PENTA-OCEAN CONSTRUCTION COMPANY LIMITED

REMAINING ENGINEERING INFRASTRUCTURE WORKS FOR PAK SHEK KOK DEVELOPMENT PACKAGE 1 (CONTRACT NO.: TP 35/02)

MONTHLY EM&A REPORT (FEBRUARY 2003)

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EXECUTIVE SUMMARY

This report is the second monthly EM&A report (No.2) and has been prepared to document the impact monitoring works conducted for the Contract of the Remaining Engineering Infrastructure Works for Pak Shek Kok Development Package 1 (Contract No: TP 35/02) during the reporting period from 01 to 28 February 2003.

Construction Progress

The major construction works in this reporting month included RE wall construction, removal of existing mounds, drainage works and subway, maintain wheel-washing facilities and general site clearance.

Environmental Monitoring Progress

The summary of the monitoring activities in this monitoring month is listed below:

- Noise Monitoring (Day-time): 4 Occasions at 3 designated locations;
- Noise Monitoring (Evening-time): 4 Occasions at 3 designated locations;
- Noise Monitoring (Holiday): 3 Occasions at 3 designated locations;
- 24-hour TSP Monitoring: 5 Occasions at 1 designated location;
- 1-hour TSP Monitoring: 11 Occasions at 2 designated locations;
- Weekly-site inspection: 4 Occasions.

Noise Monitoring

No exceedances of Action and Limit levels for noise monitoring were recorded in the reporting month.

Air Monitoring

No 24-hour TSP monitoring was carried out at HKIB Staff Accommodation in the reporting month because the application for the permission to set up and providing power supply for the monitoring equipment (High Volume Sampler) is still under process. 24-hour TSP monitoring is pending approval by CUHK of access to monitoring location. Hence, only 1-hour TSP monitoring at HKIB Staff Accommodation was conducted to monitor the air quality in this reporting month.

No exceedances of Action and Limit levels were recorded for 24-hr TSP and 1-hr TSP monitoring in the reporting month.

Site Inspection

Environmental audits and inspections conducted in this reporting month are presented as follows:

Concerned Parties	Dates of Audit / Inspection
ET	06, 13, 20, 27
IEC/POC	18

There were no non-compliance and 6 observations raised during the IEC monthly site inspection. The IEC and ET audit findings in the site inspection are presented as follows:

Item	IEC/ET	Aspects	Findings	Proposed Mitigation Measures
1	IEC/ ET	Air	Stockpiles were not covered and hydroseeding was not performing well.	• To cover and hydroseed stockpiles and slope area; • Open stockpiles with a volume of greater than 50m^3 should be covered by clean tarpaulin sheets; • Watering applied to stockpile and exposed loose soil surface of site works; • To perform more frequent water spraying activities to enhance the effectiveness for the grass growth during dry season.
2	IEC/ ET	Water	Surface channel next to the cycling path: 1. The capacity of the sedimentation tank is not adequate to treat the surface runoff, especially in rainy season;	• To select larger sedimentation tank to ensure the discharge comply with the discharge standard; • To use more adequate measures to protect the channel.
			2. The sand slope next to the channel was not covered or hydroseed, potential for the sand to fall off slope accumulate in the channel. Sand was observed in the channel	• To place sand bays at the end of temporary channel in order to prevent the discharge of muddy water. • To provide more manpower to clean up of sand and soil accumulated in the channel • To divert the site runoff to sedimentation tanks/traps before any directly discharge to the drainage.

Item	IEC/ET	Aspects	Findings	Proposed Mitigation Measures
3	IEC/ ET	Waste	Rubbish was found accumulated on site. No skip or bins were provided for the workers for collecting rubbish on site.	• To remove the rubbish at the site immediately; • To remind staff to clean the rubbish accumulated more frequently as necessary; • To provide rubbish bin/skips for collected the rubbish; • To remind staff to dispose rubbish into the rubbish bins/skips as possible.
4	IEC	Water	Oil leakage from drip tray for the generator at the South Exit near the wheel washing facility.	• To clean up oil and dispose them as chemical waste; • To check and maintain all site machines to prevent oil leakage; • To provide suitable drip trays for the generator or other site machines which may perform the leakage of oil; • To place enough sand bags or other protection next the channel to prevent oil leaked discharge to the drainage; • To provide briefing to the concerned site staff on remedial actions in case of oil spillage, such as handling method of chemical waste.
5	IEC	Air	Bicycle track was dusty in some sections.	• To conduct regular cleaning to prevent dust emission.

Environmental Complaints

No environmental complaints were received in this monitoring month.

Notification of summons and successful prosecutions

No notification of summons and prosecutions with respect to environmental issues registered in this reporting month.

Future Key Issues

Base on the site inspections and forecast of engineering works in the coming month, key issues to be considered are as follows:

- Noise and air quality impact due to construction works;
- Maintain wheel washing facilities and sedimentation tanks properly;
- Watering, hydro-seeding or covering all stockpiles with tarpaulin to avoid wind and water erosion;
- Maintain good site practice and waste management to minimize environmental impacts at the site;
- Follow-up improvements on waste management issues.

1.0 INTRODUCTION

Penta-Ocean Construction Co., Ltd. (POC) appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit for Remaining Engineering Infrastructure Works for Pak Shek Kok Development Package 1 (Contract No.: TP 35/02).

