the Contractor on 2nd June 2008. It was lodged by one of the local resident regarding the noise nuisance generated from the marine works at Western Portal at about 18:15 hrs on 31 May 2008. 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 noise monitoring results was recorded in May and (3) no non-compliance or observation on noise was recorded.
- 4.27 No warning, summon and notification of successful prosecution was received in the reporting period.
- 4.28 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 K.

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 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.

5.2 The tentative program of major site activities and the impact prediction and control measures for the coming two month, i.e. June 2008 to July 2008 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
- Site Investigation - Utilities Diversion - Soil nail works - Pipe roofing works and installation of temporary facilities - Boulder stabilization and soil slope - Excavation for slope cutting	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	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; g) Provision of measures to prevent discharge into the stream; and h) Installation of silt curtain.

Construction Works	Major Impact Prediction	Control Measures
- Shallow Excavation and temporary support - Marine works and Erection of SOR's Site Offices.	Noise Impact	i) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; j) Controlling the number of plants use on site; k) Regular maintenance of machines; and l) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

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

Construction Program for the Next Month

5.4 The tentative construction program for the Project is provided in **Appendix L**.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

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

24-hr TSP Monitoring

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

Construction Noise Monitoring

- 6.4 All construction noise monitoring was conducted as scheduled in the reporting period. No Action/Limit Level exceedance was recorded.

Complaint and Prosecution

- 6.5 Two environmental complaints and no environmental prosecution were received in the reporting period.

Recommendations

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

Air Quality Impact

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

Noise Impact

- To inspect the noise sources inside the site.
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.

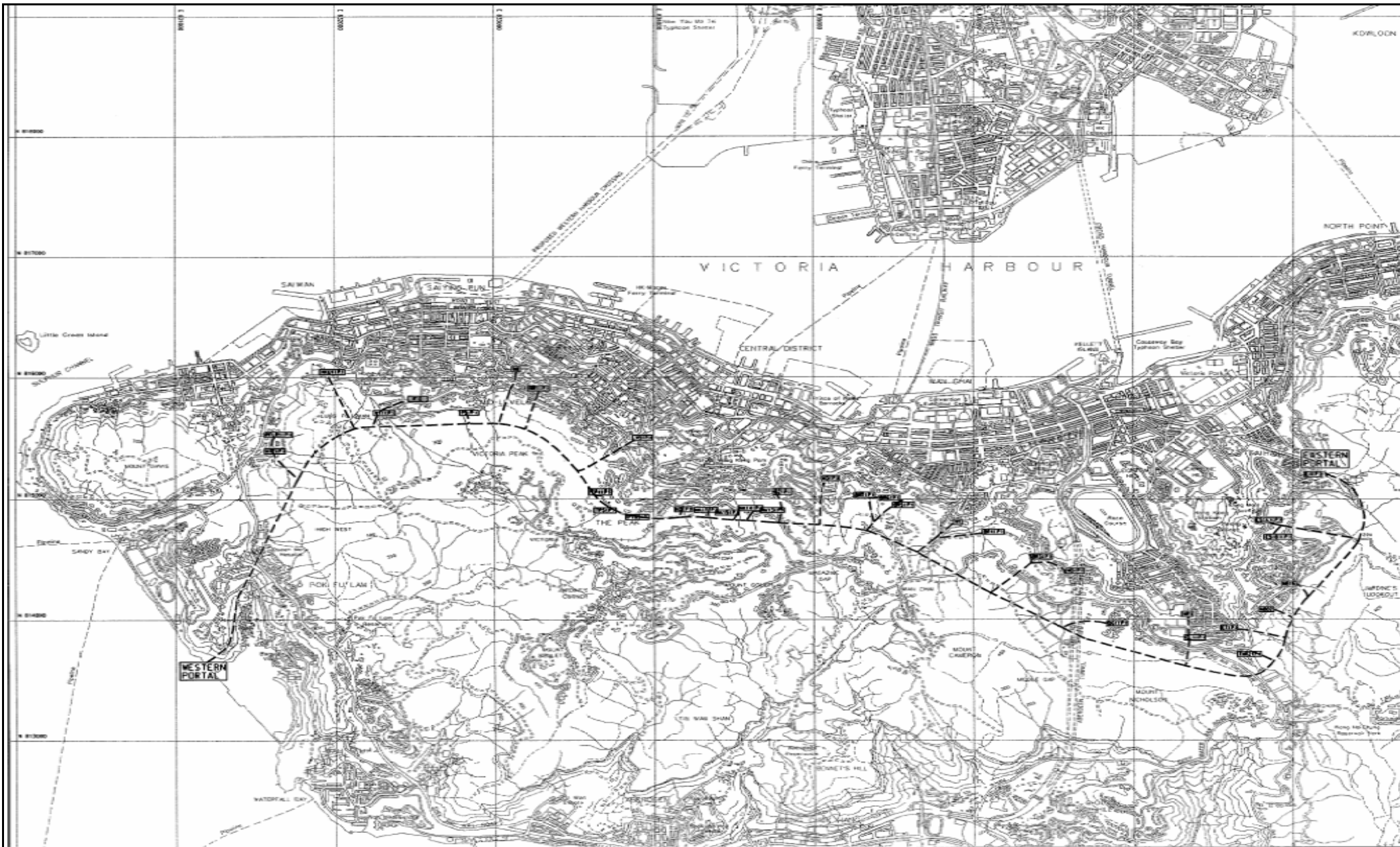
Water Impact

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

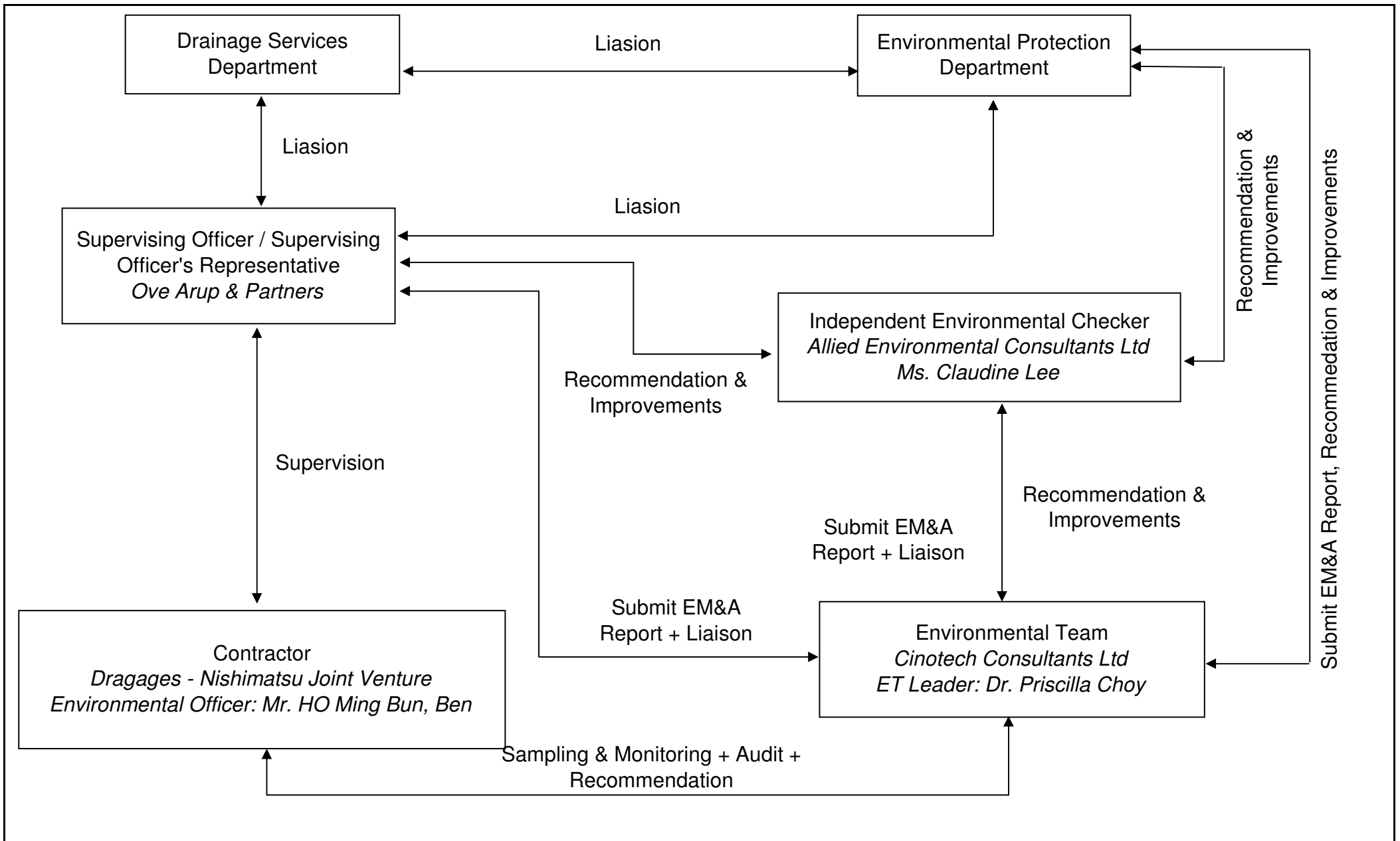
Waste/Chemical Management

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

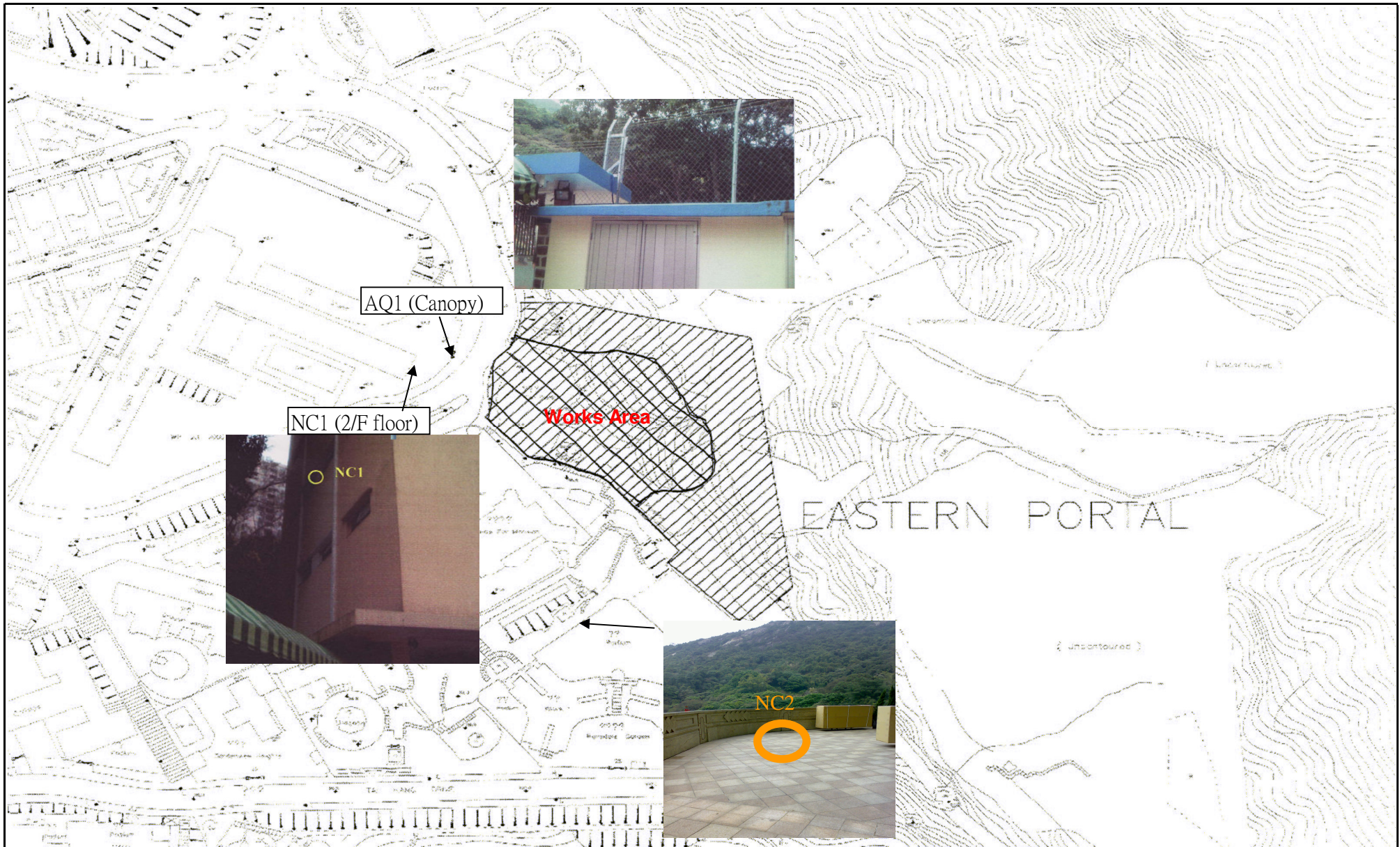
FIGURES



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



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



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





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

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

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

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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.

**APPENDIX B
COPIES OF CALIBRATION
CERTIFICATES**



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENVY.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 10, 2008 Roots-meter 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 = $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$

y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$

CALCULATIONS

$V_{std} = \text{Diff. Vol}[(\text{Pa} - \text{Diff. Hg})/760](298/\text{Ta})$
 $Q_{std} = V_{std}/\text{Time}$

$V_a = \text{Diff Vol}[(\text{Pa} - \text{Diff Hg})/\text{Pa}]$
 $Q_a = V_a/\text{Time}$

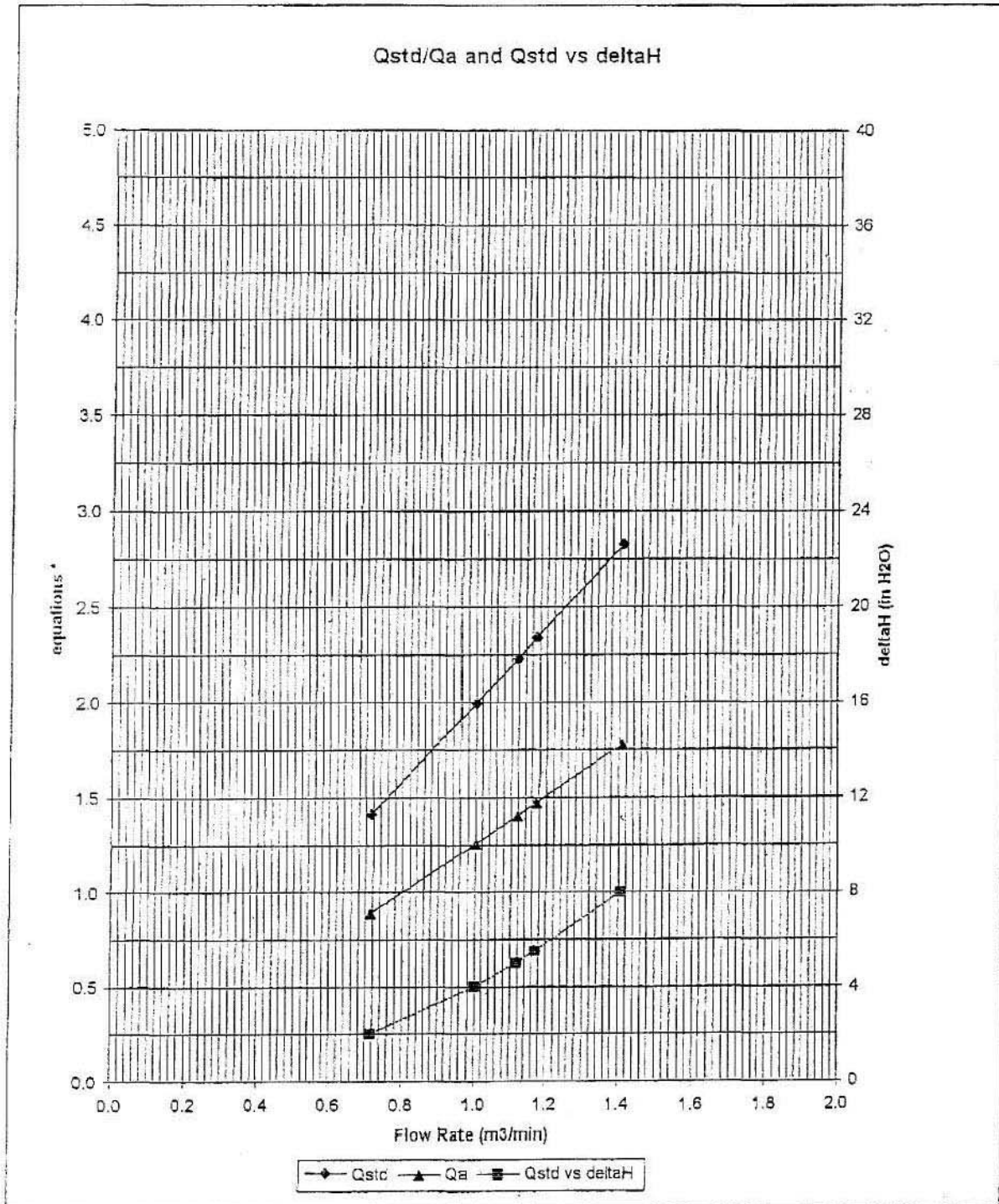
For subsequent flow rate calculations:

$Q_{std} = 1/m\{[\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))] - b\}$
 $Q_a = 1/m\{[\text{SQRT} \text{H}_2\text{O}(\text{Ta}/\text{Pa})] - b\}$



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AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:
$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:
$$\sqrt{(\Delta H (T_a / P_a))}$$

WELLAB LTD.

Unit C, 1/F, Goldlion Holdings Center
13-15 Yuen Shun Circuit,
Shatin, Hong Kong.
Tel: (852) 2898 7388
Fax: (852) 2898 7076

TEST REPORT

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

Test Report No.:	C/07/70502
Date of Issue:	2007-05-02
Date Received:	2007-05-01
Date Tested:	2007-05-01
Date Completed:	2007-05-02

ATTN: Mr. Henry Leung

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
Senior Chemist

TEST REPORT

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

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

ATTN: Mr. Henry Leung

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
Laboratory Manager

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
-------------------------	--------

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



PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 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
Senior Chemist

TEST REPORT

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

Test Report No.:	C/N/71015/1
Date of Issue:	2007-10-15
Date Received:	2007-10-13
Date Tested:	2007-10-13
Date Completed:	2007-10-15
Next Due Date:	2008-10-14

ATTN: Mr. Henry Leung

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Senior Chemist

TEST REPORT

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

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

ATTN: Mr. Henry Leung

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 Temperature	: 20 degree Celsius
Relative Humidity	: 59%
Pressure	: 1015.2 hPa

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Senior Chemist

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 Temperature	: 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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Senior Chemist

FACTORY CALIBRATION DATA OF THE SVAN 955 nr.: 12553

1. CALIBRATION (electrical)

 LEVEL METER; Characteristic: Z; $f_{sin}=1000\text{Hz}$

Nominal result [dB]	Indication [dB]	Error [dB]
114.0	114.0	0.0

2. CALIBRATION* (acoustical)

LEVEL METER; Range: High; Reference frequency: 1000Hz; Calibration factor: -0.2

Characteristic	Correct value [dB]	Indication [dB]	Error [dB]
Z	113.9	113.7	-0.2
A	113.9	113.7	-0.2
C	113.9	113.7	-0.2

Calibration measured with the microphone ACO type 7052S No. 35222.