Under the requirements of Section 10 of Environmental Permit to Construct and Operate a Designate Project (EP-108/2001/AEP-108/2001), EM&A programme as set out in the EM&A Manual is required to be implemented. In accordance with the EM&A manual, environmental monitoring of air quality and noise is required for the Project. The EM&A requirement for each parameter are described in details in subsequent 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 report;
- Environmental requirements in contract documents.

This monthly EM&A report summarizes the impact monitoring results and audit findings of the EM&A program during the reporting period form 01 to 28 February 2003.

2.0 PROJECT INFORMATION

2.1 Background

Remaining Engineering Infrastructure Works for Pak Shek Kok Development Package 1 (Contract No.: TP 35/02) was planned and designed by the Territory Development Department (TDD).

As the main Contractor of the captioned project: contracted by, POC will follow the environmental monitoring recommendation stated at the EM&A Manual that was prepared with reference to the EIA Study for Feasibility Study on the Pak Shek Kok Development Area (PSKDA) Environmental Monitoring and Audit Manual under Agreement No. CE 90/96.

2.2 Site Description

Generally, the construction site is located at Pak Shek Kok development area. Surrounding the construction site, there are two air sensitive receivers: HKIB Staff Accommodation and Cheung Shue Tan Village and three noise sensitive receivers: HKIB Staff Accommodation, CUHK Residence No.10 and Cheung Shue Tan Village.

Figure 1and 2 show the noise and air monitoring locations of this project.

2.3 Construction Programme

The details of construction programme (from February to May 2003) are shown in Appendix F.

2.4 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in Appendix A.

2.5 Contact Details of Key Personnel

The key personnel contact names and telephone numbers, and construction programme are shown in table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel. No.	Fax No.
TDD	Employer	Mr. H W Lau	2158 5629	---
Hyder	Engineer	Mr. Herman Fong	2911 2233	2805 5028
Hyder	Independent Environmental Checker	Ms Jacquelyn Anderson	2911 2233	2827 2891
POC	Contractor	Mr. Roger Lau	9870 6390	2691 6012
ETL	Contractor's Environmental Team	Mr C L Lau (Environmental Team Leader)	2946 7792	2695 3944

3.0 CONSTRUCTION PROGRESS IN THIS REPORTING MONTH

The site area of this project is shown in Appendix G.

A summary of the major construction activities undertaken in this monitoring month is shown in Table 3.1. The implementation of the corresponding mitigation measures is summarized in Table 3.2.

Table 3.1 Major Construction Activities in this reporting month

Location	Major Construction Activity
Site 3	Erecting and Serving Engineer's and Contractor's Site Accommodation
Zone C	RE Wall construction
Zones C & D, Zone S3 (Area 9B), Section 16	Excavation
Section 1(Area 1), Section 7 (Area 8A), Section 9 (Area 5), S7780-S7785	Drainage and sewage
Zone A, L, E and Q	Construct and maintain wheel-washing facilities
SB1 Ramps,	Subway and pump house
---	General site clearance

Table 3.2 Implementation of Environmental Mitigation Measures

General construction works	• Effective water sprays used on the site at potential dust emission sources such as unpaved area; • The heights from which fill materials are dropped should be controlled to a practical height to minimize the fugitive dust arising from unloading; • Minimize of exposed soil areas to reduce the potential for increased siltation and contamination of run-off; • Water, hydro-seed or cover the open stockpile and exposed loose soil areas by using clean tarpaulin sheets; • Provide proper and efficient drainage facilities (e.g. wheel washing facilities) and sedimentation system to ensure that site runoff should be treated before discharged to drains; • Provide good site practice (e.g. selection of quieter pland and working methods and reduction in number of plant operating in critical areas close to NSRs) to limit noise emissions at source; • Remove the construction waste accumulated inside or outside the site regularly; • Keep good waste management.

4.0 AIR QUALITY MONITORING

4.1 Monitoring Requirement

1-hour and 24-hour TSP monitoring are required to conducted to monitor the air quality, at designated monitoring locations:

- HKIB Staff Accommodation (on ground floor near the entrance facing south-east);
- Cheung Shue Tan Village (near the outer building, temple) for 1-hr TSP monitoring;
- Cheung Shue Tan Village (in front of Man Kee Store) for 24-hr TSP monitoring.

No 24-hour TSP monitoring was carried out at HKIB Staff Accommodation in the reporting month because the application for the permission to set up and providing power supply for the monitoring equipment (High Volume Sampler) is still under process. 24-hour TSP monitoring is pending approval by CUHK of access to monitoring location. Hence, only 1-hour TSP monitoring was conducted to monitor the air quality in this reporting month.

4.2 Monitoring Equipment

Continuous 24-hour TSP air quality monitoring was performed using a GMWS2310 High Volume Air Sampler (HVS) located at each of the designated monitoring station. One portable dust meter was used to carry out the 1-hour TSP monitoring. Table 4.1 summarizes the equipment used in the air quality monitoring programme. A copy of the calibration certificate for the HVS and portable dust meter are attached in Appendix B1.

Table 4.1 Air Quality Monitoring Equipment

Equipment	Model and Make
HVS Sampler	Greasby GMWS2310
Calibrator	G25 A
1-hour TSP Dust Meter	TSI Model 8520 Dust Trak™ Aerosol Monitor

4.3 Monitoring Parameters, Frequency and Duration

Table 4.2 summarizes the monitoring parameters, monitoring duration and frequencies of air quality monitoring.

Table 4.2 Monitoring parameters, duration, frequencies of impact air quality monitoring

Parameter	Duration	Frequency
24-hr TSP	24 hr (0000-2400)	Once every six days
1-hr TSP	1 hr (0700-1900)	Three times every six days

4.4 Monitoring Locations and Schedule

Two designated air quality monitoring locations – Cheung Shue Tan Village and HKIB Staff Accommodation were selected. Table 4.3 tabulates the air quality monitoring locations of this project.

Table 4.3 Air quality monitoring locations

Air quality Monitoring stations	Locations
AM1	HKIB Staff Accommodation (on ground floor near the entrance facing south-east) for 1-hr TSP monitoring
AM3	Cheung Shue Tan Village (near the outer building, temple) for 1-hr TSP monitoring
AM3A	Cheung Shue Tan (in front of Man Kee Store) for 24-hr TSP monitoring

The air quality monitoring schedule for 24-hr and 1-hr TSP monitoring at designated monitoring locations is summarized in table 4.4.

Table 4.4 Monitoring Schedule for the air quality monitoring stations

Air quality monitoring stations	Location	Monitoring Period						
		24-hr TSP				1-hr TSP		
		Start		Finish		Date	Start	Finish
		Date	Time	Date	Time			
AM1	HKIB Staff Accommodation	---				04/02/03	15:14	16:14
						06/02/03	08:15	09:15
						08/02/03	08:30	09:30
						11/02/03	11:00	12:00
						13/02/03	13:02	14:02
						15/02/03	09:40	10:40
						18/02/03	09:30	10:30
						20/02/03	13:00	14:00
						22/02/03	17:00	18:00
						25/02/03	16:15	17:15
						27/02/03	15:30	16:30
AM3	Cheung Shue Tan Village (near the outer building, temple)	---				04/02/03	13:15	14:15
						06/02/03	16:30	17:30
						08/02/03	14:00	15:00
						11/02/03	13:06	14:06
						13/02/03	15:23	16:23
						15/02/03	13:00	14:00
						18/02/03	15:40	16:40
						20/02/03	16:30	17:30
						22/02/03	09:15	10:15
						25/02/03	09:56	10:56
						27/02/03	11:10	12:10
						04/02/03	13:15	14:15
						06/02/03	16:30	17:30
						08/02/03	14:00	15:00
						11/02/03	13:06	14:06
						13/02/03	15:23	16:23
AM3A	Cheung Shue Tan (in front of Man Kee Store)	04/02/03	13:05	05/02/03	13:05	---		
		10/02/03	14:48	11/02/03	14:48			
		14/02/03	10:05	15/02/03	10:05			
		20/02/03	16:37	21/02/03	16:37			
		26/02/03	16:30	27/02/03	16:30			

4.5 Monitoring Methodology

4.5.1 24-hour TSP Monitoring

Instrumentation

High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets are employed for 24-hour TSP. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

Installation

The installation of HVS refers to the requirement stated in EM&A Manual.

Operation/Analytical Procedures

Operating/analytical procedures for the operation of HVS are as below:

Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 0.6m^3/min and 1.7m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

- For TSP sampling, fiberglass filters (GA-55) were used.

- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 minutes to establish thermal equilibrium before placing any filter media at designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The programmable timer will be set for a sampling period of 24 hours. 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.).
- After sampling, the filter was transferred from the filter holder of the HVS to a sealed plastic bag and sent to the laboratory for weighting. The elapsed time was also recoded.
- Before weighting, all filters were equilibrated in a desiccator for 24 hour with the temperature of 25^{o}C $\pm$ 3^{o}C and the relative humidity (RH) <50% $\pm$5%.

Maintenance & Calibration

- The HVS and their accessories should be maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS should be calibrated at bi-monthly intervals.

4.5.2 1-hour TSP Monitoring

Measuring Procedures

The measuring procedures of the 1-hr dust meter are in accordance with the Manufacturer's instruction Manual as follows:

- Set POWER to ON, check the battery indicator to ensure whether the power supply is enough to conduct the TSP monitoring;
- Calibrate the dust meter by zero check;
- Set the TIME CONSTANT of the dust meter;
- Press SAMPLE to start the TSP monitoring;
- Record the maximum, minimum and average reading directly from the dust meter by press STATISTICS when monitoring complete.

Maintenance & Calibration

- 1-hr dust meter should be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of impact air quality monitoring.

4.5.3 Wind Data Monitoring

Wind data (wind speed and wind direction) were directly extracted from Sha Tin Station (located at Sha Tin Race Course) of Hong Kong Observatory. All wind data during this reporting month are shown in Appendix D.

4.6 Action and Limit Levels

Action and Limit levels for 24-hr TSP and 1-hr TSP derived as illustrated in Table 4.5.

Table 4.5 Action and Limit Levels for 24-hr TSP and 1-hr TSP

Monitoring Location	24-hr TSP (μg/m^3)		1-hr TSP (μg/m^3)	
	Action Level	Limit Level	Action Level	Limit Level
AM1	164 *	260 *	325 *	500 *
AM3	---	---	306	500
AM3A	183	260	---	---

* = Reference to the information contained in the Baseline Monitoring Report submitted under the "Advance Engineering Infrastructure Works for Pak Shek Kok Development – Southern Access Road and Sewage Pumping Station No.3

4.7 Event-Action Plans

Please refer to Appendix E for details.