3. LINEARITY TEST* (electrical)

 LEVEL METER; Characteristic: A; $f_{sin}=31.5\text{ Hz}$

Nominal result [dB]	25.0	26.0	27.0	28.0	29.0	30.0	40.0	50.0	60.0	70.0	80.0
Error [dB]	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0
Nominal result [dB]	90.0	93.0	94.0	95.0	96.0	97.0	98.0	-	-	-	-
Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-

 LEVEL METER; Characteristic: A; $f_{sin}=1000\text{ Hz}$

Nominal result [dB]	25.0	26.0	27.0	28.0	29.0	30.0	40.0	50.0	60.0	70.0	80.0
Error [dB]	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Nominal result [dB]	90.0	100.0	110.0	120.0	130.0	133.0	134.0	135.0	136.0	137.0	138.0
Error [dB]	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1

 LEVEL METER; Characteristic: A; $f_{sin}=8000\text{ Hz}$

Nominal result [dB]	25.0	26.0	27.0	28.0	29.0	30.0	40.0	50.0	60.0	70.0	80.0
Error [dB]	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal result [dB]	90.0	100.0	110.0	120.0	130.0	132.0	133.0	134.0	135.0	136.0	137.0
Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

4. TONEBURST RESPONSE* (electrical)

 LEVEL METER; Characteristic: A; $f_{sin}=4000\text{ Hz}$; Burst duration: 2s;

Steady level nominal result = 135dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	134.9	134.9	134.0	132.4	130.1	126.6	123.8	120.9	116.9	113.9	110.9	107.8
		Error [dB]	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	-0.2
	Slow	Indication [dB]	132.9	130.8	127.4	124.6	121.7	117.8	114.8	111.8	107.8	-	-	-
		Error [dB]	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-	-	-
SEL	-	Indication [dB]	134.9	131.9	128.0	124.9	121.9	117.9	114.9	111.9	107.9	104.9	101.8	98.8
		Error [dB]	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2

Steady level nominal result = 115dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	115.0	115.0	114.1	112.5	110.2	106.7	103.9	101.0	97.0	94.0	91.0	87.9
		Error [dB]	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1
	Slow	Indication [dB]	113.0	110.9	107.5	104.7	101.8	97.9	94.9	91.9	87.9	-	-	-
		Error [dB]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-	-	-
SEL	-	Indication [dB]	115.0	112.0	108.0	105.0	102.0	98.0	95.0	92.0	88.0	85.0	81.9	78.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1

Steady level nominal result = 95dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	95.0	94.9	94.0	92.4	90.2	86.7	83.9	80.9	77.0	74.0	70.9	67.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
	Slow	Indication [dB]	93.0	90.9	87.5	84.7	81.8	77.9	74.9	71.9	67.9	-	-	-
		Error [dB]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-	-	-
SEL	-	Indication [dB]	95.0	92.0	88.0	85.0	82.0	78.0	75.0	72.0	68.0	65.0	61.9	58.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1

Steady level nominal result = 75dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	75.0	74.9	74.0	72.4	70.2	66.7	63.9	60.9	57.0	54.0	50.9	47.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
	Slow	Indication [dB]	73.0	70.9	67.5	64.7	61.8	57.9	54.9	51.9	47.9	-	-	-
		Error [dB]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-	-	-
SEL	-	Indication [dB]	75.0	72.0	68.0	65.0	62.0	58.0	55.0	52.0	48.0	45.0	41.9	38.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1

Steady level nominal result = 55dB

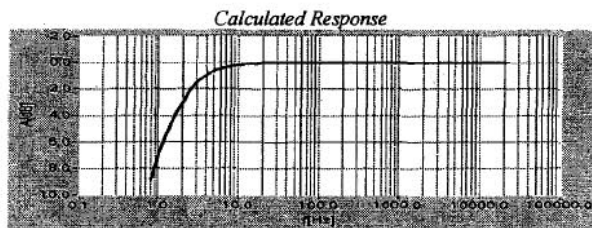
Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2
MAX	Fast	Indication [dB]	55.0	54.9	54.0	52.4	50.2	46.7	43.9	40.9	37.0
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slow	Indication [dB]	53.0	50.9	47.5	44.7	41.8	37.9	34.9	31.9	27.9
		Error [dB]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
SEL	-	Indication [dB]	55.0	52.0	48.0	45.0	42.0	38.0	35.0	32.0	28.0
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Steady level nominal result = 35dB

Result	Detector	Duration [ms]	1000	500	200	100
MAX	Fast	Indication [dB]	35.0	34.9	34.0	32.4
		Error [dB]	0.0	-0.0	0.0	-0.0
	Slow	Indication [dB]	32.9	30.9	27.4	24.6
		Error [dB]	-0.1	0.0	-0.2	-0.2
SEL	-	Indication [dB]	35.0	32.0	28.0	25.0
		Error [dB]	0.0	0.0	0.0	0.0

5. FREQUENCY RESPONSE* (electrical)

LEVEL METER; Characteristic: Z; Nominal result (1kHz)=135 dB;



Measured Response (f-frequency, A-attenuation)

f [Hz]	A [dB]	f [Hz]	A [dB]	f [Hz]	A [dB]	f [Hz]	A [dB]
10	3.2	80	0.1	630	0.0	5000	0.1
12.5	2.3	100	0.1	800	0.0	6300	0.1
16	1.6	125	0.1	1000	0.0	8000	0.1
20	1.0	160	0.1	1250	0.0	10000	0.1
25	0.7	200	0.1	1600	0.0	12500	0.0
31.5	0.5	250	0.0	2000	0.0	16000	0.0
40	0.3	315	0.0	2500	0.0	20000	0.2
50	0.2	400	0.0	3150	0.0	-	-
63	0.2	500	0.0	4000	0.0	-	-

All frequencies are nominal center values for the 1/3 octave bands

6. INTERNAL NOISE LEVEL* (electrical - compensated)

LEVEL METER; Backlight - off

Characteristic	Z	A	C
Indication [dB]	10.0	10.0	10.0

* measured with preamplifier SVANTEK type SV12L No. 13508.

7. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER; Range: LOW; Backlight - off

Characteristic	A
Indication [dB]	<17

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 13529

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
21 °C	48 %	1005 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	84	Signal generator
2.	SVANTEK	SVAN 912A	3000	Sound & Vibration Analyser
3.	SOAR	3430	90CA1811	Digital voltmeter
4.	SVANTEK	SV30A	7921	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)

CONFORMITY & TEST DECLARATION

- Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
- The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
- The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
- This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Anna Domańska

Test date: 2007-09-25

N-09-01

Sound Calibrator Certificate
Calibrator : Svantek Type SV30A



Serial no : 10929
Level 1 : 94.01 dB
Level 2 : 114.01 dB
Frequency : 1000 Hz

Reference conditions

Pressure : 1013.2 hPa
Temperature : 23.0 °C
Relative humidity : 50 %RH

Masurement conditions

Pressure : 1001 hPa
Temperature : 21 °C
Relative humidity : 56 %RH

The stated level is valid at reference conditions.
Calibrator signal distortion for 94dB level: 0.07 %
Calibrator signal distortion for 114dB level: 0.13 %
Short term level stability : 0.05 dB
Frequency stability : 0.01 %

Measured according to IEC 60942.
The stated level is relative to 20 uPa .
The level is traceable to GUM, Poland,
with a calculated uncertainty less than ± 0.15 dB (2 * sd).

Date : 2007-09-28

Signature : .....

**APPENDIX C
ENVIRONMENTAL MONITORING
SCHEDULES**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		29-Apr	30-Apr	1-May	2-May	3-May
		24 hrs TSP	1 hr TSP Noise			
4-May	5-May	6-May	7-May	8-May	9-May	10-May
	24 hrs TSP	1 hr TSP Noise	1 hr TSP		1 hr TSP	24 hrs TSP
11-May	12-May	13-May	14-May	15-May	16-May	17-May
		1 hr TSP Noise	1 hr TSP	1 hr TSP	24 hrs TSP	
18-May	19-May	20-May	21-May	22-May	23-May	24-May
	1 hr TSP Noise		1 hr TSP	24 hrs TSP	1 hr TSP	
25-May	26-May	27-May	28-May	29-May	30-May	31-May
	1 hr TSP Noise		24 hrs TSP	1 hr 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
Impact Air and Noise Monitoring Schedule for May 2008 (for Western Portal)**

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

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
Tentative 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
Tentative 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
Tentative 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 8:00 Mid-Ebb 13:30		Mid-Flood 8:00 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 8:12 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 8:00 Mid-Ebb 13:23	
22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun
	Mid-Flood 8:03 Mid-Ebb 15:15		Mid-Flood 9:50 Mid-Ebb 16:33		Mid-Ebb 8:00 Mid-Flood 12:29	
29-Jun	30-Jun					
	Mid-Ebb 9:49 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

**APPENDIX D
1-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION AND
WIND DATA**

Appendix D - 1-hour TSP Monitoring Results

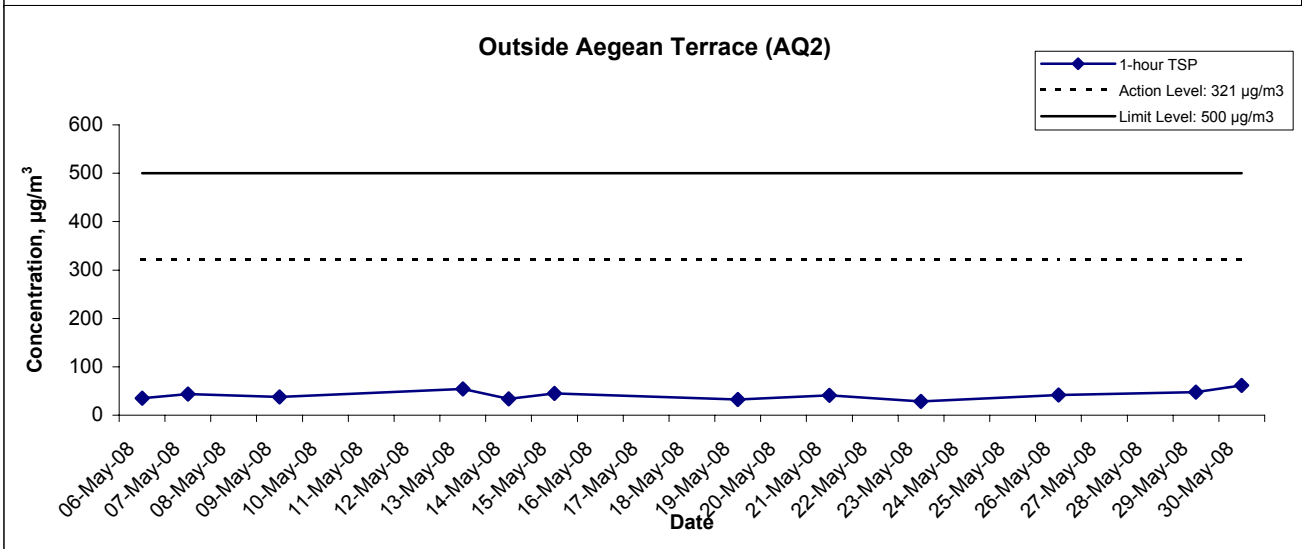
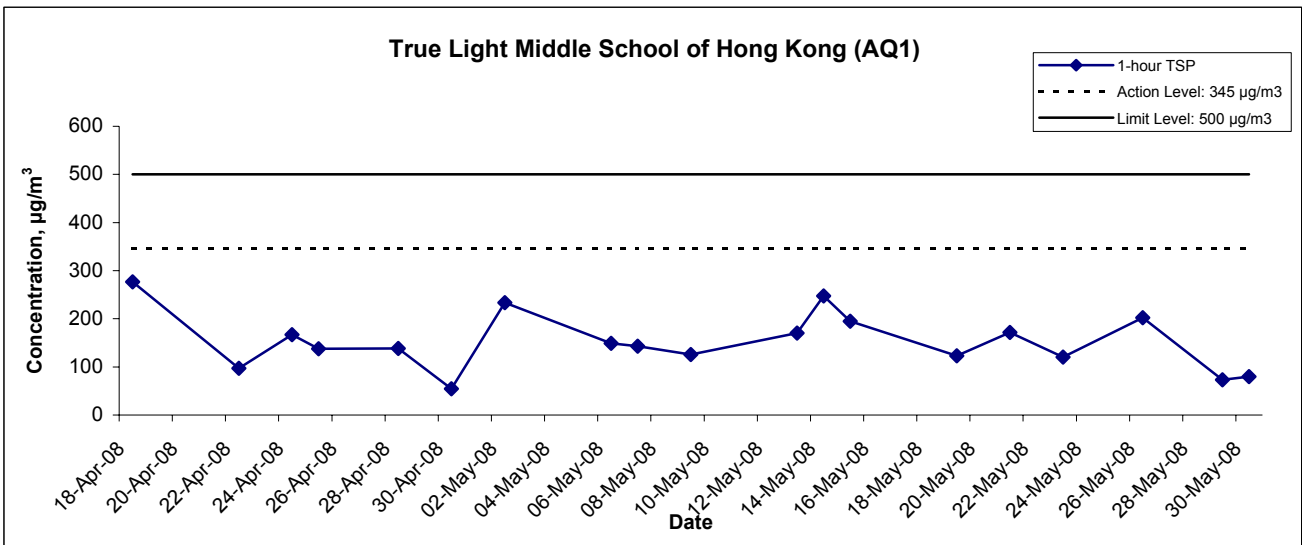
Station AQ1 (True Light Middle School of Hong Kong)

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. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
30-Apr-08	10:10	Cloudy	296.3	762.3	2.8139	2.8179	0.0040	1305.9	1306.9	1.0	1.22	1.22	1.22	73.4	54.5
2-May-08	09:00	Cloudy	296.2	760.0	2.8329	2.8500	0.0171	1306.9	1307.9	1.0	1.22	1.22	1.22	73.3	233.2
6-May-08	14:00	Cloudy	296.4	759.6	2.8331	2.8440	0.0109	1332.9	1333.9	1.0	1.22	1.22	1.22	73.3	148.8
7-May-08	09:00	Sunny	296.2	760.8	2.8260	2.8365	0.0105	1333.9	1334.9	1.0	1.22	1.22	1.22	73.4	143.1
9-May-08	09:00	Sunny	301.5	756.9	2.8344	2.8435	0.0091	1334.9	1335.9	1.0	1.21	1.21	1.21	72.4	125.6
13-May-08	13:30	Sunny	300.7	762.1	2.8438	2.8562	0.0124	1359.9	1360.9	1.0	1.21	1.21	1.21	72.8	170.3
14-May-08	09:00	Sunny	298.1	763.3	2.8341	2.8522	0.0181	1360.9	1361.9	1.0	1.22	1.22	1.22	73.2	247.2
15-May-08	09:00	Sunny	297.5	762.5	2.8283	2.8426	0.0143	1361.9	1362.9	1.0	1.22	1.22	1.22	73.3	195.2
19-May-08	14:35	Cloudy	295.9	759.1	2.8875	2.8965	0.0090	1386.9	1387.9	1.0	1.22	1.22	1.22	73.3	122.8
21-May-08	09:00	Cloudy	295.2	759.6	2.8280	2.8406	0.0126	1387.9	1388.9	1.0	1.22	1.22	1.22	73.4	171.6
23-May-08	09:00	Sunny	299.1	760.0	2.8600	2.8688	0.0088	1412.9	1413.9	1.0	1.22	1.22	1.22	72.9	120.7
26-May-08	09:00	Cloudy	300.4	759.3	2.8474	2.8621	0.0147	1413.9	1414.9	1.0	1.21	1.21	1.21	72.7	202.2
29-May-08	15:05	Cloudy	299.7	754.9	2.8543	2.8596	0.0053	1438.9	1439.9	1.0	1.21	1.21	1.21	72.6	73.0
30-May-08	09:00	Cloudy	299.8	756.6	2.8682	2.8740	0.0058	1439.9	1440.9	1.0	1.21	1.21	1.21	72.7	79.8
														Min	54.5
														Max	247.2
														Average	149.1

Appendix D - 1-hour TSP Monitoring Results

Station AQ2 - Outside Aegean Terrace			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
6-May-08	16:20	Cloudy	34.8
7-May-08	15:10	Sunny	43.7
9-May-08	10:20	Sunny	37.8
13-May-08	16:00	Sunny	54.5
14-May-08	16:15	Sunny	33.6
15-May-08	15:10	Sunny	45.0
19-May-08	13:00	Cloudy	32.7
21-May-08	14:20	Cloudy	41.1
23-May-08	15:00	Sunny	28.5
26-May-08	15:15	Cloudy	41.5
29-May-08	16:30	Cloudy	47.6
30-May-08	14:00	Cloudy	61.3
		Average	41.8
		Maximum	61.3
		Minimum	28.5

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	Project No. MA8001	
	Date May 08	Appendix D	

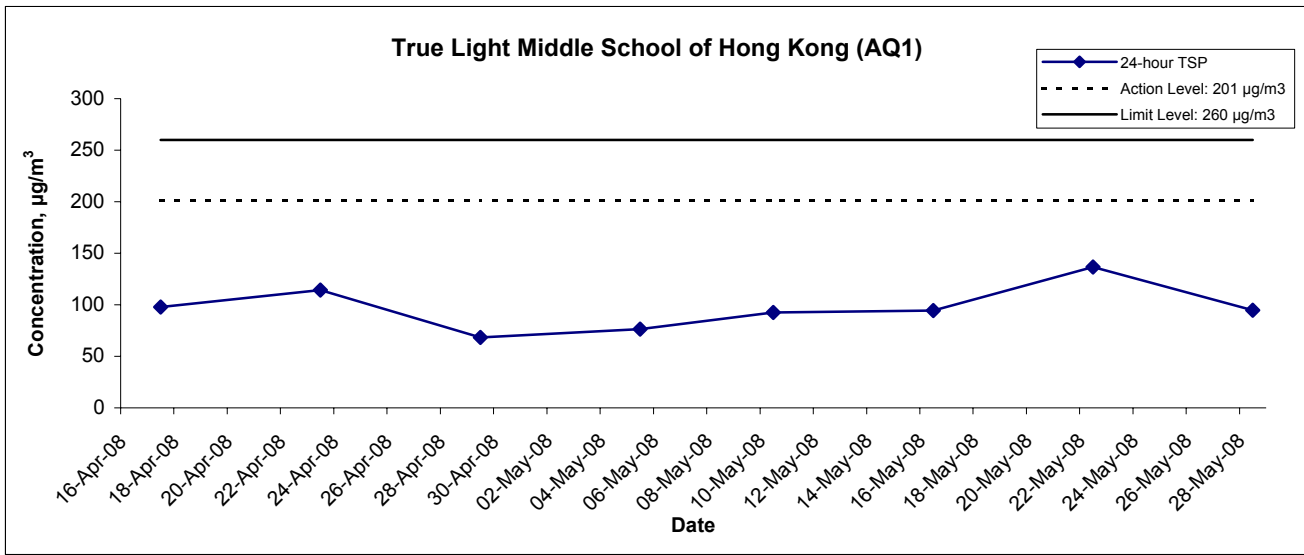
**APPENDIX E
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION**

Appendix E - 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			
29-Apr-08	Cloudy	294.1	762.7	2.8561	2.9772	0.1211	1281.9	1305.9	24.0	1.23	1.23	1.23	1769.8	68.4
5-May-08	Cloudy	299.2	758.9	2.8349	2.9685	0.1336	1308.9	1332.9	24.0	1.21	1.21	1.21	1748.5	76.4
10-May-08	Sunny	297.8	758.4	2.8006	2.9628	0.1622	1335.9	1359.9	24.0	1.22	1.22	1.22	1752.4	92.6
16-May-08	Sunny	298.2	761.0	2.8500	3.0156	0.1656	1362.9	1386.9	24.0	1.22	1.22	1.22	1754.4	94.4
22-May-08	Cloudy	296.9	760.0	2.8851	3.1251	0.2400	1388.9	1412.9	24.0	1.22	1.22	1.22	1757.3	136.6
28-May-08	Cloudy	301.9	755.8	2.8828	3.0471	0.1643	1414.9	1438.9	24.0	1.21	1.21	1.21	1736.1	94.6
													Min	68.4
													Max	136.6
													Average	93.8

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	Project No. MA8001	
	Date May 08	Appendix E	