4.8 Results

4.8.1 24-hour TSP Monitoring

Only 24-hour TSP monitoring was carried out at monitoring station, AM3A in the reporting month. 24-hour TSP monitoring at monitoring station, AM1 was not carried out in this month because the permission for setting up the monitoring equipment, High Volume Sampler, at HKIB Staff Accommodation is still under processing. All monitoring data of 24-hour TSP monitoring is provided in Appendix B2. Graphical presentation of 24-hour TSP monitoring results for the reporting month is shown in Appendix B3.

No exceedances of Action and Limit Level of 24-hour TSP monitoring results were recorded during the reporting month.

4.8.2 1-hour TSP Monitoring

1-hour TSP monitoring was carried out at monitoring stations, AM1 and AM3 in the reporting month. All monitoring data of 1-hour TSP monitoring is provided in Appendix B2. Graphical presentation of 1-hour TSP monitoring results for the reporting month is shown in Appendix B3.

No exceedances of Action and Limit Level of 1-hour TSP monitoring results were recorded during the reporting month.

5. Noise Monitoring

5.1 Monitoring Requirements

As the requirement in EM&A Manual, noise monitoring was conducted at designated monitoring locations:

- HKIB Staff Accommodation (on ground floor near the entrance facing south-east);
- Cheung Shue Tan Village (near the outer building, temple);
- CUHK Residence No.10.

5.2 Monitoring Equipment

Integrating Sound Level Meters were used for noise monitoring. They were Type 1 sound level meters capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (Lx). They comply with International Electro technical Commission Publications 651:1979 (Type1) and 804:1985 (Type1), and speed in m/s was used to monitor the wind speed.

Table 5.1 summarized noise monitoring equipment model being used. A copy of the calibration certificates for noise meters and calibrator are attached in Appendix C1.

Table 5.1 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL-14 Sound Level Meter
Calibrator	Rion NC-73 Sound Level Calibrator
Portable Wind Speed Indicator	TSI Model 8340-M Air Velocity Meter

5.3 Monitoring Parameters, duration and Frequency

Noise monitoring for the A-weighted levels Leq, L10 and L90 were recorded. The following guide on the regular monitoring frequency for each monitoring station on a per week basis when noise generating activities are underway:

- One set of measurements between 0700-1900 hours on normal weekdays (6 consecutive $L_{eq(5\text{-}min)}$);
- One set of measurements between 1900-2300 hours (3 consecutive $L_{eq(5\text{-}min)}$)*;
- One set of measurements between 2300-0700 hours of next day (3 consecutive $L_{eq(5\text{-}min)}$)*;
- One set of measurements between 0700-1900 hours on holidays (3 consecutive $L_{eq(5\text{-}min)}$)*.

(*): Noise monitoring to be conducted only when there is construction work.

Duration, frequencies and parameters of noise measurement are presented in Table 5.2.

Table 5.2 Duration, Frequencies and Parameters of Noise Monitoring

Time period	Duration/min	Parameters	Frequency
Day-time: 0700-1900 hrs on normal weekday	30	L_{eq}, L_{10}, L_{90}	Once per week
Evening-time: 1900-2300 hrs	15	L_{eq}, L_{10}, L_{90}	Once per week
Night-time: 2300-0700 hrs of next day	15	L_{eq}, L_{10}, L_{90}	Once per week
Holiday: 0700-1900 hrs	15	L_{eq}, L_{10}, L_{90}	Once per week

5.4 Monitoring Locations and Period

In accordance with the EM&A Manual, there are three noise monitoring locations: HKIB Staff Accommodation, Cheung Shue Tan Village and CUHK Residence No.10. The location of the monitoring stations are described in Table 5.3 and depicted in Figure 1.

Table 5.3 Noise Monitoring Locations

Noise Monitoring stations	Location
NM1	HKIB Staff Accommodation (on ground floor near the entrance facing south-east)
NM2	CUHK Residence No.10
NM3	Cheung Shue Tan Village (near the outer building, a temple)

The noise monitoring programme of monitoring locations (Day-time, Evening-time, Holiday and Night-time) is summarized in Table 5.4.

Table 5.4 Monitoring Periods for noise monitoring stations

Noise monitoring stations	Monitoring Period							
	Day-time		Evening-time		Holiday		Night-time	
NM1	04/02/03	15:16	04/02/03	20:11	02/02/03*	---	---	---
	11/02/03	11:05	11/02/03	19:00	09/02/03	15:58	---	---
	18/02/03	11:28	18/02/03	19:42	16/02/03	11:17	---	---
	25/02/03	16:18	25/02/03	19:47	23/02/03	14:00	---	---
NM2	04/02/03	14:32	04/02/03	19:46	02/02/03*	---	---	---
	11/02/03	14:26	11/02/03	19:48	09/02/03	16:32	---	---
	18/02/03	16:58	18/02/03	20:36	16/02/03	11:42	---	---
	25/02/03	11:10	25/02/03	20:10	23/02/03	13:35	---	---
NM3	04/02/03	13:17	04/02/03	19:20	02/02/03*	---	---	---
	11/02/03	13:09	11/02/03	19:23	09/02/03	15:18	---	---
	18/02/03	15:42	18/02/03	20:14	16/02/03	14:30	---	---
	25/02/03	09:55	25/02/03	20:37	23/02/03	13:08	---	---

Remark (*): The noise monitoring cancelled due to no construction works.

5.5 Monitoring Procedures and Calibration Details

Operation/Analysis Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- 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 : 5 mins
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with a portable wind meter.
- During the monitoring period, the Leq, L10 and L90 were recorded. In addition, sie conditions and noise sources were recorded on a standard record sheet.
- Free Field correction to the measurements should be made. Correction factor of +3dB(A) should be made to the free Field measurements.
- Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The meter is sent to be supplier or HOKLAS laboratory to check and calibrated at yearly intervals.

5.6 Action and Limit Levels

The Action and Limit levels for noise levels derived as illustrated in Table 5.5.

Table 5.5 Action and Limit Levels for noise monitoring

Time Period	Time Period	Action	Limit
Normal hours	0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *
Holiday	0700-1900 hrs on holidays		70 dB(A) **
Evening-time	1900-2300 hrs on all other days		
Night-time	2300-0700 hrs of next day		55 dB(A) **

* = Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.
** = Area Sensitivity Rating (ASR) C is selected from the "Technical Memorandum on Noise from Construction Work Other Than Percussive Piling".

5.7 Event-Action Plans

Please refer to the Appendix E for details.

5.8 Results

Day-time, Evening-time and Holiday noise monitoring were carried out at monitoring stations, NM1, NM2 and NM3 in this reporting month. No night-time noise monitoring were required since no construction works were processed during the night-time period. All noise levels are provided in Appendix C2. Graphical presentation of the monitoring results for the reporting month are shown in Appendix C3.

No day-time, evening-time and holiday noise monitoring results at all monitoring stations exceeded the Action Level since no documented complaints were received in this reporting month. Besides, no exceedances in Limit Level were recorded according to the results from day-time, evening-time and holiday noise monitoring.

6.0 ENVIRONMENTAL NON-CONFORMANCE

6.1 Summary of air and noise monitoring

No exceedances of Action and Limit Level of 24-hour and 1-hour TSP monitoring results were recorded during the reporting month.

No day-time, evening-time and holiday noise levels recorded at all monitoring stations exceeded the Action and Limit Level in the reporting month.

6.2 Summary of Environmental Complaints

No environmental complaints were received in this monitoring month.

6.3 Summary of Notification of Summons and Prosecutions

No notification of summons and prosecutions with respect to environmental issues registered in this reporting month.

7.0 SITE INSPECTION

Weekly site inspections were carried out by the ET. Four site inspections were undertaken in this reporting month (06, 13, 20 and 27 February 2003). Monthly Site inspection at 18 February 2003 was carried out by the Engineer's Representative, the IEC, POC and ET. A summary of the implementation status of the mitigation measures on site inspections is presented in Appendix H.

7.1 Summary of the IEC and ET site inspection findings

The summaries of the IEC and ET site inspection findings in this reporting month are shown in Table 7.1.

Table 7.1 The summary of the IEC and ET site inspection findings

Item	IEC/ET	Aspects	Findings	Proposed Mitigation Measures
1	IEC/ ET	Air	Stockpiles were not covered and hydroseeding was not performing well.	• To cover and hydroseed stockpiles and slope area; • Open stockpiles with a volume of greater than $50m^3$ should be covered by clean tarpaulin sheets; • Watering applied to stockpile and exposed loose soil surface of site works; • To perform more frequent water spraying activities to enhance the effectiveness for the grass growth during dry season.
2	IEC/ ET	Water	Surface channel next to the cycling path: 1. The capacity of the sedimentation tank is not adequate to treat the surface runoff, especially in rainy season;	• To select larger sedimentation tank to ensure the discharge comply with the discharge standard; • To use more adequate measures to protect the channel.
			2. The sand slope next to the channel was not covered or hydroseed, potential for the sand to fall off slope accumulate in the channel. Sand was observed in the channel	• To place sand bays at the end of temporary channel in order to prevent the discharge of muddy water. • To provide more manpower to clean up of sand and soil accumulated in the channel • To divert the site runoff to sedimentation tanks/traps before any directly discharge to the drainage.

Item	IEC/ET	Aspects	Findings	Proposed Mitigation Measures
3	IEC/ ET	Waste	Rubbish was found accumulated on site. No skip or bins were provided for the workers for collecting rubbish on site.	• To remove the rubbish at the site immediately; • To remind staff to clean the rubbish accumulated more frequently as necessary; • To provide rubbish bin/skips for collected the rubbish; • To remind staff to dispose rubbish into the rubbish bins/skips as possible.
4	IEC	Water	Oil leakage from drip tray for the generator at the South Exit near the wheel washing facility.	• To clean up oil and dispose them as chemical waste; • To check and maintain all site machines to prevent oil leakage; • To provide suitable drip trays for the generator or other site machines which may perform the leakage of oil; • To place enough sand bags or other protection next the channel to prevent oil leaked discharge to the drainage; • To provide briefing to the concerned site staff on remedial actions in case of oil spillage, such as handling method of chemical waste.
5	IEC	Air	Bicycle track was dusty in some sections.	• To conduct regular cleaning to prevent dust emission.

7.2 Status of Environmental Licensing and Permitting

All permits/licenses obtained in August are summarises in Table 7.2.