**APPENDIX F
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

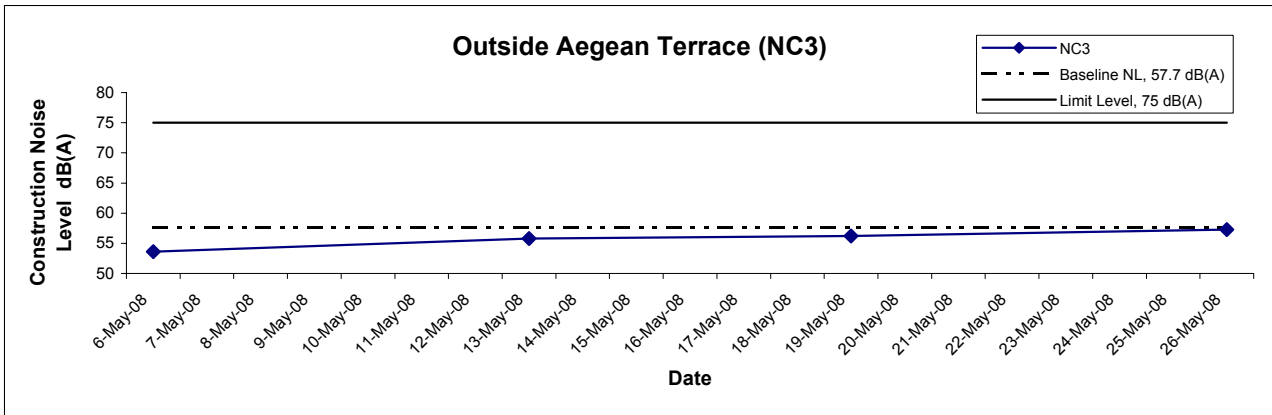
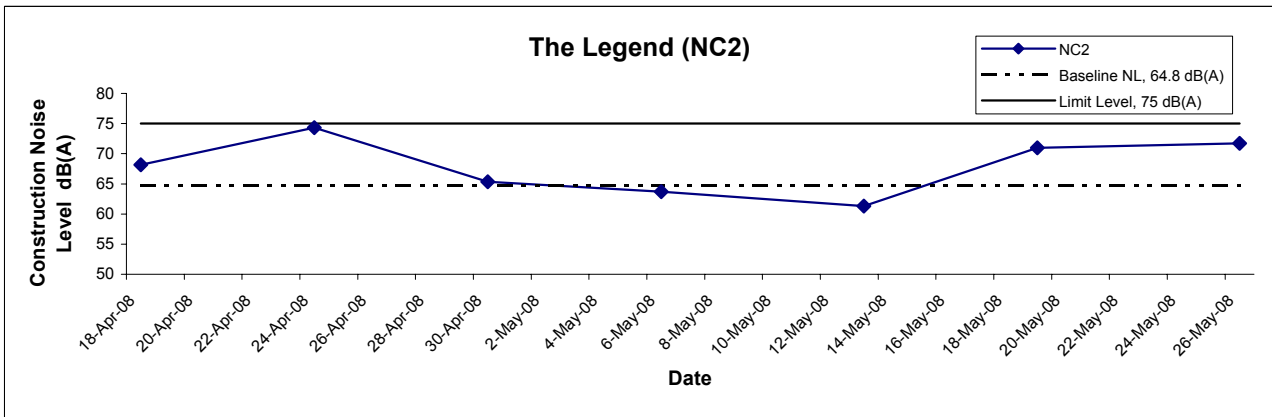
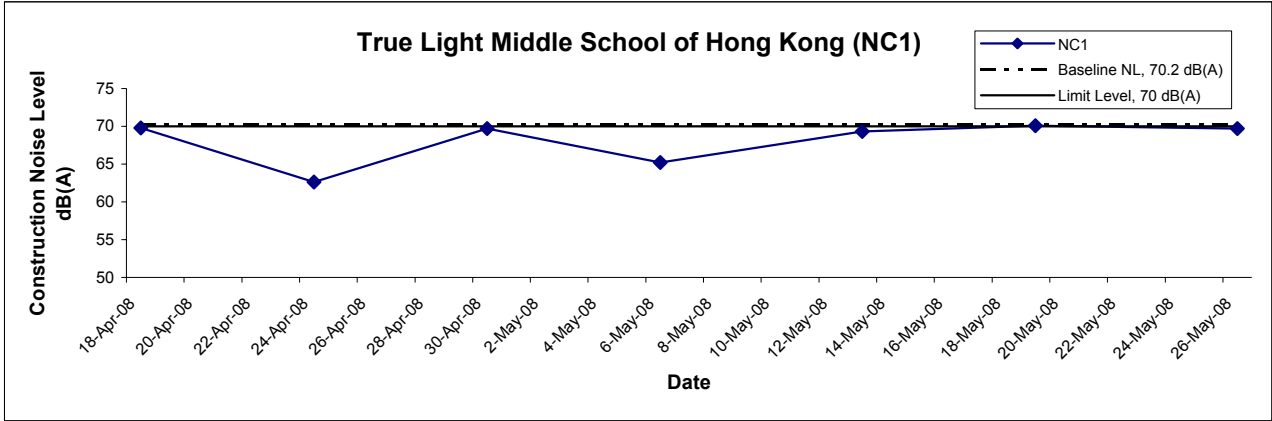
Appendix F - Noise Monitoring Results

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}
30-Apr-08	10:25	Cloudy	69.7	72.7	64.0	70.2	69.7, Measured ≤ Baseline
6-May-08	14:20	Cloudy	71.4	74.0	67.5		65.2
13-May-08	13:30	Sunny	72.8	77.0	68.0		69.3
19-May-08	14:20	Cloudy	70.1	72.5	64.0		70.1, Measured ≤ Baseline
26-May-08	13:00	Cloudy	69.7	72.0	66.5		69.7, 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}
30-Apr-08	11:15	Cloudy	68.1	70.4	63.7	64.8	65.4
6-May-08	13:15	Cloudy	67.3	69.5	62.0		63.7
13-May-08	14:35	Sunny	66.4	68.5	62.0		61.3
19-May-08	15:30	Cloudy	71.9	74.0	66.0		71.0
26-May-08	13:50	Cloudy	72.5	74.5	67.0		71.7

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}
6-May-08	16:25	Cloudy	53.6	54.5	49.5	57.7	53.6, Measured ≤ Baseline
13-May-08	15:20	Sunny	55.8	57.5	51.0		55.8, Measured ≤ Baseline
19-May-08	13:05	Cloudy	56.2	59.5	50.5		56.2, Measured ≤ Baseline
26-May-08	15:20	Cloudy	57.3	59.5	50.5		57.3, Measured ≤ Baseline

Noise Levels



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

APPENDIX G
WIND DATA

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
29-Apr-2008	00:00	0.5	W
29-Apr-2008	01:00	0.6	W
29-Apr-2008	02:00	1.5	WSW
29-Apr-2008	03:00	1.2	W
29-Apr-2008	04:00	1.7	WNW
29-Apr-2008	05:00	2.3	W
29-Apr-2008	06:00	2.3	W
29-Apr-2008	07:00	2.0	WNW
29-Apr-2008	08:00	1.7	WNW
29-Apr-2008	09:00	2.0	W
29-Apr-2008	10:00	1.9	WNW
29-Apr-2008	11:00	2.6	W
29-Apr-2008	12:00	2.8	WNW
29-Apr-2008	13:00	3.1	W
29-Apr-2008	14:00	2.8	W
29-Apr-2008	15:00	2.8	WNW
29-Apr-2008	16:00	1.8	W
29-Apr-2008	17:00	1.2	WSW
29-Apr-2008	18:00	0.8	W
29-Apr-2008	19:00	0.2	WSW
29-Apr-2008	20:00	0.5	SW
29-Apr-2008	21:00	0.5	SW
29-Apr-2008	22:00	1.0	SW
29-Apr-2008	23:00	0.7	WSW
30-Apr-2008	00:00	0.5	SW
30-Apr-2008	01:00	0.2	SW
30-Apr-2008	02:00	0.2	SW
30-Apr-2008	03:00	0.6	SW
30-Apr-2008	04:00	0.2	WSW
30-Apr-2008	05:00	0.0	WSW
30-Apr-2008	06:00	0.8	WSW
30-Apr-2008	07:00	0.2	WSW
30-Apr-2008	08:00	0.2	WSW
30-Apr-2008	09:00	0.9	SW
30-Apr-2008	10:00	1.3	WSW
30-Apr-2008	11:00	1.4	SW
30-Apr-2008	12:00	2.3	WSW
30-Apr-2008	13:00	2.2	SW
30-Apr-2008	14:00	2.4	W
30-Apr-2008	15:00	1.8	WNW
30-Apr-2008	16:00	1.5	WNW
30-Apr-2008	17:00	2.1	WNW
30-Apr-2008	18:00	1.2	WNW
30-Apr-2008	19:00	1.2	WSW
30-Apr-2008	20:00	0.6	WSW
30-Apr-2008	21:00	0.5	WNW
30-Apr-2008	22:00	1.1	WNW
30-Apr-2008	23:00	0.9	WNW
1-May-2008	00:00	1.2	WSW
1-May-2008	01:00	1.1	W
1-May-2008	02:00	0.7	WNW
1-May-2008	03:00	0.7	W

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
1-May-2008	04:00	0.6	W
1-May-2008	05:00	0.8	W
1-May-2008	06:00	0.7	W
1-May-2008	07:00	0.9	WNW
1-May-2008	08:00	0.9	WNW
1-May-2008	09:00	1.2	WNW
1-May-2008	10:00	1.3	W
1-May-2008	11:00	1.5	WSW
1-May-2008	12:00	1.7	SW
1-May-2008	13:00	1.7	SW
1-May-2008	14:00	1.6	SW
1-May-2008	15:00	1.9	WSW
1-May-2008	16:00	1.8	SW
1-May-2008	17:00	1.5	SW
1-May-2008	18:00	1.2	SW
1-May-2008	19:00	0.7	SW
1-May-2008	20:00	0.8	WSW
1-May-2008	21:00	1.0	WNW
1-May-2008	22:00	1.1	E
1-May-2008	23:00	0.9	NW
2-May-2008	00:00	1.1	WNW
2-May-2008	01:00	1.2	NNE
2-May-2008	02:00	1.2	N
2-May-2008	03:00	0.9	NNE
2-May-2008	04:00	1.0	NE
2-May-2008	05:00	0.9	N
2-May-2008	06:00	0.9	N
2-May-2008	07:00	0.9	NNE
2-May-2008	08:00	0.9	N
2-May-2008	09:00	0.9	N
2-May-2008	10:00	1.5	N
2-May-2008	11:00	2.1	N
2-May-2008	12:00	2.0	SSE
2-May-2008	13:00	1.5	SSE
2-May-2008	14:00	1.8	SSW
2-May-2008	15:00	2.5	SW
2-May-2008	16:00	2.1	WSW
2-May-2008	17:00	1.8	WSW
2-May-2008	18:00	1.6	ENE
2-May-2008	19:00	1.2	ENE
2-May-2008	20:00	1.0	E
2-May-2008	21:00	1.4	E
2-May-2008	22:00	1.5	SW
2-May-2008	23:00	1.3	N
3-May-2008	00:00	1.3	NNE
3-May-2008	01:00	1.4	SSW
3-May-2008	02:00	1.4	WNW
3-May-2008	03:00	1.3	W
3-May-2008	04:00	1.1	NE
3-May-2008	05:00	1.2	SW
3-May-2008	06:00	0.9	W
3-May-2008	07:00	0.6	NE

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
3-May-2008	08:00	0.8	NE
3-May-2008	09:00	1.3	NE
3-May-2008	10:00	1.6	NE
3-May-2008	11:00	1.3	ESE
3-May-2008	12:00	1.9	NNE
3-May-2008	13:00	2.2	SSW
3-May-2008	14:00	1.6	W
3-May-2008	15:00	1.8	W
3-May-2008	16:00	1.8	W
3-May-2008	17:00	1.9	W
3-May-2008	18:00	1.5	W
3-May-2008	19:00	1.0	SW
3-May-2008	20:00	0.7	WSW
3-May-2008	21:00	0.8	W
3-May-2008	22:00	0.8	WSW
3-May-2008	23:00	0.9	W
4-May-2008	00:00	1.1	WSW
4-May-2008	01:00	1.1	W
4-May-2008	02:00	1.1	WSW
4-May-2008	03:00	1.0	WSW
4-May-2008	04:00	0.7	WSW
4-May-2008	05:00	0.9	SW
4-May-2008	06:00	0.6	SW
4-May-2008	07:00	0.6	SW
4-May-2008	08:00	0.7	SW
4-May-2008	09:00	0.9	SW
4-May-2008	10:00	1.1	S
4-May-2008	11:00	1.6	WSW
4-May-2008	12:00	1.9	WSW
4-May-2008	13:00	1.8	WSW
4-May-2008	14:00	1.6	S
4-May-2008	15:00	1.6	S
4-May-2008	16:00	1.4	WSW
4-May-2008	17:00	1.4	S
4-May-2008	18:00	1.1	N
4-May-2008	19:00	0.5	WSW
4-May-2008	20:00	0.5	W
4-May-2008	21:00	0.5	W
4-May-2008	22:00	0.6	SW
4-May-2008	23:00	0.8	W
5-May-2008	00:00	1.5	W
5-May-2008	01:00	1.7	WSW
5-May-2008	02:00	1.5	SW
5-May-2008	03:00	1.1	WSW
5-May-2008	04:00	1.1	SW
5-May-2008	05:00	0.7	SW
5-May-2008	06:00	0.7	W
5-May-2008	07:00	0.3	W
5-May-2008	08:00	0.4	SW
5-May-2008	09:00	0.8	WSW
5-May-2008	10:00	0.8	SW
5-May-2008	11:00	1.3	SW

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
5-May-2008	12:00	1.6	SSW
5-May-2008	13:00	1.9	NNE
5-May-2008	14:00	1.9	N
5-May-2008	15:00	1.8	NNE
5-May-2008	16:00	1.3	NNE
5-May-2008	17:00	1.2	NE
5-May-2008	18:00	0.7	NE
5-May-2008	19:00	0.6	ENE
5-May-2008	20:00	0.6	ENE
5-May-2008	21:00	0.6	ENE
5-May-2008	22:00	0.6	E
5-May-2008	23:00	0.4	E
6-May-2008	00:00	0.6	E
6-May-2008	01:00	0.6	ENE
6-May-2008	02:00	0.5	E
6-May-2008	03:00	0.8	E
6-May-2008	04:00	1.1	E
6-May-2008	05:00	0.7	E
6-May-2008	06:00	0.6	E
6-May-2008	07:00	1.2	E
6-May-2008	08:00	1.5	E
6-May-2008	09:00	1.5	E
6-May-2008	10:00	1.8	NNE
6-May-2008	11:00	2.1	NE
6-May-2008	12:00	2.5	ESE
6-May-2008	13:00	2.2	NE
6-May-2008	14:00	1.9	SE
6-May-2008	15:00	1.8	SE
6-May-2008	16:00	1.6	SE
6-May-2008	17:00	1.6	SE
6-May-2008	18:00	1.5	W
6-May-2008	19:00	2.3	WSW
6-May-2008	20:00	2.3	WSW
6-May-2008	21:00	1.6	W
6-May-2008	22:00	1.4	SSW
6-May-2008	23:00	1.3	WSW
7-May-2008	00:00	1.5	WSW
7-May-2008	01:00	1.1	WSW
7-May-2008	02:00	1.2	WSW
7-May-2008	03:00	1.1	NNE
7-May-2008	04:00	1.2	NE
7-May-2008	05:00	0.8	NE
7-May-2008	06:00	0.6	NNE
7-May-2008	07:00	0.9	NE
7-May-2008	08:00	1.2	NE
7-May-2008	09:00	1.8	NNE
7-May-2008	10:00	2.0	NE
7-May-2008	11:00	2.1	NNE
7-May-2008	12:00	2.5	NNE
7-May-2008	13:00	2.5	NNE
7-May-2008	14:00	2.8	WNW
7-May-2008	15:00	0	---

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
7-May-2008	16:00	0	---
7-May-2008	17:00	0	---
7-May-2008	18:00	2.0	WNW
7-May-2008	19:00	1.4	WNW
7-May-2008	20:00	1.0	NW
7-May-2008	21:00	1.1	WNW
7-May-2008	22:00	1.4	NW
7-May-2008	23:00	1.7	NW
8-May-2008	00:00	1.4	WNW
8-May-2008	01:00	1.2	NW
8-May-2008	02:00	1.2	W
8-May-2008	03:00	1.5	WNW
8-May-2008	04:00	1.1	W
8-May-2008	05:00	1.3	W
8-May-2008	06:00	1.2	WNW
8-May-2008	07:00	1.5	WNW
8-May-2008	08:00	1.9	WNW
8-May-2008	09:00	2.1	WNW
8-May-2008	10:00	1.8	WNW
8-May-2008	11:00	2.1	WNW
8-May-2008	12:00	2.4	W
8-May-2008	13:00	2.2	W
8-May-2008	14:00	2.4	WNW
8-May-2008	15:00	2.2	WNW
8-May-2008	16:00	1.8	WNW
8-May-2008	17:00	1.7	WNW
8-May-2008	18:00	1.6	WNW
8-May-2008	19:00	1.0	WNW
8-May-2008	20:00	1.1	WNW
8-May-2008	21:00	0.5	WNW
8-May-2008	22:00	0.9	WNW
8-May-2008	23:00	0.7	WNW
9-May-2008	00:00	0.8	WNW
9-May-2008	01:00	0.5	WNW
9-May-2008	02:00	0.6	N
9-May-2008	03:00	1.2	NE
9-May-2008	04:00	1.3	NE
9-May-2008	05:00	1.2	ENE
9-May-2008	06:00	1.1	NE
9-May-2008	07:00	1.3	NE
9-May-2008	08:00	1.7	E
9-May-2008	09:00	2.0	ENE
9-May-2008	10:00	2.0	E
9-May-2008	11:00	1.8	ENE
9-May-2008	12:00	1.0	E
9-May-2008	13:00	1.9	E
9-May-2008	14:00	1.7	E
9-May-2008	15:00	1.3	ENE
9-May-2008	16:00	1.4	ENE
9-May-2008	17:00	1.0	ENE
9-May-2008	18:00	1.2	ENE
9-May-2008	19:00	0.9	E

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
9-May-2008	20:00	0	---
9-May-2008	21:00	0.9	W
9-May-2008	22:00	1.0	W
9-May-2008	23:00	0.6	WNW
10-May-2008	00:00	0.5	WNW
10-May-2008	01:00	1.7	N
10-May-2008	02:00	0.6	N
10-May-2008	03:00	0.6	N
10-May-2008	04:00	0.6	NW
10-May-2008	05:00	0.6	NW
10-May-2008	06:00	0.3	NW
10-May-2008	07:00	0.6	NW
10-May-2008	08:00	0.7	S
10-May-2008	09:00	0.7	SSW
10-May-2008	10:00	1.1	SSW
10-May-2008	11:00	1.2	WSW
10-May-2008	12:00	1.7	W
10-May-2008	13:00	1.7	W
10-May-2008	14:00	1.9	SW
10-May-2008	15:00	2.1	SW
10-May-2008	16:00	1.8	WSW
10-May-2008	17:00	1.7	WSW
10-May-2008	18:00	1.2	WNW
10-May-2008	19:00	1.2	WNW
10-May-2008	20:00	1.0	WNW
10-May-2008	21:00	1.0	WNW
10-May-2008	22:00	0.9	WNW
10-May-2008	23:00	1.1	WNW
11-May-2008	00:00	1.0	WNW
11-May-2008	01:00	0.9	WNW
11-May-2008	02:00	0.9	WNW
11-May-2008	03:00	0.6	WNW
11-May-2008	04:00	0.5	WSW
11-May-2008	05:00	0.5	WNW
11-May-2008	06:00	0.6	WNW
11-May-2008	07:00	0.5	WNW
11-May-2008	08:00	0.7	WNW
11-May-2008	09:00	0.6	W
11-May-2008	10:00	1.2	W
11-May-2008	11:00	1.4	W
11-May-2008	12:00	1.8	W
11-May-2008	13:00	1.9	W
11-May-2008	14:00	1.7	WSW
11-May-2008	15:00	1.9	WSW
11-May-2008	16:00	1.7	WSW
11-May-2008	17:00	1.4	WSW
11-May-2008	18:00	1.2	NNE
11-May-2008	19:00	1.1	ENE
11-May-2008	20:00	1.0	ESE
11-May-2008	21:00	0	---
11-May-2008	22:00	0	---
11-May-2008	23:00	0	---