Table 7.2 Summary of environmental licensing and permit status

Description	Permit No.	Valid Period		Section
		From	To	
Environmental Permit	EP-108/2001	05/11/02	---	Whole work site
Construction Noise Permit	GW-TN0444-2002	03/11/02	02/05/03	Group A: • 2 Dump trucks • 2 Excavator, tracked • 1 Generator, super silenced, 70dB(A) at 7m • 1 Lorry Group B: • 2 Drill rig • 2 Air compressor, with Noise Emission Label showing a sound power level of ≤ 102dB(A) • 1 Generator, super silenced, 70dB(A) at 7m 2 Band drain rig
Waste Producer	5213 729 P2800 11	03/10/02	---	Generating waste at the work site
Wastewater Discharge License	No. 2946	18/12/02	18/12/07	Discharge of trade Effluent, surface run-off and all other wastewater arising from the construction site and sedimentation tank

7.3 Recommendations on site inspection findings

Based on the site inspection findings, the recommendations are as below:

- All stockpiles with a volume of greater than 50m^3 should be covered with clean tarpaulin sheets, watering or hydro-seeding to avoid wind and water erosion;
- Providing more manpower to clean up of rubbish accumulated at the site;
- To provide rubbish bin/skips for collected the rubbish;
- Site inspection and maintenance of all sedimentation system and drainage facilities by the contractor's site staff should be conducted regularly to ensure proper and efficient operation all the times;
- Placing enough sand bags or other protection should be applied to prevent the slity surface runoff onto the drains system;
- Removing the oil in the drip tray and treat as chemical waste regularly
- Checking and maintaining all the site machines to prevent oil leakage regularly;
- Providing briefing to the concerned site staff on remedial actions in case of oil spillage, such as handling method of chemical waste;
- Maintain good waste management at the site;

8.0 WASTE MANAGEMENT

8.1 Waste Management Audit

Waste management audit was carried out by the ET on a weekly basis. A summary of the implementation status of the mitigation measures on waste management is presented in Appendix H.

8.2 Records of Waste Quantities

All type of wastes arising from the construction work are classified into the following:
- General refuses;
- Chemical waste;
- Construction & demolition (C&D) material.

The quantities of waste for disposal in this month are summarized in Table 8.1.

Table 8.1 Summary of Quantities of Waste for Disposal in this reporting month

Type of Waste	Quantity	Disposal Location
C&D Material (Inert) (m^3)	0	NA
C&D material (Non-inert) (m^3)	0	NA
General Refuse (Tonne)	0.57	Disposed of al NENT landfills
Chemical Waste (m^3)	0	NA

9.0 IMPLEMENTATION STATUS

9.1 Implementation Status of Environmental Mitigation Measures

POC has been implementing the required environmental mitigation measures according to Implementation of Mitigation Measures (clause 4.2, 5.2 and 6.2) in Environmental Management Plan for Contract No. TP 35/02 Remaining Engineering Infrastructure Works for PaK Shek Kok Development Package 1 (Revision 2). A summary of the implementation status of the mitigation measures is presented in Appendix H.

Air Quality

Only partial stockpiles were covered by using tarpaulin sheets. The Contractor was reminded to water, hydro-seed or cover all the stockpiles by using clean tarpaulin sheets.

Noise

All mitigation measures stated in Appendix I were implemented properly in this reporting month.

Water Quality

The Contractor was reminded to provide more effort to implement mitigation measures, such as prevent oil leakage from the drip tray for all site machines, discharge of site runoff after suitable treatment processes, proper maintenance of sedimentation system and drainage facilities (e.g. sedimentation tank and U-channels).

Waste Management

POC has been implementing most mitigation measures on waste management. However, rubbish was observed at the site and no skips or bins were provided for collecting rubbish at site. The Contractor was remained to provide more manpower to clean up of rubbish accumulated at the site and provide rubbish bin/skips for collected the rubbish.

9.2 Implementation Status of Event and Action Plan

There were no exceedances in air quality and noise monitoring parameters recorded in this monitoring month. No further mitigation measures were required.

9.3 Implementation Status of Environmental Complaint Handling

No complaints had been received during this monitoring month.

10.0 Conclusion

Impact monitoring of air quality and noise were carried out at designated locations in accordance with the EM&A Manual in this reporting month.

According to the summary of air and noise monitoring results, no exceedances of Action and Limit Level of 24-hour and 1-hour TSP monitoring results were recorded during the reporting month. Besides, no day-time, evening-time and holiday noise levels were recorded at all monitoring stations exceeded the Action and Limit Level in this reporting month. No night-time noise monitoring were required since no construction works were processed during the night-time period.

According to the ET weekly site inspections and IEC monthly site audit carried out this month, it indicated that site practices of the POC were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was satisfactory.

11.0 FUTURE KEY ISSUES

11.1 Upcoming EM&A Schedule in March and April 2003

The Proposed EM&A program in coming March and April 2003 are presented as following table:

Table 11.1 – Upcoming EM&A Schedule in March and April 2003

Type of Monitoring	March 2003	April 2003
Noise Monitoring (Day-time)	06, 13, 20, 27	03, 10, 17, 24
Noise Monitoring (Evening-time)	06, 13, 20, 27	03, 10, 17, 24
Noise Monitoring (Holiday)	02, 09, 16, 23, 30	06, 13, 20, 27
1-hour TSP	04, 06, 08, 11, 13, 15, 18,	01, 02, 03, 08, 10, 12, 15,
24-hour TSP	04, 10, 14, 20, 26	01, 07, 11, 17, 23, 29

Site Inspection	04, 11, 18, 24, 31	01, 08, 15, 22, 29

11.2 Upcoming construction works schedule in March 2003

The major construction works planned to be carried out in next month and their possible impact is tabulated (Table 11.2) for reference.

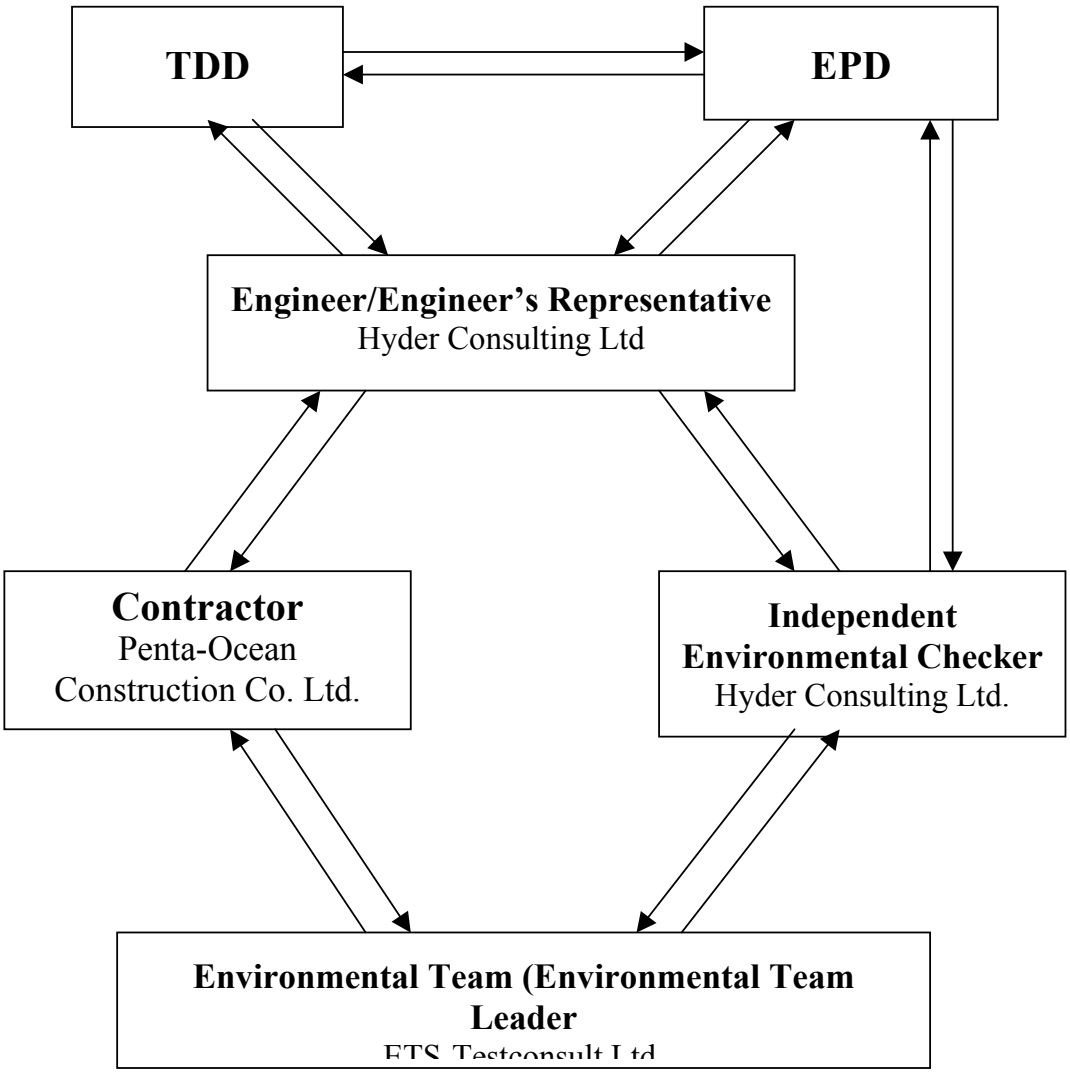
Table 11.2 – Construction Plan in March 2003

Month	Works Planned to be Carried Out
March 2003	- Servicing Engineer's and Contractor's site accommodation, hoarding, signboards and temporary gate; - Excavation; - Construct drainage and sewerage system; - Maintain wheel wash facilities; - Site clearance; - Earthworks.

Appendix A

Organization Chart and Lines of Communication

Lines of Communication



Appendix B1

Calibration Certificates for Air Quality Monitoring Equipments

Appendix B2

Air Quality Monitoring Results

Summary of Air Quality Monitoring Results

Monitoring Parameter : 24-hr TSP Monitoring
Monitoring Station : AM3A
Location : Cheung Shue Tan (in front of Man Kee Store)

Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Weight (g)		Conc. ($\mu g/m^3$)	Weather Condition
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final		
04/02/03	13:05	05/02/03	13:05	9162.34	9186.34	24.00	1.040	1.040	1.040	2.7530	2.8850	88	Fine
10/02/03	14:48	11/02/03	14:48	9186.34	9210.34	24.00	1.040	1.040	1.040	2.8772	3.0132	91	Sunny
14/02/03	10:05	15/02/03	10:05	9210.34	9234.34	24.00	1.040	1.040	1.040	2.8501	2.9760	84	Cloudy
20/02/03	16:37	21/02/03	16:37	9234.34	9258.34	24.00	1.040	1.040	1.040	2.8315	2.9495	79	Fine
26/02/03	16:30	27/02/03	16:30	9258.34	9282.34	24.00	1.040	1.040	1.040	2.8421	2.9549	75	Sunny

Summary of Air Quality Monitoring Results

Monitoring Parameter : 1-hr TSP Monitoring
Monitoring Station : AM1
Location : HKIB Staff Accommodation