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
12-May-2008	00:00	0.9	NNE
12-May-2008	01:00	0.9	E
12-May-2008	02:00	0.8	ESE
12-May-2008	03:00	0.7	ESE
12-May-2008	04:00	0.9	ESE
12-May-2008	05:00	0.5	W
12-May-2008	06:00	0.5	W
12-May-2008	07:00	1.0	W
12-May-2008	08:00	1.1	W
12-May-2008	09:00	1.2	WSW
12-May-2008	10:00	1.7	WSW
12-May-2008	11:00	2.2	W
12-May-2008	12:00	2.4	SSW
12-May-2008	13:00	2.3	SSW
12-May-2008	14:00	2.3	SSW
12-May-2008	15:00	2.5	W
12-May-2008	16:00	2.7	W
12-May-2008	17:00	1.9	WSW
12-May-2008	18:00	1.7	W
12-May-2008	19:00	2.3	NE
12-May-2008	20:00	1.2	ENE
12-May-2008	21:00	1.4	W
12-May-2008	22:00	1.3	SW
12-May-2008	23:00	1.1	SSW
13-May-2008	00:00	1.0	NE
13-May-2008	01:00	1.2	N
13-May-2008	02:00	0	---
13-May-2008	03:00	0	---
13-May-2008	04:00	1.0	SW
13-May-2008	05:00	1.0	SW
13-May-2008	06:00	0.8	W
13-May-2008	07:00	1.0	W
13-May-2008	08:00	1.2	W
13-May-2008	09:00	1.7	W
13-May-2008	10:00	1.4	N
13-May-2008	11:00	1.7	N
13-May-2008	12:00	1.9	NE
13-May-2008	13:00	2.1	ENE
13-May-2008	14:00	1.9	ENE
13-May-2008	15:00	1.7	ESE
13-May-2008	16:00	1.7	ESE
13-May-2008	17:00	1.7	SE
13-May-2008	18:00	1.5	W
13-May-2008	19:00	1.1	WSW
13-May-2008	20:00	1.1	WSW
13-May-2008	21:00	0.8	WSW
13-May-2008	22:00	0.6	SW
13-May-2008	23:00	0.7	SW
14-May-2008	00:00	0.6	SW
14-May-2008	01:00	0.6	SW
14-May-2008	02:00	0.7	SSW
14-May-2008	03:00	0.8	SSW

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
14-May-2008	04:00	0.5	SSW
14-May-2008	05:00	0.5	S
14-May-2008	06:00	0.6	NE
14-May-2008	07:00	0.8	NE
14-May-2008	08:00	0.8	ENE
14-May-2008	09:00	1.8	ENE
14-May-2008	10:00	1.7	W
14-May-2008	11:00	1.7	WSW
14-May-2008	12:00	0	---
14-May-2008	13:00	0	---
14-May-2008	14:00	0	---
14-May-2008	15:00	0	---
14-May-2008	16:00	0	---
14-May-2008	17:00	0	---
14-May-2008	18:00	0	---
14-May-2008	19:00	1.0	W
14-May-2008	20:00	1.0	W
14-May-2008	21:00	1.1	NNW
14-May-2008	22:00	0.7	W
14-May-2008	23:00	1.1	WNW
15-May-2008	00:00	1.3	WNW
15-May-2008	01:00	1.3	WSW
15-May-2008	02:00	1.2	WSW
15-May-2008	03:00	1.2	WSW
15-May-2008	04:00	1.2	WSW
15-May-2008	05:00	0	---
15-May-2008	06:00	0.9	WSW
15-May-2008	07:00	0.9	WSW
15-May-2008	08:00	0.7	WSW
15-May-2008	09:00	0.9	WSW
15-May-2008	10:00	1.1	WSW
15-May-2008	11:00	1.4	WSW
15-May-2008	12:00	1.5	WSW
15-May-2008	13:00	1.8	SW
15-May-2008	14:00	1.8	WSW
15-May-2008	15:00	1.4	WSW
15-May-2008	16:00	1.7	WSW
15-May-2008	17:00	1.4	W
15-May-2008	18:00	1.4	WNW
15-May-2008	19:00	1.2	W
15-May-2008	20:00	0.7	WSW
15-May-2008	21:00	0.7	SW
15-May-2008	22:00	0.7	SSW
15-May-2008	23:00	0.8	W
16-May-2008	00:00	1.0	W
16-May-2008	01:00	1.0	SW
16-May-2008	02:00	1.0	SSW
16-May-2008	03:00	0.9	WSW
16-May-2008	04:00	1.0	W
16-May-2008	05:00	0.7	W
16-May-2008	06:00	0.5	WSW
16-May-2008	07:00	0.6	W

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
16-May-2008	08:00	0.7	W
16-May-2008	09:00	0.8	W
16-May-2008	10:00	0.8	W
16-May-2008	11:00	1.1	WSW
16-May-2008	12:00	1.2	WSW
16-May-2008	13:00	1.2	W
16-May-2008	14:00	1.1	SSW
16-May-2008	15:00	1.3	SW
16-May-2008	16:00	1.2	SW
16-May-2008	17:00	1.5	SW
16-May-2008	18:00	1.3	SW
16-May-2008	19:00	1.2	SW
16-May-2008	20:00	1.1	WNW
16-May-2008	21:00	0.9	WNW
16-May-2008	22:00	1.4	W
16-May-2008	23:00	1.4	SSW
17-May-2008	00:00	0.8	WNW
17-May-2008	01:00	0.7	ENE
17-May-2008	02:00	0.8	ENE
17-May-2008	03:00	0.4	ENE
17-May-2008	04:00	0.4	ENE
17-May-2008	05:00	0.5	ENE
17-May-2008	06:00	0.2	SSW
17-May-2008	07:00	0.2	S
17-May-2008	08:00	0.7	E
17-May-2008	09:00	0.8	E
17-May-2008	10:00	1.0	E
17-May-2008	11:00	1.7	ENE
17-May-2008	12:00	1.8	NE
17-May-2008	13:00	2.0	NE
17-May-2008	14:00	2.1	ENE
17-May-2008	15:00	1.8	NE
17-May-2008	16:00	1.6	ENE
17-May-2008	17:00	1.5	NE
17-May-2008	18:00	0.8	ENE
17-May-2008	19:00	0.6	ENE
17-May-2008	20:00	0.7	ENE
17-May-2008	21:00	0.8	ENE
17-May-2008	22:00	1.2	NNE
17-May-2008	23:00	1.0	NNE
18-May-2008	00:00	0.9	S
18-May-2008	01:00	0.9	WNW
18-May-2008	02:00	0.8	E
18-May-2008	03:00	0.9	NW
18-May-2008	04:00	1.0	WNW
18-May-2008	05:00	0.7	NNE
18-May-2008	06:00	0.7	N
18-May-2008	07:00	0.7	NNE
18-May-2008	08:00	0.6	NE
18-May-2008	09:00	0.9	N
18-May-2008	10:00	1.3	N
18-May-2008	11:00	1.7	NNE

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
18-May-2008	12:00	1.6	N
18-May-2008	13:00	1.7	N
18-May-2008	14:00	1.8	N
18-May-2008	15:00	2.2	N
18-May-2008	16:00	2.1	SSE
18-May-2008	17:00	2.1	SSE
18-May-2008	18:00	1.7	SSW
18-May-2008	19:00	1.6	WNW
18-May-2008	20:00	1.4	WSW
18-May-2008	21:00	1.3	WSW
18-May-2008	22:00	1.4	WNW
18-May-2008	23:00	1.5	WNW
19-May-2008	00:00	1.9	WNW
19-May-2008	01:00	1.6	W
19-May-2008	02:00	1.6	WSW
19-May-2008	03:00	1.4	WSW
19-May-2008	04:00	1.3	SW
19-May-2008	05:00	1.3	SW
19-May-2008	06:00	1.2	WNW
19-May-2008	07:00	1.1	WNW
19-May-2008	08:00	0.9	WNW
19-May-2008	09:00	1.4	WNW
19-May-2008	10:00	1.6	WSW
19-May-2008	11:00	1.8	WSW
19-May-2008	12:00	2.3	WNW
19-May-2008	13:00	2.6	WNW
19-May-2008	14:00	2.3	W
19-May-2008	15:00	2.5	SW
19-May-2008	16:00	2.2	SW
19-May-2008	17:00	1.7	WSW
19-May-2008	18:00	1.5	WSW
19-May-2008	19:00	1.1	WSW
19-May-2008	20:00	1.0	SW
19-May-2008	21:00	0.9	WNW
19-May-2008	22:00	0.7	WNW
19-May-2008	23:00	0.6	W
20-May-2008	00:00	0.8	W
20-May-2008	01:00	0.6	WSW
20-May-2008	02:00	0.8	SW
20-May-2008	03:00	0.6	W
20-May-2008	04:00	0.5	SW
20-May-2008	05:00	0.5	W
20-May-2008	06:00	0.4	WNW
20-May-2008	07:00	0.6	SW
20-May-2008	08:00	0.7	WNW
20-May-2008	09:00	0.9	W
20-May-2008	10:00	1.6	W
20-May-2008	11:00	2.0	W
20-May-2008	12:00	1.9	S
20-May-2008	13:00	2.7	S
20-May-2008	14:00	2.3	S
20-May-2008	15:00	1.9	SSW

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
20-May-2008	16:00	1.6	SW
20-May-2008	17:00	1.5	WSW
20-May-2008	18:00	1.1	W
20-May-2008	19:00	1.0	SW
20-May-2008	20:00	0.8	WNW
20-May-2008	21:00	0.8	WNW
20-May-2008	22:00	0.7	NW
20-May-2008	23:00	0.8	WNW
21-May-2008	00:00	1.0	W
21-May-2008	01:00	1.1	WNW
21-May-2008	02:00	0.9	W
21-May-2008	03:00	1.1	W
21-May-2008	04:00	1.0	W
21-May-2008	05:00	0.9	W
21-May-2008	06:00	0.7	W
21-May-2008	07:00	0.7	W
21-May-2008	08:00	0.8	SSW
21-May-2008	09:00	0.8	W
21-May-2008	10:00	0.7	W
21-May-2008	11:00	1.1	SSW
21-May-2008	12:00	1.7	W
21-May-2008	13:00	2.0	W
21-May-2008	14:00	1.8	W
21-May-2008	15:00	1.8	W
21-May-2008	16:00	1.4	W
21-May-2008	17:00	1.2	W
21-May-2008	18:00	1.1	W
21-May-2008	19:00	0.9	W
21-May-2008	20:00	0.7	W
21-May-2008	21:00	1.5	SSW
21-May-2008	22:00	0.7	SW
21-May-2008	23:00	1.0	SW
22-May-2008	00:00	0.7	NNE
22-May-2008	01:00	0.8	N
22-May-2008	02:00	0.7	N
22-May-2008	03:00	0.8	WSW
22-May-2008	04:00	0.9	WSW
22-May-2008	05:00	0.8	WSW
22-May-2008	06:00	0.8	WSW
22-May-2008	07:00	0.9	S
22-May-2008	08:00	1.6	S
22-May-2008	09:00	1.8	S
22-May-2008	10:00	2.2	NE
22-May-2008	11:00	2.0	NE
22-May-2008	12:00	1.5	ENE
22-May-2008	13:00	1.6	ENE
22-May-2008	14:00	1.3	W
22-May-2008	15:00	1.0	WSW
22-May-2008	16:00	0.9	W
22-May-2008	17:00	1.0	W
22-May-2008	18:00	0.7	W
22-May-2008	19:00	0.6	W

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
22-May-2008	20:00	0.7	W
22-May-2008	21:00	0.6	W
22-May-2008	22:00	0.7	W
22-May-2008	23:00	0.7	W
23-May-2008	00:00	0.5	W
23-May-2008	01:00	0.4	NNW
23-May-2008	02:00	0.6	W
23-May-2008	03:00	0.8	WNW
23-May-2008	04:00	0.7	WNW
23-May-2008	05:00	0.8	WSW
23-May-2008	06:00	0.6	W
23-May-2008	07:00	0.7	W
23-May-2008	08:00	1.0	SSW
23-May-2008	09:00	1.3	SSW
23-May-2008	10:00	1.8	SSW
23-May-2008	11:00	2.0	WNW
23-May-2008	12:00	2.2	WNW
23-May-2008	13:00	2.3	WNW
23-May-2008	14:00	2.1	SW
23-May-2008	15:00	2.0	WSW
23-May-2008	16:00	1.7	WSW
23-May-2008	17:00	1.8	SW
23-May-2008	18:00	1.7	W
23-May-2008	19:00	0.9	W
23-May-2008	20:00	1.0	W
23-May-2008	21:00	0.9	WNW
23-May-2008	22:00	0.8	W
23-May-2008	23:00	0.9	W
24-May-2008	00:00	0.8	SW
24-May-2008	01:00	0.7	W
24-May-2008	02:00	0.8	W
24-May-2008	03:00	0.7	WNW
24-May-2008	04:00	1.3	WNW
24-May-2008	05:00	1.8	WNW
24-May-2008	06:00	1.9	WSW
24-May-2008	07:00	2.2	W
24-May-2008	08:00	1.8	WSW
24-May-2008	09:00	1.6	WNW
24-May-2008	10:00	1.7	W
24-May-2008	11:00	2.0	WSW
24-May-2008	12:00	2.1	WSW
24-May-2008	13:00	1.9	W
24-May-2008	14:00	1.9	W
24-May-2008	15:00	1.7	W
24-May-2008	16:00	1.6	WNW
24-May-2008	17:00	1.3	WNW
24-May-2008	18:00	1.3	WNW
24-May-2008	19:00	0.8	W
24-May-2008	20:00	1.1	W
24-May-2008	21:00	1.0	W
24-May-2008	22:00	0.9	WNW
24-May-2008	23:00	1.0	WSW

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
25-May-2008	00:00	1.2	W
25-May-2008	01:00	1.3	SW
25-May-2008	02:00	1.4	SW
25-May-2008	03:00	1.4	W
25-May-2008	04:00	1.0	WSW
25-May-2008	05:00	0.8	W
25-May-2008	06:00	0.9	SW
25-May-2008	07:00	0.8	WSW
25-May-2008	08:00	1.0	W
25-May-2008	09:00	1.4	SW
25-May-2008	10:00	1.5	SW
25-May-2008	11:00	1.6	WNW
25-May-2008	12:00	1.6	WNW
25-May-2008	13:00	1.8	WNW
25-May-2008	14:00	1.7	N
25-May-2008	15:00	1.8	N
25-May-2008	16:00	1.5	NNE
25-May-2008	17:00	1.3	NE
25-May-2008	18:00	1.0	NNE
25-May-2008	19:00	0.7	NE
25-May-2008	20:00	0.5	WNW
25-May-2008	21:00	0.3	W
25-May-2008	22:00	0.4	WNW
25-May-2008	23:00	0.5	W
26-May-2008	00:00	0.4	WNW
26-May-2008	01:00	0.2	W
26-May-2008	02:00	0.1	W
26-May-2008	03:00	0.2	WNW
26-May-2008	04:00	0.3	W
26-May-2008	05:00	0.4	W
26-May-2008	06:00	0.5	SSW
26-May-2008	07:00	0.3	SSW
26-May-2008	08:00	0.5	SSW
26-May-2008	09:00	0.7	SSW
26-May-2008	10:00	0.9	WNW
26-May-2008	11:00	1.1	WSW
26-May-2008	12:00	1.4	W
26-May-2008	13:00	1.8	WSW
26-May-2008	14:00	1.7	WSW
26-May-2008	15:00	1.3	SW
26-May-2008	16:00	1.1	SW
26-May-2008	17:00	1.4	SW
26-May-2008	18:00	0.7	SSW
26-May-2008	19:00	0.5	W
26-May-2008	20:00	0.4	W
26-May-2008	21:00	0.2	W
26-May-2008	22:00	0.2	W
26-May-2008	23:00	0.1	W
27-May-2008	00:00	0.2	WNW
27-May-2008	01:00	0.3	W
27-May-2008	02:00	0.3	W
27-May-2008	03:00	0.3	WNW

Appendix G - Wind Data (Eastern Portal)

Date	Time	Wind Speed m/s	Direction
27-May-2008	04:00	0.5	WNW
27-May-2008	05:00	0.4	WNW
27-May-2008	06:00	0.3	W
27-May-2008	07:00	0.4	W
27-May-2008	08:00	0.4	WNW
27-May-2008	09:00	1.3	SW
27-May-2008	10:00	1.3	SSW
27-May-2008	11:00	1.7	SSW
27-May-2008	12:00	1.6	W
27-May-2008	13:00	1.8	W
27-May-2008	14:00	1.7	W
27-May-2008	15:00	1.2	SW
27-May-2008	16:00	1.4	SW
27-May-2008	17:00	1.6	SSW
27-May-2008	18:00	1.3	W
27-May-2008	19:00	1.0	SW
27-May-2008	20:00	0.7	SSW
27-May-2008	21:00	0.5	SW
27-May-2008	22:00	0.4	W
27-May-2008	23:00	0.4	W
28-May-2008	00:00	0.3	W
28-May-2008	01:00	0.4	W
28-May-2008	02:00	0.3	WNW
28-May-2008	03:00	0.2	W
28-May-2008	04:00	0.2	WNW
28-May-2008	05:00	0.3	WNW
28-May-2008	06:00	0.4	WNW
28-May-2008	07:00	0.4	WNW
28-May-2008	08:00	0.5	WSW
28-May-2008	09:00	1.0	WSW
28-May-2008	10:00	1.1	SW
28-May-2008	11:00	1.5	WSW
28-May-2008	12:00	1.3	WSW
28-May-2008	13:00	1.2	SW
28-May-2008	14:00	1.3	WSW
28-May-2008	15:00	1.3	SW
28-May-2008	16:00	1.3	WSW
28-May-2008	17:00	0.9	W
28-May-2008	18:00	0.9	WSW
28-May-2008	19:00	0.4	WNW
28-May-2008	20:00	0.2	WNW
28-May-2008	21:00	0.3	W
28-May-2008	22:00	0.5	SW
28-May-2008	23:00	0.4	SW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
29-Apr-2008	00:00	0.9	SSW
29-Apr-2008	01:00	0.7	W
29-Apr-2008	02:00	1.0	SW
29-Apr-2008	03:00	1.0	SW
29-Apr-2008	04:00	0.7	SW
29-Apr-2008	05:00	0.6	SW
29-Apr-2008	06:00	0.9	SW
29-Apr-2008	07:00	1.2	SW
29-Apr-2008	08:00	1.0	SW
29-Apr-2008	09:00	0.6	SSW
29-Apr-2008	10:00	1.0	SSW
29-Apr-2008	11:00	1.8	SW
29-Apr-2008	12:00	1.6	SSW
29-Apr-2008	13:00	1.5	SW
29-Apr-2008	14:00	1.5	S
29-Apr-2008	15:00	2.1	S
29-Apr-2008	16:00	2.1	SSW
29-Apr-2008	17:00	1.8	SW
29-Apr-2008	18:00	1.3	SW
29-Apr-2008	19:00	1.6	W
29-Apr-2008	20:00	2.5	WSW
29-Apr-2008	21:00	1.9	WSW
29-Apr-2008	22:00	2.1	WSW
29-Apr-2008	23:00	1.3	WSW
30-Apr-2008	00:00	1.6	WSW
30-Apr-2008	01:00	1.8	SSW
30-Apr-2008	02:00	1.8	SW
30-Apr-2008	03:00	1.9	SW
30-Apr-2008	04:00	2.2	SSW
30-Apr-2008	05:00	2.2	SW
30-Apr-2008	06:00	2.1	NE
30-Apr-2008	07:00	2.1	NE
30-Apr-2008	08:00	1.8	NE
30-Apr-2008	09:00	1.6	NE
30-Apr-2008	10:00	2.1	NE
30-Apr-2008	11:00	1.9	NE
30-Apr-2008	12:00	1.5	NE
30-Apr-2008	13:00	1.2	NE
30-Apr-2008	14:00	1.3	E
30-Apr-2008	15:00	1.8	E
30-Apr-2008	16:00	2.1	ENE
30-Apr-2008	17:00	2.1	NE
30-Apr-2008	18:00	2.2	NE
30-Apr-2008	19:00	2.2	W
30-Apr-2008	20:00	2.2	WNW
30-Apr-2008	21:00	2.7	WNW
30-Apr-2008	22:00	2.7	WNW
30-Apr-2008	23:00	2.5	WNW
1-May-2008	00:00	1.9	E
1-May-2008	01:00	1.6	W
1-May-2008	02:00	1.0	WNW
1-May-2008	03:00	1.3	W

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
1-May-2008	04:00	1.4	W
1-May-2008	05:00	1.4	W
1-May-2008	06:00	2.0	N
1-May-2008	07:00	1.7	N
1-May-2008	08:00	2.2	NNE
1-May-2008	09:00	2.9	NNE
1-May-2008	10:00	2.6	ESE
1-May-2008	11:00	2.9	SSE
1-May-2008	12:00	3.9	WSW
1-May-2008	13:00	3.6	WSW
1-May-2008	14:00	2.7	NW
1-May-2008	15:00	2.4	WSW
1-May-2008	16:00	2.0	N
1-May-2008	17:00	1.9	WSW
1-May-2008	18:00	2.3	SSW
1-May-2008	19:00	1.0	WSW
1-May-2008	20:00	1.1	WSW
1-May-2008	21:00	0.7	WSW
1-May-2008	22:00	0.5	SSW
1-May-2008	23:00	0.8	SSW
2-May-2008	00:00	0.5	S
2-May-2008	01:00	0.8	SSW
2-May-2008	02:00	1.1	W
2-May-2008	03:00	0.8	WNW
2-May-2008	04:00	0.4	WNW
2-May-2008	05:00	0.4	WSW
2-May-2008	06:00	0.4	WSW
2-May-2008	07:00	0.1	W
2-May-2008	08:00	0.7	W
2-May-2008	09:00	2.7	W
2-May-2008	10:00	4.3	WSW
2-May-2008	11:00	4.4	W
2-May-2008	12:00	3.9	WSW
2-May-2008	13:00	3.9	WSW
2-May-2008	14:00	2.9	WSW
2-May-2008	15:00	2.6	SW
2-May-2008	16:00	3.5	WSW
2-May-2008	17:00	3.4	WSW
2-May-2008	18:00	3.0	SW
2-May-2008	19:00	2.0	SSW
2-May-2008	20:00	2.5	SW
2-May-2008	21:00	2.5	SW
2-May-2008	22:00	2.0	WSW
2-May-2008	23:00	2.4	SW
3-May-2008	00:00	1.3	SW
3-May-2008	01:00	0.8	WSW
3-May-2008	02:00	1.0	WSW
3-May-2008	03:00	0.8	SW
3-May-2008	04:00	0.7	SW
3-May-2008	05:00	0.5	SW
3-May-2008	06:00	0.5	SW
3-May-2008	07:00	0.0	SW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
3-May-2008	08:00	0.3	SSW
3-May-2008	09:00	1.8	SW
3-May-2008	10:00	2.4	SW
3-May-2008	11:00	2.3	SW
3-May-2008	12:00	1.9	SW
3-May-2008	13:00	2.0	SW
3-May-2008	14:00	2.3	SW
3-May-2008	15:00	2.9	W
3-May-2008	16:00	3.0	W
3-May-2008	17:00	2.5	W
3-May-2008	18:00	2.3	W
3-May-2008	19:00	1.7	W
3-May-2008	20:00	1.4	W
3-May-2008	21:00	1.1	W
3-May-2008	22:00	1.3	W
3-May-2008	23:00	1.7	WSW
4-May-2008	00:00	1.1	W
4-May-2008	01:00	1.4	WNW
4-May-2008	02:00	1.4	W
4-May-2008	03:00	1.4	W
4-May-2008	04:00	1.0	WNW
4-May-2008	05:00	1.4	WNW
4-May-2008	06:00	0.8	W
4-May-2008	07:00	0.7	WNW
4-May-2008	08:00	1.6	W
4-May-2008	09:00	2.4	W
4-May-2008	10:00	4.5	WSW
4-May-2008	11:00	3.6	W
4-May-2008	12:00	2.9	WNW
4-May-2008	13:00	2.9	WNW
4-May-2008	14:00	2.6	WNW
4-May-2008	15:00	2.0	WNW
4-May-2008	16:00	2.4	WNW
4-May-2008	17:00	2.4	WNW
4-May-2008	18:00	2.9	W
4-May-2008	19:00	2.0	W
4-May-2008	20:00	1.3	WNW
4-May-2008	21:00	1.8	WNW
4-May-2008	22:00	2.7	WNW
4-May-2008	23:00	1.8	WSW
5-May-2008	00:00	3.4	W
5-May-2008	01:00	3.3	WNW
5-May-2008	02:00	2.2	WNW
5-May-2008	03:00	2.7	WSW
5-May-2008	04:00	2.4	WSW
5-May-2008	05:00	3.1	WNW
5-May-2008	06:00	2.4	SSW
5-May-2008	07:00	2.9	S
5-May-2008	08:00	3.0	S
5-May-2008	09:00	3.5	WSW
5-May-2008	10:00	3.3	WSW
5-May-2008	11:00	3.7	WNW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
5-May-2008	12:00	3.9	NW
5-May-2008	13:00	4.0	SSW
5-May-2008	14:00	3.9	S
5-May-2008	15:00	3.6	WSW
5-May-2008	16:00	3.4	WNW
5-May-2008	17:00	2.9	N
5-May-2008	18:00	3.9	SSW
5-May-2008	19:00	2.4	S
5-May-2008	20:00	2.7	SSW
5-May-2008	21:00	2.9	S
5-May-2008	22:00	2.7	SSW
5-May-2008	23:00	2.9	WNW
6-May-2008	00:00	1.7	N
6-May-2008	01:00	1.3	NE
6-May-2008	02:00	1.6	E
6-May-2008	03:00	1.4	ENE
6-May-2008	04:00	1.1	ENE
6-May-2008	05:00	0.4	ENE
6-May-2008	06:00	0.7	ENE
6-May-2008	07:00	0.4	NE
6-May-2008	08:00	0.4	ENE
6-May-2008	09:00	1.1	ENE
6-May-2008	10:00	1.0	WSW
6-May-2008	11:00	1.8	WSW
6-May-2008	12:00	1.0	W
6-May-2008	13:00	1.6	W
6-May-2008	14:00	1.5	WSW
6-May-2008	15:00	1.4	W
6-May-2008	16:00	1.2	WSW
6-May-2008	17:00	1.2	WSW
6-May-2008	18:00	0.5	SSW
6-May-2008	19:00	1.2	W
6-May-2008	20:00	1.1	WSW
6-May-2008	21:00	1.3	SW
6-May-2008	22:00	2.3	WSW
6-May-2008	23:00	1.9	SW
7-May-2008	00:00	2.9	SW
7-May-2008	01:00	1.7	S
7-May-2008	02:00	1.6	S
7-May-2008	03:00	2.3	NW
7-May-2008	04:00	2.3	N
7-May-2008	05:00	1.7	N
7-May-2008	06:00	1.3	NNE
7-May-2008	07:00	1.3	SSW
7-May-2008	08:00	1.4	SSW
7-May-2008	09:00	1.9	SW
7-May-2008	10:00	1.5	SW
7-May-2008	11:00	1.5	NNE
7-May-2008	12:00	2.6	SE
7-May-2008	13:00	2.7	SE
7-May-2008	14:00	1.4	SE
7-May-2008	15:00	1.4	ENE

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
7-May-2008	16:00	2.0	NE
7-May-2008	17:00	2.0	ENE
7-May-2008	18:00	1.8	ENE
7-May-2008	19:00	2.0	NE
7-May-2008	20:00	2.7	NE
7-May-2008	21:00	2.6	ENE
7-May-2008	22:00	2.6	NE
7-May-2008	23:00	2.7	ENE
8-May-2008	00:00	1.6	ENE
8-May-2008	01:00	1.6	ENE
8-May-2008	02:00	1.0	ENE
8-May-2008	03:00	1.2	ENE
8-May-2008	04:00	1.1	NE
8-May-2008	05:00	1.2	ENE
8-May-2008	06:00	1.4	ENE
8-May-2008	07:00	1.6	ENE
8-May-2008	08:00	1.1	ENE
8-May-2008	09:00	1.7	ENE
8-May-2008	10:00	2.0	ENE
8-May-2008	11:00	2.1	---
8-May-2008	12:00	2.4	ENE
8-May-2008	13:00	2.3	ENE
8-May-2008	14:00	2.6	NNE
8-May-2008	15:00	2.7	NNE
8-May-2008	16:00	2.9	NNW
8-May-2008	17:00	2.0	SSW
8-May-2008	18:00	1.7	WSW
8-May-2008	19:00	1.6	WSW
8-May-2008	20:00	1.4	WSW
8-May-2008	21:00	1.6	WSW
8-May-2008	22:00	1.2	SW
8-May-2008	23:00	0.9	SSW
9-May-2008	00:00	1.2	SSW
9-May-2008	01:00	1.0	SSW
9-May-2008	02:00	1.2	SSW
9-May-2008	03:00	1.2	S
9-May-2008	04:00	1.3	SW
9-May-2008	05:00	1.0	WSW
9-May-2008	06:00	1.2	W
9-May-2008	07:00	1.1	SW
9-May-2008	08:00	1.2	WNW
9-May-2008	09:00	1.6	WNW
9-May-2008	10:00	2.1	WNW
9-May-2008	11:00	2.0	WNW
9-May-2008	12:00	2.4	NE
9-May-2008	13:00	2.7	SW
9-May-2008	14:00	2.4	WSW
9-May-2008	15:00	2.3	WSW
9-May-2008	16:00	2.0	WSW
9-May-2008	17:00	2.4	SW
9-May-2008	18:00	2.0	E
9-May-2008	19:00	1.3	N

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
9-May-2008	20:00	1.4	N
9-May-2008	21:00	1.4	ENE
9-May-2008	22:00	1.0	WNW
9-May-2008	23:00	0.6	W
10-May-2008	00:00	0.7	WNW
10-May-2008	01:00	0.3	WNW
10-May-2008	02:00	0.4	WNW
10-May-2008	03:00	0.0	WNW
10-May-2008	04:00	0.0	WNW
10-May-2008	05:00	0.0	WSW
10-May-2008	06:00	0.0	WNW
10-May-2008	07:00	0.0	WNW
10-May-2008	08:00	0.1	WNW
10-May-2008	09:00	1.0	W
10-May-2008	10:00	1.4	WSW
10-May-2008	11:00	1.7	WSW
10-May-2008	12:00	1.8	W
10-May-2008	13:00	2.0	W
10-May-2008	14:00	1.7	W
10-May-2008	15:00	1.6	WNW
10-May-2008	16:00	1.6	WNW
10-May-2008	17:00	2.3	W
10-May-2008	18:00	2.2	WSW
10-May-2008	19:00	1.6	W
10-May-2008	20:00	1.2	W
10-May-2008	21:00	1.2	WSW
10-May-2008	22:00	0.9	W
10-May-2008	23:00	0.8	WNW
11-May-2008	00:00	1.1	WNW
11-May-2008	01:00	0.9	WNW
11-May-2008	02:00	0.9	WNW
11-May-2008	03:00	0.3	WNW
11-May-2008	04:00	0.3	NNE
11-May-2008	05:00	0.0	---
11-May-2008	06:00	0.1	WSW
11-May-2008	07:00	0.1	S
11-May-2008	08:00	0.1	W
11-May-2008	09:00	0.8	WNW
11-May-2008	10:00	1.0	WNW
11-May-2008	11:00	1.3	WSW
11-May-2008	12:00	1.2	WSW
11-May-2008	13:00	1.1	WSW
11-May-2008	14:00	1.0	WSW
11-May-2008	15:00	1.0	SW
11-May-2008	16:00	1.0	SW
11-May-2008	17:00	1.1	WNW
11-May-2008	18:00	1.4	W
11-May-2008	19:00	1.4	WNW
11-May-2008	20:00	1.3	WNW
11-May-2008	21:00	0.9	W
11-May-2008	22:00	0.8	WSW
11-May-2008	23:00	0.4	W

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
12-May-2008	00:00	0.7	W
12-May-2008	01:00	0.3	W
12-May-2008	02:00	0.0	---
12-May-2008	03:00	0.4	W
12-May-2008	04:00	0.7	WNW
12-May-2008	05:00	0.4	W
12-May-2008	06:00	0.3	W
12-May-2008	07:00	0.6	W
12-May-2008	08:00	0.9	W
12-May-2008	09:00	0.8	W
12-May-2008	10:00	1.4	WNW
12-May-2008	11:00	1.4	WNW
12-May-2008	12:00	1.6	W
12-May-2008	13:00	1.8	WNW
12-May-2008	14:00	1.3	W
12-May-2008	15:00	1.7	W
12-May-2008	16:00	1.5	W
12-May-2008	17:00	1.7	WNW
12-May-2008	18:00	1.8	WNW
12-May-2008	19:00	0.9	WSW
12-May-2008	20:00	0.7	WSW
12-May-2008	21:00	1.3	NNE
12-May-2008	22:00	1.3	NNE
12-May-2008	23:00	0.8	NW
13-May-2008	00:00	0.7	WNW
13-May-2008	01:00	0.9	W
13-May-2008	02:00	0.9	WNW
13-May-2008	03:00	1.0	WNW
13-May-2008	04:00	1.3	N
13-May-2008	05:00	1.4	NNW
13-May-2008	06:00	1.0	NNW
13-May-2008	07:00	1.9	NNW
13-May-2008	08:00	1.4	NNW
13-May-2008	09:00	2.7	NNW
13-May-2008	10:00	3.4	NNW
13-May-2008	11:00	3.5	SSW
13-May-2008	12:00	3.2	WNW
13-May-2008	13:00	2.9	N
13-May-2008	14:00	1.7	N
13-May-2008	15:00	2.7	NE
13-May-2008	16:00	2.4	NE
13-May-2008	17:00	1.8	WNW
13-May-2008	18:00	2.0	WNW
13-May-2008	19:00	1.7	W
13-May-2008	20:00	1.3	WSW
13-May-2008	21:00	0.7	S
13-May-2008	22:00	0.7	W
13-May-2008	23:00	0.9	WNW
14-May-2008	00:00	0.8	WNW
14-May-2008	01:00	0.4	WSW
14-May-2008	02:00	0.1	WSW
14-May-2008	03:00	0.7	WSW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
14-May-2008	04:00	1.0	WNW
14-May-2008	05:00	0.8	W
14-May-2008	06:00	1.0	W
14-May-2008	07:00	1.7	W
14-May-2008	08:00	1.4	N
14-May-2008	09:00	2.2	ENE
14-May-2008	10:00	2.2	N
14-May-2008	11:00	2.2	N
14-May-2008	12:00	2.3	SSW
14-May-2008	13:00	2.4	W
14-May-2008	14:00	1.6	ESE
14-May-2008	15:00	1.2	ESE
14-May-2008	16:00	2.0	S
14-May-2008	17:00	2.0	SSW
14-May-2008	18:00	1.5	E
14-May-2008	19:00	0.4	W
14-May-2008	20:00	0.7	W
14-May-2008	21:00	0.3	SSW
14-May-2008	22:00	0.7	SSW
14-May-2008	23:00	1.0	SSW
15-May-2008	00:00	1.1	SSW
15-May-2008	01:00	0.7	NNE
15-May-2008	02:00	0.7	NNE
15-May-2008	03:00	0.7	N
15-May-2008	04:00	0.4	ENE
15-May-2008	05:00	0.4	NE
15-May-2008	06:00	0.3	NNE
15-May-2008	07:00	0.7	NNE
15-May-2008	08:00	1.2	NNE
15-May-2008	09:00	1.4	NE
15-May-2008	10:00	1.9	NE
15-May-2008	11:00	2.4	NE
15-May-2008	12:00	2.3	NE
15-May-2008	13:00	1.9	NE
15-May-2008	14:00	1.9	NE
15-May-2008	15:00	1.2	NE
15-May-2008	16:00	1.3	NE
15-May-2008	17:00	1.4	NE
15-May-2008	18:00	1.4	NNE
15-May-2008	19:00	1.0	NE
15-May-2008	20:00	1.2	NNE
15-May-2008	21:00	0.8	NE
15-May-2008	22:00	0.9	NE
15-May-2008	23:00	1.0	ENE
16-May-2008	00:00	0.6	ENE
16-May-2008	01:00	0.4	ENE
16-May-2008	02:00	0.1	ENE
16-May-2008	03:00	0.0	---
16-May-2008	04:00	0.0	---
16-May-2008	05:00	0.0	---
16-May-2008	06:00	0.6	E
16-May-2008	07:00	1.0	N

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
16-May-2008	08:00	0.8	NE
16-May-2008	09:00	0.4	NNE
16-May-2008	10:00	1.1	NNE
16-May-2008	11:00	1.4	NNE
16-May-2008	12:00	2.2	NE
16-May-2008	13:00	1.6	E
16-May-2008	14:00	1.7	ENE
16-May-2008	15:00	2.2	ENE
16-May-2008	16:00	1.7	E
16-May-2008	17:00	1.4	E
16-May-2008	18:00	1.3	E
16-May-2008	19:00	1.3	E
16-May-2008	20:00	0.8	N
16-May-2008	21:00	0.7	NNE
16-May-2008	22:00	0.7	NE
16-May-2008	23:00	0.6	NE
17-May-2008	00:00	0.7	NE
17-May-2008	01:00	0.3	N
17-May-2008	02:00	0.1	ENE
17-May-2008	03:00	0.3	N
17-May-2008	04:00	0.0	---
17-May-2008	05:00	0.1	ENE
17-May-2008	06:00	0.0	---
17-May-2008	07:00	0.3	ENE
17-May-2008	08:00	0.7	NE
17-May-2008	09:00	0.9	ENE
17-May-2008	10:00	1.4	ENE
17-May-2008	11:00	2.2	ENE
17-May-2008	12:00	1.9	ENE
17-May-2008	13:00	2.1	NNE
17-May-2008	14:00	1.4	NNE
17-May-2008	15:00	1.4	NNE
17-May-2008	16:00	1.7	NNE
17-May-2008	17:00	1.6	SW
17-May-2008	18:00	1.1	SW
17-May-2008	19:00	1.0	W
17-May-2008	20:00	0.8	W
17-May-2008	21:00	0.6	WNW
17-May-2008	22:00	0.9	W
17-May-2008	23:00	0.6	WNW
18-May-2008	00:00	0.4	WNW
18-May-2008	01:00	0.4	W
18-May-2008	02:00	0.0	---
18-May-2008	03:00	0.0	---
18-May-2008	04:00	0.1	NW
18-May-2008	05:00	0.0	---
18-May-2008	06:00	0.3	N
18-May-2008	07:00	0.5	SW
18-May-2008	08:00	1.2	SW
18-May-2008	09:00	1.4	SW
18-May-2008	10:00	1.9	W
18-May-2008	11:00	2.0	WSW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
18-May-2008	12:00	1.4	WNW
18-May-2008	13:00	1.6	W
18-May-2008	14:00	1.4	W
18-May-2008	15:00	1.4	W
18-May-2008	16:00	1.7	WNW
18-May-2008	17:00	1.7	N
18-May-2008	18:00	1.0	N
18-May-2008	19:00	1.7	W
18-May-2008	20:00	0.5	W
18-May-2008	21:00	0.4	S
18-May-2008	22:00	0.6	SSE
18-May-2008	23:00	1.0	W
19-May-2008	00:00	0.5	WNW
19-May-2008	01:00	0.7	WNW
19-May-2008	02:00	0.4	NNE
19-May-2008	03:00	1.3	NNE
19-May-2008	04:00	1.4	NNE
19-May-2008	05:00	1.4	NNE
19-May-2008	06:00	0.8	NE
19-May-2008	07:00	0.7	NE
19-May-2008	08:00	0.7	NE
19-May-2008	09:00	1.0	NE
19-May-2008	10:00	0.9	NE
19-May-2008	11:00	1.0	NE
19-May-2008	12:00	1.1	NE
19-May-2008	13:00	2.0	NE
19-May-2008	14:00	1.9	SSW
19-May-2008	15:00	2.3	WSW
19-May-2008	16:00	2.0	SW
19-May-2008	17:00	1.6	WSW
19-May-2008	18:00	1.5	W
19-May-2008	19:00	1.6	WSW
19-May-2008	20:00	1.3	WNW
19-May-2008	21:00	1.4	W
19-May-2008	22:00	1.4	W
19-May-2008	23:00	1.3	W
20-May-2008	00:00	1.3	W
20-May-2008	01:00	2.0	W
20-May-2008	02:00	1.3	N
20-May-2008	03:00	1.6	WNW
20-May-2008	04:00	2.0	WSW
20-May-2008	05:00	2.4	W
20-May-2008	06:00	1.9	WSW
20-May-2008	07:00	0.8	WSW
20-May-2008	08:00	1.0	WSW
20-May-2008	09:00	1.4	W
20-May-2008	10:00	1.9	WNW
20-May-2008	11:00	2.3	W
20-May-2008	12:00	2.0	WNW
20-May-2008	13:00	2.2	WSW
20-May-2008	14:00	1.8	WSW
20-May-2008	15:00	1.9	S

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
20-May-2008	16:00	2.9	SSW
20-May-2008	17:00	2.0	SW
20-May-2008	18:00	1.4	SSW
20-May-2008	19:00	1.1	SW
20-May-2008	20:00	1.2	SW
20-May-2008	21:00	1.6	SSE
20-May-2008	22:00	1.2	SSE
20-May-2008	23:00	0.9	SSE
21-May-2008	00:00	0.6	SSE
21-May-2008	01:00	0.4	---
21-May-2008	02:00	0.3	SSE
21-May-2008	03:00	0.1	SSE
21-May-2008	04:00	0.3	SSE
21-May-2008	05:00	0.4	SSE
21-May-2008	06:00	0.4	SSE
21-May-2008	07:00	0.3	NNE
21-May-2008	08:00	0.3	NNE
21-May-2008	09:00	0.7	WNW
21-May-2008	10:00	0.7	WNW
21-May-2008	11:00	0.5	W
21-May-2008	12:00	1.0	N
21-May-2008	13:00	1.7	NNE
21-May-2008	14:00	1.4	NNE
21-May-2008	15:00	1.7	NE
21-May-2008	16:00	1.4	S
21-May-2008	17:00	1.3	SSW
21-May-2008	18:00	1.7	WSW
21-May-2008	19:00	1.6	W
21-May-2008	20:00	1.6	SSW
21-May-2008	21:00	1.6	S
21-May-2008	22:00	1.8	S
21-May-2008	23:00	0.1	S
22-May-2008	00:00	0.3	SW
22-May-2008	01:00	0.1	SW
22-May-2008	02:00	0.0	---
22-May-2008	03:00	0.0	---
22-May-2008	04:00	0.0	---
22-May-2008	05:00	0.0	---
22-May-2008	06:00	0.0	---
22-May-2008	07:00	0.0	---
22-May-2008	08:00	0.3	SW
22-May-2008	09:00	0.4	W
22-May-2008	10:00	0.4	W
22-May-2008	11:00	0.7	WNW
22-May-2008	12:00	0.5	W
22-May-2008	13:00	0.5	W
22-May-2008	14:00	0.6	W
22-May-2008	15:00	1.3	WNW
22-May-2008	16:00	1.3	W
22-May-2008	17:00	1.4	W
22-May-2008	18:00	1.0	W
22-May-2008	19:00	0.7	WNW

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
22-May-2008	20:00	1.0	SSW
22-May-2008	21:00	0.9	SSW
22-May-2008	22:00	0.9	SSW
22-May-2008	23:00	0.4	SW
23-May-2008	00:00	0.9	SW
23-May-2008	01:00	0.6	SW
23-May-2008	02:00	0.8	WSW
23-May-2008	03:00	0.3	W
23-May-2008	04:00	0.7	WSW
23-May-2008	05:00	0.9	SSW
23-May-2008	06:00	0.7	WSW
23-May-2008	07:00	0.7	WSW
23-May-2008	08:00	0.3	WSW
23-May-2008	09:00	0.8	WSW
23-May-2008	10:00	1.3	W
23-May-2008	11:00	1.9	W
23-May-2008	12:00	1.9	W
23-May-2008	13:00	1.4	WNW
23-May-2008	14:00	1.3	WNW
23-May-2008	15:00	1.3	N
23-May-2008	16:00	1.7	NNE
23-May-2008	17:00	1.0	NNE
23-May-2008	18:00	0.5	NNE
23-May-2008	19:00	0.3	NNE
23-May-2008	20:00	0.3	W
23-May-2008	21:00	0.3	W
23-May-2008	22:00	0.3	W
23-May-2008	23:00	0.7	W
24-May-2008	00:00	0.8	W
24-May-2008	01:00	1.0	W
24-May-2008	02:00	1.1	W
24-May-2008	03:00	1.3	W
24-May-2008	04:00	1.3	W
24-May-2008	05:00	1.6	W
24-May-2008	06:00	1.5	W
24-May-2008	07:00	1.4	WNW
24-May-2008	08:00	1.4	WNW
24-May-2008	09:00	1.0	WNW
24-May-2008	10:00	1.2	N
24-May-2008	11:00	0.7	NE
24-May-2008	12:00	1.2	NE
24-May-2008	13:00	0.8	W
24-May-2008	14:00	1.1	ENE
24-May-2008	15:00	1.2	ENE
24-May-2008	16:00	1.3	SW
24-May-2008	17:00	1.6	W
24-May-2008	18:00	0.8	W
24-May-2008	19:00	1.0	SSE
24-May-2008	20:00	0.7	SSE
24-May-2008	21:00	1.3	SSE
24-May-2008	22:00	2.0	SSE
24-May-2008	23:00	1.7	SSE

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
25-May-2008	00:00	1.7	SSE
25-May-2008	01:00	1.1	SSE
25-May-2008	02:00	1.1	SSE
25-May-2008	03:00	0.5	W
25-May-2008	04:00	0.7	WNW
25-May-2008	05:00	0.5	W
25-May-2008	06:00	1.0	W
25-May-2008	07:00	0.9	WNW
25-May-2008	08:00	1.1	WNW
25-May-2008	09:00	1.3	WNW
25-May-2008	10:00	1.7	W
25-May-2008	11:00	2.3	WSW
25-May-2008	12:00	2.3	WSW
25-May-2008	13:00	2.3	WSW
25-May-2008	14:00	2.1	WSW
25-May-2008	15:00	1.9	WNW
25-May-2008	16:00	1.3	WSW
25-May-2008	17:00	1.6	WNW
25-May-2008	18:00	1.6	SW
25-May-2008	19:00	0.7	WNW
25-May-2008	20:00	0.7	WNW
25-May-2008	21:00	0.6	WNW
25-May-2008	22:00	0.7	WNW
25-May-2008	23:00	0.9	WNW
26-May-2008	00:00	0.4	WNW
26-May-2008	01:00	0.4	WNW
26-May-2008	02:00	0.1	WNW
26-May-2008	03:00	0.1	WNW
26-May-2008	04:00	0.3	WNW
26-May-2008	05:00	0.4	WNW
26-May-2008	06:00	1.3	W
26-May-2008	07:00	1.6	WNW
26-May-2008	08:00	1.7	WNW
26-May-2008	09:00	1.4	WNW
26-May-2008	10:00	1.5	W
26-May-2008	11:00	2.0	W
26-May-2008	12:00	1.8	WSW
26-May-2008	13:00	1.8	W
26-May-2008	14:00	2.2	WSW
26-May-2008	15:00	2.7	WSW
26-May-2008	16:00	2.7	WNW
26-May-2008	17:00	2.3	WNW
26-May-2008	18:00	2.2	W
26-May-2008	19:00	1.6	WNW
26-May-2008	20:00	1.1	W
26-May-2008	21:00	1.3	WNW
26-May-2008	22:00	1.2	WNW
26-May-2008	23:00	1.0	W
27-May-2008	00:00	1.0	WSW
27-May-2008	01:00	0.7	SW
27-May-2008	02:00	0.4	SW
27-May-2008	03:00	0.3	ESE

Appendix G - Wind Data (Western Portal)

Date	Time	Wind Speed m/s	Direction
27-May-2008	04:00	0.3	W
27-May-2008	05:00	0.6	SW
27-May-2008	06:00	0.7	W
27-May-2008	07:00	0.7	W
27-May-2008	08:00	1.3	W
27-May-2008	09:00	1.4	W
27-May-2008	10:00	1.3	N
27-May-2008	11:00	1.1	N
27-May-2008	12:00	1.3	NE
27-May-2008	13:00	1.0	ENE
27-May-2008	14:00	1.0	ENE
27-May-2008	15:00	1.7	ESE
27-May-2008	16:00	2.2	ESE
27-May-2008	17:00	1.7	SE
27-May-2008	18:00	1.6	SE
27-May-2008	19:00	1.2	SSE
27-May-2008	20:00	1.4	SSE
27-May-2008	21:00	1.6	SE
27-May-2008	22:00	1.6	WSW
27-May-2008	23:00	1.7	W
28-May-2008	00:00	1.9	WNW
28-May-2008	01:00	1.3	WSW
28-May-2008	02:00	0.9	SSE
28-May-2008	03:00	1.0	SE
28-May-2008	04:00	0.9	S
28-May-2008	05:00	0.7	ESE
28-May-2008	06:00	1.0	ESE
28-May-2008	07:00	0.9	SE
28-May-2008	08:00	1.1	SSE
28-May-2008	09:00	1.4	S
28-May-2008	10:00	2.0	SSW
28-May-2008	11:00	1.9	SW
28-May-2008	12:00	1.6	W
28-May-2008	13:00	1.4	NE
28-May-2008	14:00	1.4	WNW
28-May-2008	15:00	1.3	SW
28-May-2008	16:00	1.3	NE
28-May-2008	17:00	1.3	WNW
28-May-2008	18:00	1.6	ENE
28-May-2008	19:00	1.4	SE
28-May-2008	20:00	1.6	SE
28-May-2008	21:00	1.0	N
28-May-2008	22:00	0.7	ENE
28-May-2008	23:00	0.9	ENE


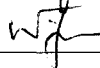
APPENDIX H
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80430
Date	30 April 2008 (Wednesday)
Time	14:00 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80430-002	<ul style="list-style-type: none"> Exposed slope was observed at Western Portal. The Contractor was reminded to cover it with tarpaulin when it is not in works and raining especially. 	B11
	B. Air Quality	
80430-001	<ul style="list-style-type: none"> Stockpile was observed at Eastern Portal (next to existing stream). The Contractor was reminded to cover it with tarpaulin when it is not in works. 	D6
	C. Noise	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	D. Waste / Chemical Management	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	E. Ecology	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	F. Reminders	
80430-R03	<ul style="list-style-type: none"> Spray mosquito oil on the standing water regularly to prevent mosquito breed. 	
80430-R04	<ul style="list-style-type: none"> Ensure the C&D waste that has been sorted before disposing to the public fill. 	

	Name	Signature	Date
Recorded by	Ivy Tam		30 April 2008
Checked by	Dr. Priscilla Choy		30 April 2008


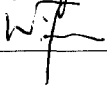
Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80507
Date	7 May 2008 (Wednesday)
Time	10:00 – 12:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
A. Water Quality		
80507-O01	<ul style="list-style-type: none"> Standing water was observed at the tank at Eastern Portal. The Contractor was reminded to dry it out to prevent mosquito breed. 	B15
B. Air Quality		
80507-O03	<ul style="list-style-type: none"> Stockpile was observed next to RE site office at Western Portal. The Contractor was reminded to cover it with tarpaulin. 	D6
C. Noise		
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
D. Waste / Chemical Management		
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
E. Ecology		
80507-O02	<ul style="list-style-type: none"> Worn sand bag was observed at the access road at Eastern Portal. The Contractor was reminded to replace it to prevent any silt from getting to the existing stream. 	G1
F. Reminders		
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
G. Others		
	<ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:80430), all environmental deficiencies were improved/rectified by contractor during the site inspection. 	



	Name	Signature	Date
Recorded by	Ivy Tam		7 May 2008
Checked by	Dr. Priscilla Choy		7 May 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80514
Date	14 May 2008 (Wednesday)
Time	15:30 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80514-001	<ul style="list-style-type: none"> Standing water was observed at both Eastern and Western Portal. The Contractor was reminded to dry it out to prevent mosquito breed. 	B15
	B. Air Quality	
80514-002	<ul style="list-style-type: none"> Stockpile more than 20m³ was observed at Western Portal. The Contractor was reminded to cover it with tarpaulin. 	D6
	C. Noise	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	D. Waste / Chemical Management	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	E. Ecology	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	F. Reminders	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	G. Others	
	<ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:80507), all environmental deficiencies were improved/rectified by contractor during the site inspection. 	

	Name	Signature	Date
Recorded by	Ivy Tam		14 May 2008
Checked by	Dr. Priscilla Choy		14 May 2008



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

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80521
Date	21 May 2008 (Wednesday)
Time	15:30 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80521-001	<i>Eastern Portal</i> <ul style="list-style-type: none"> Standing water was observed in the drip tray and at the site boundary. The Contractor was reminded to dry it out to prevent mosquito breed. 	B15
80521-003	<i>Western Portal</i> <ul style="list-style-type: none"> Standing water was observed on the haul road after rainstorm. The Contractor was reminded to pave it to prevent accumulate of stagnant water. 	
	B. Air Quality	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	C. Noise	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	D. Waste / Chemical Management	
80521-002	<ul style="list-style-type: none"> Discarded leaves were observed at the site boundary near the U-Channel. The Contractor was reminded to clear them to prevent from blocking the U-Channel. 	F9
	E. Ecology	
	<ul style="list-style-type: none"> No environmental deficiency was identified during site inspection. 	
	F. Reminders	
	Water Quality & Air Quality	
80521-R04	<ul style="list-style-type: none"> Ensure the open stockpile more than 20m³ was covered with tarpaulin after finishing the works. 	B12 & D6
	G. Others	
	<ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.:80514), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80514-O02). Follow-up action is needed for the outstanding items. 	


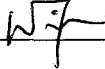
	Name	Signature	Date
Recorded by	Ivy Tam		21 May 2008
Checked by	Dr. Priscilla Choy		21 May 2008

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	80529
Date	29 May 2008 (Wednesday)
Time	14:00 – 17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
80529-001	• Standing water was still observed at the unpaved road at Western Portal. The Contractor was reminded to pave it after rainstorm as soon as possible.	B15
80529-002	• C&D waste and sediment were observed at the drainage channel at Western Portal. The Contractor was reminded to clear them and well maintain the drainage system.	B1
	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	
80529-002	• C&D waste and sediment were observed at the drainage channel at Western Portal. The Contractor was reminded to clear them and well maintain the drainage system.	F5ii.
	E. Ecology	
80529-003	• 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.	G1
	F. Reminders	
	Water Quality & Air Quality	
80529-R04	• Ensure the open stockpile more than 20 m ³ was covered with tarpaulin when it is not in works.	B12 & D6
	G. Others	
	• Follow-up on previous audit section (Ref. No.:80521), all environmental deficiencies were improved/rectified by contractor during the site inspection except items (80521-003 and 80521-R04). Follow-up action is needed for the outstanding items.	

	Name	Signature	Date
Recorded by	Ivy Tam		29 May 2008
Checked by	Dr. Priscilla Choy		29 May 2008

**APPENDIX I
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

Appendix I - Summary of Environmental Mitigation Implementation Schedule

Types of Impacts	Mitigation Measures	Status
Construction Dust	<i>Dust Mitigation Measures</i>	
	<ul style="list-style-type: none"> 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. 	^
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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. 	^
	<ul style="list-style-type: none"> A watering programme of once every 2 hours in normal weather conditions, and hourly in dry/windy conditions. 	^
	<ul style="list-style-type: none"> 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. 	*
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> The heights from excavated spoils are dropped should be minimise to reduce the fugitive dust arising from unloading/loading. 	^
	<ul style="list-style-type: none"> 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. 	^
<ul style="list-style-type: none"> 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. 	^	
<ul style="list-style-type: none"> 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. 	^	
<ul style="list-style-type: none"> Chemical wetting agents shall only be used on completed cuts and fills to reduce wind erosion. 	N/A	

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

Types of Impacts	Mitigation Measures	Status
	<ul style="list-style-type: none"> • No vehicle exhausts shall be directed towards the ground or downwards to minimize dust nuisance. • Ventilation system, equipped with proprietary filters, should be provided to ensure the safe working environment inside the tunnel. Particular attention should be paid to the location and direction of the ventilation exhausts. The exhausts should not be allowed to face any sensitive receivers directly. Consideration should also be given to the location of windows, doors and direction of prevailing winds in relation to the nearby sensitive receivers. • In the event of any spoil or debris from construction works being deposited on adjacent land, or stream, or any silt being washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Engineers. <p>In addition, based on the <i>Air Pollution Control (Construction Dust) Regulation</i>, any works involved regulatory and notifiable works, such as stockpiling, loading and unloading of dusty materials, shall take precautions to suppress dust nuisance.</p> <ul style="list-style-type: none"> • 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 20m³) 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 <i>Air Pollution Control (Construction Dust) Regulation</i>, where appropriate, should be adopted. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>*</p> <p>^</p>

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Construction Noise	<p><u>Air borne noise</u></p> <p>In general, potential construction noise impact can be minimized or avoided by imposing a combination of the following mitigation measures:</p> <ul style="list-style-type: none"> 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 or 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 	<p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>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.</p> <ul style="list-style-type: none"> • 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/m². • 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). <p>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.</p> <p><u>Level 2 Use of Barriers</u></p> <p>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.</p> <p>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).</p> <p>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/m². 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.</p> <p>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/m²) located close to the operating PME.</p> <p>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.</p>	<p>^</p> <p>^</p> <p>^</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>^</p> <p>N/A</p>

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	<p>No construction activity is recommended during the examination period.</p> <p><u>Ground borne noise</u></p> <p>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.</p> <p>Public relationship strategy with 24-hour hotline system.</p>	<p>^</p> <p>N/A</p>

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Water Quality	<p><u>Precautionary measures for construction work near natural streams</u></p>	
	<p>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:</p>	
	<ul style="list-style-type: none"> • 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. 	^
	<ul style="list-style-type: none"> • 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. 	^
	<ul style="list-style-type: none"> • 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. 	^
	<ul style="list-style-type: none"> • 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. 	^ *
<p><u>Construction of temporary berthing point at the Western Portal</u></p>		
<p>A refuse collection vessel shall be provided to collect refuse or materials lost into the sea.</p>	N/A	
<p>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.</p>	N/A	

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	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).	N/A
	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, putrescibles, 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.	N/A
	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 (armor 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.	N/A
	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.	N/A
	<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 <i>Water Pollution Control Ordinance</i> (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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	<p>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.</p> <p>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 fabric) or hydroseedings as far as practicable especially during the wet season.</p> <p>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.</p> <p>Vehicle washing areas should be drained 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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>^</p> <p>^</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>C. On-Site Effluent Generation</p> <p>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.</p> <p>D. Protection of Existing Flora and Fauna</p> <p>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.</p> <p>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.</p> <p><u>Maintaining Baseflow in Downstream Watercourses</u></p> <p>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.</p> <ul style="list-style-type: none"> • 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. 	<p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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Waste/Chemical	<p><u>General</u></p> <p>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.</p>	^
	<p>All waste materials shall be segregated into categories covering:</p> <ul style="list-style-type: none"> • 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 	* * * *
	<p>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.</p>	*
	<p>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 be responsible for auditing this system.</p>	^
	<p>IEC should also be 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.</p>	^
	<p>Regular cleaning and maintenance of the waste storage area should be conducted throughout the construction stage.</p>	^
	<p><u>Excavated spoil</u></p> <p>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:</p>	^

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Terrestrial Ecology	<p>During the detailed design stage, the following issues should also be considered as possible to further minimise the impacts:</p> <ul style="list-style-type: none"> • 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 <i>Artocarpus hypargyreus</i> recorded within the temporary works area of HKU1, if to be encroached, would also be transplanted. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
	<p>Standard site practices including the following, should be enforced to minimise the disturbance to the surroundings:</p> <ul style="list-style-type: none"> • 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. 	<p>^</p> <p>^</p> <p>^</p>
	<p>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.</p>	<p>^</p>
	<p>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.</p>	<p>^</p>
	<p>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.</p>	<p>^</p>

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	<p>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.</p> <p>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.</p>	<p>^</p> <p>^</p>
Marine Ecology	<p>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.</p> <p>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.</p> <p>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.</p>	<p>^</p> <p>N/A</p> <p>N/A</p>

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

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Types of Impacts	Mitigation Measures	Status
Cultural Heritage	<p>The Cultural Heritage Impact Assessment has identified the following resources which will require mitigation measures during the construction stage;</p>	
	<p><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.</p>	^
	<p>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.</p>	^
	<p><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.</p> <p>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.</p>	^

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 J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	SUPERVISING OFFICER'S REPRESENTATIVE	CONTRACTOR
ACTION LEVEL				
1.Exceedance for one sample	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2.Check Contractor's working methods 	<ol style="list-style-type: none"> 1.Notify Contractor 	<ol style="list-style-type: none"> 1.Rectify any unacceptable practice 2.Amend working methods if appropriate
2.Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial actions properly implemented 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial actions properly implemented 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

**APPENDIX K
COMPLAINT LOG**

APPENDIX K – COMPLAINT LOG

Reporting Period: 29th April to 31st May 2008

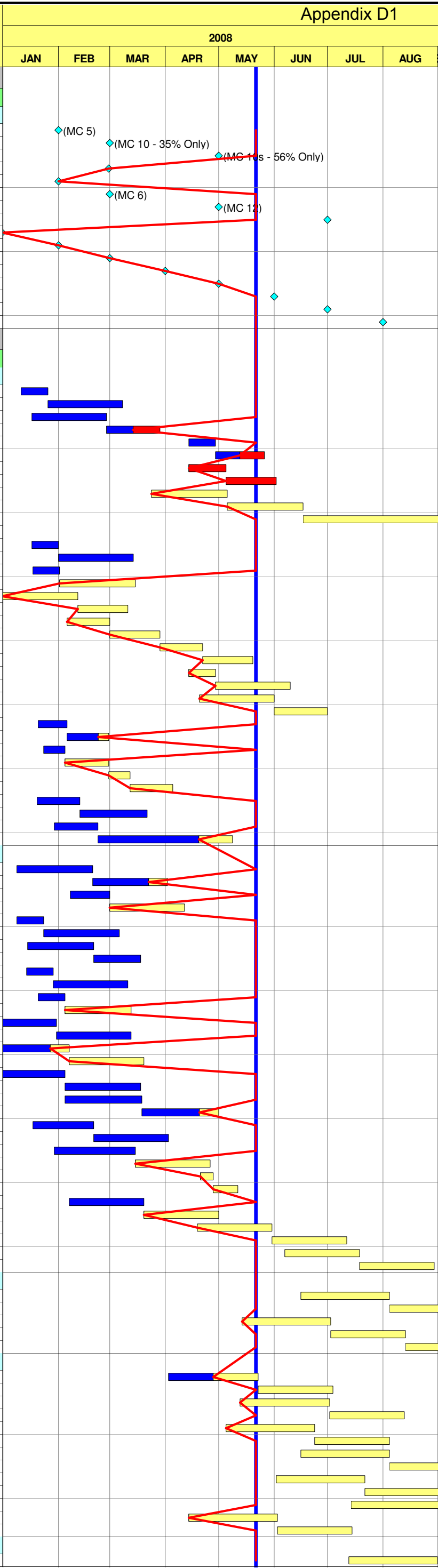
Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
Com-2008-05-003	Construction site at Eastern Portal	22 May 2008	The complaint was lodged by Ms. Ng on 22 May 2008 regarding noise nuisance generated from the construction activities at the construction site of Eastern Portal	<p>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.</p> <p>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.</p> <p>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.</p>	Closed
Com-2008-05-004	Construction site at Western Portal (Marine Works)	31 May 2008	The complaint was lodged by one of the local resident on 31 May 2008 regarding the noise nuisance generated from the marine works at Western Portal.	According to the Contractor, only two derrick barges and one tug boat were operated for the seabed formation works around 18:00 hrs on 31 May 2008 at the Western Portal. No other construction activities were conducted.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
				Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in May and (3) no non-compliance or observation on noise was recorded.	

APPENDIX L
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 22-May-08	% Comp
CC01 - PRELIMINARIES & GENERAL REQUIREMENTS							
Milestone							
General							
M1-1020	1.02-Provide All Required Survey Equip't	0		29/JAN/08A	1,427		100
M1-1030	1.03-Comp SO's Accom's Equip't Furnishings(35%)	0		29/MAR/08A	1,398		100
M1-1032	1.03A-Comp SO's Accom's Equip't Furnishings(56%)	0		30/APR/08A			100
M1-1033	1.03B-Comp SO's Accom's Equip't Furnishings	0		21/MAY/08	1,092	1,031	0
M1-1040	1.04-Complete the Setting Up of TDMS	0		21/MAY/08*	1,427	1,316	0
M1-1050	1.05-Complete of All Obligat's From 31to90d	0		07/MAR/08A	1,398		100
M1-1060	1.06-Complete of All Obligat's From 91to150d	0		30/APR/08A	1,337		100
M1-1070	1.07-Complete of All Obligat's From 151to210d	0		30/JUN/08*	1,276	1,276	0
M1-1300	1.30-Acceptance of Monthly Report on TDMS(1M)	0		21/MAY/08*	1,459	1,316	0
M1-1310	1.31-Acceptance of Monthly Report on TDMS(2M)	0		21/MAY/08*	1,427	1,316	0
M1-1320	1.32-Acceptance of Monthly Report on TDMS(3M)	0		21/MAY/08*	1,398	1,316	0
M1-1330	1.33-Acceptance of Monthly Report on TDMS(4M)	0		21/MAY/08*	1,367	1,316	0
M1-1340	1.34-Acceptance of Monthly Report on TDMS(5M)	0		21/MAY/08*	1,337	1,316	0
M1-1350	1.35-Acceptance of Monthly Report on TDMS(6M)	0		31/MAY/08*	1,306	1,306	0
M1-1360	1.36-Acceptance of Monthly Report on TDMS(7M)	0		30/JUN/08*	1,276	1,276	0
M1-1370	1.37-Acceptance of Monthly Report on TDMS(8M)	0		31/JUL/08*	1,245	1,245	0

CC02 - DESIGN & DESIGN CHECKING OF THE WORKS							
Design Stage							
Section 1 (Eastern Portal)							
D00220	P&S EP Temp Excav&SG&Maint Chamber Tunl Sup AIP	15	23/JAN/08A	06/FEB/08A	0		100
D00225	APP EP Temp Excav&SG&Maint Chamber Tunl Sup AIP	42	07/FEB/08A	23/APR/08A	21		100
D00230	P&S EP Temp Excav&SG&Maint Chamber Tunl Sup DDA	42	20/MAR/08A	10/MAY/08A	0		100
D00235	APP EP Temp Excav&SG&Maint Chamber Tunl Sup DDA	30	11/MAY/08A	28/MAY/08	0	0	50
D00236	P&S EP Temp Portal Slope for Maint Chamber AIP	15	11/APR/08A	16/MAY/08A	12		100
D00237	APP EP Temp Portal Slope for Maint Chamber AIP	28	17/MAY/08A	13/JUN/08	18	-1	50
D00238	P&S EP Temp Portal Slope for Maint Chamber DDA	21	12/APR/08A	28/MAY/08	12	-13	0
D00239	APP EP Temp Portal Slope for Maint Chamber DDA	28	29/MAY/08	25/JUN/08	12	-13	0
D00240	P&S East P Temp Drainage Divrsn Main Stream AIP	13	22/MAY/08*	03/JUN/08	666	702	0
D00245	APP East P Temp Drainage Divrsn Main Stream AIP	42	04/JUN/08	15/JUL/08	666	702	0
D00250	P&S East P Temp Drainage Divrsn Main Stream DDA	19	16/JUL/08	03/AUG/08	666	702	0
D00255	APP East P Temp Drainage Divrsn Main Stream DDA	42	04/AUG/08	14/SEP/08	666	702	0
D00260	P&S Cofferdam for Intake Shaft AIP	15	17/JAN/08A	06/FEB/08A	150		100
D00265	APP Cofferdam for Intake Shaft AIP	42	07/FEB/08A	12/APR/08A	151		100
D00270	P&S Cofferdam for Intake Shaft DDA	15	18/JAN/08A	21/MAY/08A	150		100
D00275	APP Cofferdam for Intake Shaft DDA	42	22/MAY/08	02/JUL/08	150	79	0
D00280	P&S Temp&Perm Supt EP Non-TBM Tunl to ch200 AIP	21	19/MAY/08A	08/JUN/08	176	57	0
D00282	APP Temp&Perm Supt EP Non-TBM Tunl to ch200 AIP	28	09/JUN/08	06/JUL/08	194	75	0
D00283	P&S Temp Supt EP Non-TBM Tunnel to Ch200 - DDA	24	03/JUN/08	26/JUN/08	176	57	0
D00284	APP Temp Supt EP Non-TBM Tunnel to Ch200 - DDA	28	27/JUN/08	24/JUL/08	176	57	0
D00286	P&S Perm Supt EP Non-TBM Tunnel to Ch200 - DDA	24	25/JUL/08	17/AUG/08	176	57	0
D00287	APP Perm Supt EP Non-TBM Tunnel to Ch200 - DDA	28	18/AUG/08	14/SEP/08	176	57	0
D00291	P&S EP Intake Tunnel&Intake Chamber Temp Sup AIP	15	01/APR/08A	28/MAY/08	7	11	0
D00292	APP EP Intake Tunnel&Intake Chamber Temp Sup AIP	42	29/MAY/08	09/JUL/08	28	32	0
D00293	P&S EP Intake Tunnel&Intake Chamber Temp Sup DDA	42	22/MAY/08	02/JUL/08	7	9	0
D00294	APP EP Intake Tunnel&Intake Chamber Temp Sup DDA	30	03/JUL/08	01/AUG/08	7	9	0
D00316	P&S Boulder Assess Rep(EP)-inside Bound Stage 1	16	01/FEB/08A	05/FEB/08A	0		100
D00317	APP Boulder Assess Rep(EP)-inside Bound Stage 1	23	06/FEB/08A	28/MAY/08	0	18	75
D00318	P&S Boulder Assess Rep(EP)-outside Bound Stage 2	12	28/MAR/08A	08/APR/08A	0		100
D00319	APP Boulder Assess Rep(EP)-outside Bound Stage 2	24	09/APR/08A	01/JUN/08	0	25	0
D00321	P&S Boulder Assess Rep(EP)-outside Bound Stage 3	12	02/JUN/08	13/JUN/08	74	25	0
D00322	APP Boulder Assess Rep(EP)-outside Bound Stage 3	24	14/JUN/08	07/JUL/08	74	25	0
D02331	P&S East P Temp Drainage Divn Side Stream-AIP	24	02/JAN/08A	12/FEB/08A	127		100
D02332	APP East P Temp Drainage Divn Side Stream-AIP	38	13/FEB/08A	03/APR/08A	175		100
D02333	P&S East P Temp Drainage Divn Side Stream-DDA	24	27/FEB/08A	27/MAR/08A	127		100
D02334	APP East P Temp Drainage Divn Side Stream-DDA	76	28/MAR/08A	28/MAY/08	127	149	75
Section 1 (Western Portal)							
D00300	P&S West Portal Temp Slope AIP	42	09/JAN/08A	21/FEB/08A	0		100
D00305	APP West Portal Temp Slope AIP	42	22/FEB/08A	28/MAY/08	10	46	75
D00310	P&S West Portal Temp Slope DDA	22	15/JAN/08A	09/APR/08A	0		100
D00315	APP West Portal Temp Slope DDA	42	10/APR/08A	31/MAY/08	0	43	0
D00320	P&S West Portal Marine Works AIP	15	09/JAN/08A	01/FEB/08A	0		100
D00325	APP West Portal Marine Works AIP	42	02/FEB/08A	22/APR/08A	12		100
D00330	P&S West Portal Marine Works DDA	37	15/JAN/08A	07/MAR/08A	0		100
D00335	APP West Portal Marine Works DDA	26	08/MAR/08A	16/MAY/08A	0		100
D00340	P&S West Portal Temp Drainage Diversion AIP	15	14/JAN/08A	01/FEB/08A	0		100
D00345	APP West Portal Temp Drainage Diversion AIP	42	02/FEB/08A	11/APR/08A	2		100
D00350	P&S West Portal Temp Drainage Diversion DDA	15	21/JAN/08A	27/FEB/08A	0		100
D00355	APP West Portal Temp Drainage Diversion DDA	37	28/FEB/08A	28/MAY/08	0	19	0
D00360	P&S West Portal ELS for Soft Ground Tunnel - AIP	43	19/DEC/07A	06/FEB/08A	74		100
D00365	APP West Portal ELS for Soft Ground Tunnel - AIP	42	07/FEB/08A	11/APR/08A	81		100
D00370	P&S West Portal ELS for Soft Ground Tunnel DDA	43	04/MAR/08A	28/MAY/08	74	14	75
D00375	APP West Portal ELS for Soft Ground Tunnel DDA	42	29/MAY/08	09/JUL/08	74	14	0
D00380	P&S Temp ELS West P Shalw Struc(Transl Tun) AIP	43	24/DEC/07A	30/JAN/08A	75		100
D00385	APP Temp ELS West P Shalw Struc(Transl Tun) AIP	42	31/JAN/08A	29/APR/08A	76		100
D00390	P&S Temp ELS West P Shalw Struc(Transl Tun) DDA	43	03/MAR/08A	27/MAR/08A	75		100
D00395	APP Temp ELS West P Shalw Struc(Transl Tun) DDA	43	28/MAR/08A	28/MAY/08	75	98	75
D00400	P&S Temp ELS West P Deep Structure (Basin) AIP	34	18/FEB/08A	21/FEB/08A	37		100
D00405	APP Temp ELS West P Deep Structure (Basin) AIP	42	22/FEB/08A	29/APR/08A	60		100
D00410	P&S Temp ELS WP Deep Struct (Basin)Double SP DDA	45	14/MAR/08A	23/APR/08A	37		100
D00412	APP Temp ELS WP Deep Struct (Basin)Double SP DDA	42	24/APR/08A	01/JUN/08	37	52	0
D00413	P&S Temp ELS WP Deep Struct (Basin)Single SP DDA	7	23/APR/08A	28/MAY/08	64	84	0
D00414	APP Temp ELS WP Deep Struct (Basin)Single SP DDA	14	29/MAY/08	11/JUN/08	64	84	0
D00416	P&S Boulder Assess Report(Western Portal)	42	07/MAR/08A	18/MAR/08A	63		100
D00417	APP Boulder Assess Report(Western Portal)	42	19/MAR/08A	29/MAY/08	63	97	0
D00421	P&S Temp Suppt Western Portal NON-TBM Tunnel-AIP	15	22/MAY/08*	05/JUN/08	18	70	0
D00422	APP Temp Suppt Western Portal NON-TBM Tunnel-AIP	42	06/JUN/08	17/JUL/08	67	119	0
D0423	P&S Temp Suppt Western Portal NON-TBM Tunnel-DDA	42	13/JUN/08	24/JUL/08	18	70	0
D0424	APP Temp Suppt Western Portal NON-TBM Tunnel-DDA	42	25/JUL/08	04/SEP/08	18	70	0
Section 1 (Portion W0) - Dropshaft							
D00640	P&S Dropshaft & SC at W0 Temp Rock Supt AIP	50	16/JUN/08*	04/AUG/08	3	3	0
D00645	APP Dropshaft & SC at W0 Temp Rock Supt AIP	42	05/AUG/08	15/SEP/08	3	3	0
D00660	P&S Dropshaft & SC at W0 Permanent Lining AIP	50	22/MAY/08*	10/JUL/08	45	37	0
D00665	APP Dropshaft & SC at W0 Permanent Lining AIP	42	11/JUL/08	21/AUG/08	45	37	0
D00670	P&S Dropshaft & SC at W0 Permanent Lining DDA	50	22/AUG/08	10/OCT/08	45	37	0
Section 1 (Portion W0)							
D01140	P&S W0-Permanent Works Intake AIP	50	09/APR/08A	28/MAY/08	76	70	50
D01145	APP W0-Permanent Works Intake AIP	42	29/MAY/08	09/JUL/08	116	110	0
D01150	P&S W0-Permanent Works Intake DDA	50	22/MAY/08	10/JUL/08	76	67	0
D01155	APP W0-Permanent Works Intake DDA	42	11/JUL/08	21/AUG/08	76	67	0
D01156	P&S W0-Temp Drainage Diversion Works AIP	50	22/MAY/08*	10/JUL/08	76	59	0
D01157	APP W0-Temp Drainage Diversion Works AIP	42	11/JUL/08	21/AUG/08	76	59	0
D01158	P&S W0-Temp Drainage Diversion Works DDA	50	03/JUL/08	21/AUG/08	76	59	0
D01159	APP W0-Temp Drainage Diversion Works DDA	42	22/AUG/08	02/OCT/08	76	59	0
D01160	P&S W0-Temp ELS for Intake Const AIP	50	08/MAY/08A	28/JUL/08	76	69	0
D01165	APP W0-Temp ELS for Intake Const AIP	42	29/JUL/08	08/SEP/08	76	69	0
D01170	P&S W0-Temp ELS for Intake Const DDA	50	21/JUL/08	08/SEP/08	76	69	0
D01180	P&S W0-Permanent Slopeworks AIP	50	21/APR/08A	09/JUN/08	76	69	0
D01185	APP W0-Permanent Slopeworks AIP	42	10/JUN/08	21/JUL/08	76	69	0
Section 7 (Portion THR2)							
D00940	P&S THR2-Permanent Works Intake AIP	50	13/JUL/08*	31/AUG/08	90	90	0



Start Date: 23/NOV/07
 Finish Date: 28/DEC/11
 Data Date: 22/MAY/08
 Run Date: 24/MAY/08 00:30

Legend:
 Target Bar (Yellow)
 Progress Bar (Blue)
 Critical Activity (Red)

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A04A

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

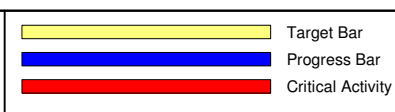
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Date	Revision	Checked	Approved
23/MAY/08	6th Monthly Update		
25Apr07	22May08		

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 22-May-08	% Comp	2008								
								JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	
Section 4 (Portion MB16)																
D00780	P&S MB16-Permanent Works Intake AIP	50	16/AUG/08*	04/OCT/08	90	90	0									
Section 32 (Portion SM1)																
D02300	P&S SM1-Permanent Works Intake AIP	50	18/JUL/08*	05/SEP/08	90	90	0									
Adits & Stilling Chambers																
D00540	P&S Adits Permanent Lining AIP	50	22/MAY/08	10/JUL/08	356	333	0									
D00545	APP Adits Permanent Lining AIP	42	11/JUL/08	21/AUG/08	356	333	0									
D00560	P&S SCs Temp Suppot AIP	50	27/MAY/08*	15/JUL/08	314	314	0									
D00565	APP SCs Temp Suppot AIP	42	16/JUL/08	26/AUG/08	314	314	0									
D00580	P&S SCs Permanent Lining AIP	50	22/MAY/08*	10/JUL/08	328	319	0									
D00585	APP SCs Permanent Lining AIP	42	11/JUL/08	21/AUG/08	328	319	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	7		100									
D00115	APP Prel Const Risk Assess (Portals) AIP	42	19/JAN/08A	22/APR/08A	15		100									
D00120	P&S Prel Const Risk Assess (excl Portals) AIP	43	12/FEB/08A	31/MAR/08A	6		100									
D00125	APP Prel Const Risk Assess (excl Portals) AIP	42	01/APR/08A	28/MAY/08	6	-28	75									
D00130	P&S EBS Condition & Structural Surveys DDA	22	22/MAY/08*	12/JUN/08	14	7	0									
D00135	APP EBS Condition & Structural Surveys DDA	42	13/JUN/08	24/JUL/08	14	7	0									
D00140	P&S Detailed Const Risk Assess DDA	50	29/JUL/08*	16/SEP/08	11	11	0									
D00150	P&S Addl Ground Investigation (Portals)	18	08/JAN/08A	25/JAN/08A	24		100									
D00155	APP Addl Ground Investigation (Portals)	42	10/JAN/08A	20/FEB/08A	24		100									
D00160	P&S Addl Ground Investigation (Rem Portions)	15	12/FEB/08A	28/MAY/08	4	-14	0									
D00165	APP Addl Ground Investigation (Rem Portions)	24	29/MAY/08	21/JUN/08	4	-14	0									
D00170	P&S Impact Assess Reqs on Waterwork Fac	50	02/JUN/08*	21/JUL/08	19	19	0									
D00175	APP Impact Assess Reqs on Waterwork Fac	42	22/JUL/08	01/SEP/08	19	19	0									
D00176	P&S Blasting Assessment - Volume 1	50	14/MAR/08A	28/MAR/08A	145		100									
D00177	APP Blasting Assessment - Volume 1	42	29/MAR/08A	19/JUN/08	145	144	50									
D00178	P&S Blasting Assessment - Vol 2A(Eastern Portal)	50	14/MAR/08A	28/MAR/08A	127		100									
D00179	APP Blasting Assessment - Vol 2A(Eastern Portal)	42	29/MAR/08A	06/JUL/08	127	127	50									
D00180	P&S Blasting Assessment - Volume 2B(Adit W0)	63	30/APR/08A	01/JUL/08	448	440	0									
D00181	APP Blasting Assessment - Volume 2B(Adit W0)	42	02/JUL/08	12/AUG/08	448	440	0									
D00182	P&S BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	71	22/MAY/08*	31/JUL/08	487	477	0									
D00183	APP BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1)	42	01/AUG/08	11/SEP/08	487	477	0									
D00184	P&S BA-Vol 3B MA17,M3,TP789,TP4-5,HKU1,PFLR1,SM1	71	16/JUN/08*	25/AUG/08	389	389	0									
D00186	P&S BA - Vol 3C (W5,CR1,RR1,W8,P5,W10)	71	14/JUL/08*	22/SEP/08	396	396	0									
D00188	P&S BA - Vol 3D (DG1,BR4,W1)	71	11/AUG/08*	20/OCT/08	675	675	0									
Main Tunnel																
D00420	P&S Main Tunnel Permanent Lining AIP	50	07/DEC/07A	31/JAN/08A	59		100									
D00425	APP Main Tunnel Permanent Lining AIP	42	01/FEB/08A	13/APR/08A	71		100									
D00430	P&S Main Tunnel Permanent Lining DDA	50	07/MAR/08A	31/MAY/08A	59		100									
D00435	APP Main Tunnel Permanent Lining DDA	42	14/MAY/08A	24/JUN/08	59	4	0									
D00460	P&S Adit/main tun intrct Perm Ling(exc W0) AIP	50	07/MAR/08A	25/MAY/08	299	382	0									
D00465	APP Adit/main tun intrct Perm Ling(exc W0) AIP	42	26/MAY/08	06/JUL/08	299	382	0									
D00470	P&S Adit/main tun intrct Perm Ling(exc W0) DDA	37	27/JUL/08	01/SEP/08	299	382	0									
D00480	P&S Adit/main tun intrct Perm Ling at W0 AIP	50	22/MAY/08	10/JUL/08	54	17	0									
D00485	APP Adit/main tun intrct Perm Ling at W0 AIP	42	11/JUL/08	21/AUG/08	54	17	0									
D00500	P&S TBM Dismantle Chamber Temp Supt at W0 AIP	50	24/MAY/08*	12/JUL/08	29	29	0									
D00505	APP TBM Dismantle Chamber Temp Supt at W0 AIP	42	13/JUL/08	23/AUG/08	29	29	0									
Sub-Milestone																
G01010	Submit AIP - W0 - Temp & Permanant Intake	1	30/JUL/08	30/JUL/08	984	978	0									
Milestone																
Design Submission																
M2-1020	2.02-Approval of Project Design Plan	0		29/MAR/08A	1,423		100	◆(MC 11)								
M2-1030	2.03-AIP-MainTunnel Submission	0		07/MAR/08A	1,433		100	◆(MC 7)								
M2-1040	2.04-AIP-MainTunnel Consent	0		30/APR/08A	1,391		100									
M2-1050	2.05-DDA-MainTunnel Submission	0		21/MAY/08	1,379	1,316	0									
M2-1060	2.06-DDA-MainTunnel Consent	0		24/JUN/08	1,337	1,282	0									
M2-1070	2.07-AIP-Adits&Stilling Chambers Submission	0		17/JUN/08	1,289	1,289	0									
M2-1080	2.08-AIP-Adits&Stilling Chambers Consent	0		12/AUG/08	1,233	1,233	0									
M2-1110	2.11-AIP-Dropshaft Submission	0		02/JUL/08	1,274	1,274	0									
M2-1120	2.12-AIP-Dropshaft Consent	0		13/AUG/08	1,232	1,232	0									
M2-1150	2.15-AIP-Intakes Submission	0		22/MAY/08	1,315	1,315	0									
M2-1160	2.16-AIP-Intakes Consent	0		03/JUL/08	1,273	1,273	0									
M2-1170	2.17-DDA-Intakes Submission	0		01/JUL/08	1,275	1,275	0									
M2-1180	2.18-DDA-Intakes Consent	0		12/AUG/08	1,233	1,233	0									
M2-1190	2.19-AIP Slope Protective(other thanE&W Portals)	0		08/JUN/08	1,298	1,298	0									
M2-1200	2.20-AIP Slope Consent (other than E&W Portals)	0		14/JUL/08	1,262	1,262	0									
CC03-PART OF SECTION 1 OF THE WORKS(MAIN TUNNEL)																
Preliminary and General Requirements																
TBM Procurement & Delivery																
B2010	TBM Procurement	64	30/NOV/07A	01/FEB/08A	0		100									
B2023	TBM Fabrication for 6.25m ID (Eastern Tunnel)	343	19/JAN/08A	30/JAN/09	0	0	36									
B2030	TBM Fabrication for 7.25m ID (Western Tunnel)	315	19/JAN/08A	11/DEC/08	0	0	39									
Milestone																
Section 1 (Main Tunnel)																
M3-1010	3.01-Selection&Purchase of TBM(6.25m dia.)	0		29/JAN/08A	25		100	◆(MC 8)								
M3-1020	3.02-Commencement of TBM byManufacturer(6.25mDia)	0		07/MAR/08A	4		100									
M3-1060	3.06-Select'n&Purchase of TBM(7.25m dia.)	0		29/JAN/08A	21		100	◆(MC 9)								
M3-1070	3.07-Commencement of TBM byManufacturer(7.25mDia)	0		07/MAR/08A	4		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	111		100									
EPA0150	Office & Workshop setup (2nd Stage)	51	08/MAY/08A	16/JUN/08	111	38	10									
EPA0160	Utilities Diversion-(EP)	50	25/JAN/08A	07/APR/08A	93		100									
EPA0170	Noise Barriers / Hoarding	71	23/JAN/08A	11/MAR/08A	93		100									
EPA0175	Provision of High Voltage line by HEC (Pillar 1)	133	07/JAN/08A	15/JUL/08	105	32	63									
EPA0180	Noise Enclosure for Temporary Stockpile Yard	114	30/JUL/08	18/DEC/08	93	5	0									
EPA0190	Wastewater Treatment Plant	66	22/MAY/08	16/AUG/08	93	5	0									
EPA0220	Tower Crane Installation	92	16/JUL/08	10/NOV/08	105	32	0									
Application for Permit / Licences / Supplies																
EPB0120	Permit for Tree Felling & Transplanting	47	18/FEB/08A	07/MAR/08A	44		100									
EPB0140	Water Supply-(EP)	66	10/DEC/07A	30/APR/08A	0		100									
EPB0150	Power Supply for External Works (Low Voltage)	66	10/DEC/07A	30/APR/08A	0		100									
EPB0160	Power Supply for Tunnel Works	279	07/JAN/08A	31/DEC/08	24	23	38									
EPB0170	Boulder Survey Report to GEO for Approval	37	14/JAN/08A	30/MAY/08	0	16	95									
EPB0180	Environmental Baseline Monitoring	10	12/FEB/08A	29/FEB/08A	24		100									
Stage 1 (Before TBM Drive)																
EPC0100	Tree Felling & Transplanting-(EP)	43	08/MAR/08A	10/MAY/08A	44		100									
EPC0110	Boulder Splitting & Stabilization-(EP)	100	10/MAR/08A	26/JUL/08	0	4	50									
EPC0120	Slope Upgrading Works (Feature No. 11SE-A/C850)	142	31/MAR/08A													

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 22-May-08	% Comp	2008								
								JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	
								CC6-PART OF SECTION 1 OF THE WORKS (WEST PORTAL)								
Construction																
Preliminary Works																
WPA0120	Possession of Site Part II	0	13/MAR/08A		0		100									
WPA0180	Site Clearance	38	18/JAN/08A	07/MAR/08A	0		100									
Site Installation - Phase 1																
WPB0050	Obtain permit Install Env Base Monitor Inst(WP)	12	15/JAN/08A	29/JAN/08A	12		100									
WPB0052	Install ENV Instruments & start monitor(WP)	12	30/JAN/08A	23/MAR/08A	12		100									
WPB0054	P & S Environmental Base Monitoring Report(WP)	12	28/MAR/08A	11/APR/08A	12		100									
WPB0058	P & S Tree Survey Report (WP)	6	01/MAR/08A	15/MAR/08A	54		100									
WPB0100	TTMS for Site Entrance-(WP)	27	31/JAN/08A	15/MAR/08A	1,087		100									
WPB0120	Site Hoarding , Fencing and Entrance	15	21/JAN/08A	07/MAR/08A	0		100									
WPB0140	Removal portion of DSD wall	6	18/JAN/08A	24/JAN/08A	19		100									
WPB0160	Sedimentation Tank - external work & wheel wash	27	25/FEB/08A	19/MAR/08A	14		100									
WPB0180	Site Haul Road & Temporary Drainage	30	04/FEB/08A	12/MAR/08A	0		100									
WPB0220	Utilities Diversion-(WP)	0	13/MAR/08A	20/MAR/08A	0		100									
WPB0240	Water Connection Dia.100mm	21	03/MAR/08A	15/APR/08A	89		100									
WPB0260	400 KVA Power (External Works) Supply	21	03/MAR/08A	15/APR/08A	89		100									
WPB0280	Contractor Office Erection-(WP)	34	21/JAN/08A	16/MAY/08A	10		100									
WPB0300	Engineer Office Erection	32	03/MAY/08A	16/JUN/08	0	13	20									
Sea Wall & Temporary Pier Construction																
WPE0120	Mobilisation of Marine Work Subcon-(WP)	15	21/JAN/08A	18/MAR/08A	16		100									
WPE0140	Silt Curtain Installation	5	22/MAY/08	27/MAY/08	0	0	0									
WPE0160	Diversion of DSD Stream-(WP)	21	15/APR/08A	13/MAY/08A	3		100									
WPE0180	Remove Armour Rock from Existing Seawall	12	24/MAY/08	06/JUN/08	0	0	0									
WPE0200	Seabed formation preparation to -10.7mpd	15	24/MAY/08	12/JUN/08	0	0	0									
WPE0220	Level Seabed w/ rock Fill	11	14/JUN/08	27/JUN/08	0	0	0									
WPE0240	Install Precast Seawall Blocks & Armour Rock	70	28/JUN/08	27/SEP/08	0	0	0									
WPE0260	Installation of Geotextile	20	20/AUG/08	13/SEP/08	0	0	0									
Stilling Basin & TBM Launch Shaft Construction																
WPF0080	Cut platform to +4mpd	31	10/JUL/08*	19/AUG/08	16	11	0									
WPF0100	Predrill and Fill Hole for Single Sheetpile	32	20/AUG/08	30/SEP/08	16	11	0									
WPF0120	Driven Single Sheet Pile	32	20/AUG/08	30/SEP/08	16	11	0									
WPF0140	Predrill and Fill Hole for Sheetpile	32	20/AUG/08	30/SEP/08	16	11	0									
WPF0160	Driven Sheetpile upto Exist Shore Line	32	20/AUG/08	30/SEP/08	16	11	0									
Site Installation - Phase 2																
WPC0100	Workshop-(WP)	13	21/APR/08A	16/JUN/08	14	0	10									
WPC0120	Transformer Room for 11KV	30	17/JUN/08	24/JUL/08	0	0	0									
WPC0140	Spoil Basin-(WP)	48	18/AUG/08	18/OCT/08	0	0	0									
WPC0200	Tower Crane Footing	17	25/JUL/08	16/AUG/08	0	0	0									
WPC0240	Other Temp. Facilities for TMB Operation	181	14/JUL/08	26/FEB/09	0	0	0									
WPC0260	Noise Enclosure	181	14/JUL/08	26/FEB/09	0	0	0									
Slope Stabilization																
WPD0120	Permanent Slope Trimming at +22 & +14.9 mpd	24	02/MAY/08A	04/JUN/08	0	32	20									
WPD0140	Berms Construction	24	22/MAY/08	21/JUN/08	0	32	0									
WPD0160	Permanent Soil Nail Installation T4-T8	35	05/JUN/08	22/JUL/08	0	32	0									
WPD0180	Temporary Soil Nail Installation at +12 mpd	9	23/JUL/08	02/AUG/08	0	32	0									
WPD0200	Construct Concrete Beam Panels at +12 mpd	7	23/JUL/08	31/JUL/08	2	34	0									
WPD0220	Install Horizontal Pipe Pile Tunnel Portal Crown	17	05/AUG/08	26/AUG/08	0	32	0									
CC7 -PART OF SECTION 1 OF THE WORKS (PORTION W0)																
Construction																
Preliminary Works																
S010020	Prepare Utility Diversion Plans - W0	70	10/JUN/08*	09/SEP/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									
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	07/JUN/08	63	64	81									
S020020	Conduct GI & Utility Identification Works - E5A	18	10/JUN/08	03/JUL/08	178	178	0									
S020030	Prepare Utility Diversion Plans - E5A	70	04/JUL/08	03/OCT/08	178	178	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	07/JUN/08	70	71	81									
S040010	Conduct GI & Utility Identification Works - MB16	24	10/JUN/08	10/JUL/08	52	52	0									
S040020	Prepare Utility Diversion Plans - MB16	70	11/JUL/08	11/OCT/08	52	52	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	07/JUN/08	205	206	81									
S050010	Conduct GI & Utility Identification Works - MBD2	18	10/JUN/08	03/JUL/08	160	160	0									
S050020	Prepare Utility Diversion Plans - MBD2	70	04/JUL/08	03/OCT/08	160	160	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	07/JUN/08	63	64	81									
S060010	Conduct GI & Utility Identification Works - E7	18	10/JUN/08	03/JUL/08	46	46	0									
S060020	Prepare Utility Diversion Plans - E7	70	04/JUL/08	03/OCT/08	103	103	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	07/JUN/08	434	435	81									
S080010	Conduct GI & Utility Identification Works - GL1	18	04/JUL/08	25/JUL/08	315	315	0									
S080020	Prepare Utility Diversion Plans - GL1	70	26/JUL/08	25/OCT/08	315	315	0									
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									

Start Date 23/NOV/07
 Finish Date 28/DEC/11
 Data Date 22/MAY/08
 Run Date 24/MAY/08 00:30

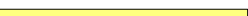




A04A
 Sheet 3 of 4
 Design & Construction of Hong Kong
 West Drainage Tunnel
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 Works Programme(Draft)
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23/MAY/08	6th Monthly Update		
25Apr07	22May08		

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								JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
								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	07/JUN/08	358	359	81								
S100010	Conduct GI & Utility Identification Works - DG1	18	04/JUL/08	25/JUL/08	258	258	0								
S100020	Prepare Utility Diversion Plans - DG1	70	26/JUL/08	25/OCT/08	258	258	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	07/JUN/08	403	404	81								
S140010	Conduct GI & Utility Identification Works - BR6	18	04/JUL/08	25/JUL/08	292	292	0								
S140020	Prepare Utility Diversion Plans - BR6	70	26/JUL/08	25/OCT/08	292	292	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	07/JUN/08	86	87	81								
S150010	Conduct GI & Utility Identification Works - W3	18	04/JUL/08	25/JUL/08	46	46	0								
S150020	Prepare Utility Diversion Plans - W3	70	26/JUL/08	25/OCT/08	270	270	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	07/JUN/08	291	292	81								
S190010	Conduct GI & Utility Identification Works - MA17	30	26/JUL/08	04/SEP/08	194	194	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	07/JUN/08	281	282	81								
S200010	Conduct GI & Utility Identification Works - M3	30	26/JUL/08	04/SEP/08	185	185	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	07/JUN/08	201	202	81								
S210010	Conduct GI & Utility Identification Works -TP789	36	26/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	07/JUN/08	109	110	81								
S220010	Conduct GI & Utility Identification Works -TP5	30	26/JUL/08	04/SEP/08	46	46	0								
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	07/JUN/08	169	170	81								
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	07/JUN/08	239	247	81								
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	07/JUN/08	423	424	81								
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	07/JUN/08	147	148	81								
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	07/JUN/08	273	274	81								
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	07/JUN/08	238	240	81								
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	07/JUN/08	168	169	81								
CC36-SECTION 30 OF THE WORKS (PORTION HKU1)															
Construction															
Preliminary Works															
S300010	Prepare Utility Diversion Plans - HKU1	70	30/JUN/08*	29/SEP/08	100	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/AUG/08	39	62	0								

Start Date 23/NOV/07
 Finish Date 28/DEC/11
 Data Date 22/MAY/08
 Run Date 24/MAY/08 00:30

 Target Bar
 Progress Bar
 Critical Activity

A04A

Sheet 4 of 4

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



Dragages - Nishimatsu Joint Venture

Date	Revision	Checked	Approved
23/MAY/08	6th Monthly Update		
25Apr07	22May08		

APPENDIX M
WASTE GENERATED QUANTITY

Monthly Waste Flow Table

Quarter ending	Actual Quantities of Inert C&D Wastes Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see notes 2)	Chemical Waste	Others, e.g. general refuse
	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)
Feb-08											40 m ³
Mar-08					6 m ³						84 m ³
Apr-08					34 m ³						34 m ³
May-08					566 m ³			2 m ³			39 m ³
Jun-08											
Jul-08											
Aug-08											
Oct-08											
Nov-08											
Dec-08											
Total	0	0	0	0	606 m³	0	0	2 m³	0	0	197 m³

- 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 May 2008 are as of 31-05-08. In May, a total of 101 nos. of trucks of C&D wastes disposed at Quarry Bay Bagring Point & a total of 7 nos. of trucks of general waste to SENT landfill