Date	Monitoring Period		1-hr TSP ($\mu g/m^3$)			Weather
	Start	Finish	Minimum	Maximum	Average	
04/02/2003	15:14	16:14	67	446	141	Fine
06/02/2003	08:15	09:15	86	368	129	Fine
08/02/2003	08:30	09:30	81	394	126	Cloudy
11/02/2003	11:00	12:00	76	396	135	Sunny
13/02/2003	13:02	14:02	84	652	171	Cloudy
15/02/2003	09:40	10:40	127	596	178	Cloudy
18/02/2003	09:30	10:30	94	537	154	Sunny
20/02/2003	13:00	14:00	68	843	167	Fine
22/02/2003	17:00	18:00	79	451	125	Cloudy
25/02/2003	16:15	17:15	112	496	169	Cloudy
27/02/2003	15:30	16:30	82	465	120	Cloudy

Summary of Air Quality Monitoring Results

Monitoring Parameter : 1-hr TSP Monitoring
Monitoring Station : AM3
Location : Cheung Shue Tan Village (near the outer building, a temple)

Date	Monitoring Period		1-hr TSP ($\mu g/m^3$)			Weather
	Start	Finish	Minimum	Maximum	Average	
04/02/2003	13:15	14:15	71	237	111	Fine
06/02/2003	16:30	17:30	94	301	105	Fine
08/02/2003	14:00	15:00	86	293	105	Cloudy
11/02/2003	13:06	14:06	54	191	102	Sunny
13/02/2003	15:23	16:23	64	488	151	Cloudy
15/02/2003	13:00	14:00	102	421	147	Cloudy
18/02/2003	15:40	16:40	73	285	105	Sunny
20/02/2003	16:30	17:30	43	612	147	Fine
22/02/2003	09:15	10:15	48	271	75	Cloudy
25/02/2003	09:56	10:56	86	276	106	Cloudy
27/02/2003	11:10	12:10	62	284	82	Cloudy

Appendix B3

Graphical Plots of Air Quality Monitoring Data

Appendix C1

Calibration Certificates for Noise Monitoring Equipments

Appendix C2

Noise Monitoring Results

Day-time Noise Monitoring

Monitoring Location: NM1 (HKIB Staff Accommodation)

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		$L_{eq}(30)$	L10	L90		
04/02/03	15:16	62.9	65.2	60.6	1.02	Fine
11/02/03	11:05	60.8	62.1	57.8	1.19	Sunny
18/02/03	11:28	65.2	67.9	62.1	1.85	Sunny
25/02/03	16:18	59.7	61.3	56.9	1.11	Cloudy

Monitoring Location: NM2 (CUHK Residence No.10)

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		$L_{eq}(30)$	L10	L90		
04/02/03	14:32	57.1	58.5	54.7	0.93	Fine
11/02/03	14:26	64.2	66.0	61.6	0.36	Sunny
18/02/03	16:58	64.4	67.3	62.4	1.51	Sunny
25/02/03	11:10	55.8	57.2	51.6	0.96	Cloudy

Monitoring Location: NM3 (Cheung Shue Tan Village)

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		$L_{eq}(30)$	L10	L90		
04/02/03	13:17	52.1	52.6	49.4	0.29	Fine
11/02/03	13:09	55.2	56.7	50.5	1.06	Sunny
18/02/03	15:42	52.7	55.3	49.1	0.39	Sunny
25/02/03	09:55	54.7	56.1	48.7	0.71	Cloudy

Evening-time Noise Monitoring

Monitoring Location: NM1 (HKIB Staff Accommodation)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
04/02/03	20:11	58.1	56.8	56.6	60.3	57.7	57.9	55.2	54.8	54.7	2.76	Cloudy
11/02/03	19:00	58.1	56.8	55.4	59.3	57.9	56.5	49.6	50.2	50.1	1.23	Sunny
18/02/03	19:42	57.4	58.9	57.2	59.3	60.4	58.1	56.2	56.8	55.9	1.31	Fine
25/02/03	19:47	56.1	58.4	56.7	58.2	61.9	59.0	54.9	55.7	54.7	1.10	Cloudy

Monitoring Location: NM2 (CUHK Residence No.10)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
04/02/03	19:46	53.7	53.5	54.2	54.6	54.7	55.8	52.0	51.8	52.0	1.61	Cloudy
11/02/03	19:48	54.2	54.1	53.5	56.0	55.6	54.4	52.1	52.0	51.7	2.78	Cloudy
18/02/03	20:36	55.3	54.7	55.0	55.8	55.6	56.3	53.4	52.1	52.6	1.60	Fine
25/02/03	20:10	59.0	58.7	58.8	60.7	60.5	61.0	57.6	57.4	57.3	0.70	Cloudy

Monitoring Location: NM3 (Cheung Shue Tan Village)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
04/02/03	19:20	47.3	46.8	47.1	47.5	47.1	47.9	45.6	45.4	45.4	1.19	Cloudy
11/02/03	19:23	50.6	49.4	49.7	51.2	50.6	50.4	48.2	47.9	47.8	1.33	Cloudy
18/02/03	20:14	53.5	51.8	52.4	55.1	53.4	53.8	51.0	49.6	50.7	0.42	Fine
25/02/03	20:37	51.9	52.2	52.0	52.8	53.0	52.5	50.1	49.7	49.7	0.40	Cloudy

Holiday Noise Monitoring

Monitoring Location: NM1 (HKIB Staff Accommodation)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
02/02/03*	---	---	---	---	---	---	---	---	---	---	---	---
09/02/03	15:58	63.2	62.4	62.0	64.0	63.6	63.5	60.5	60.1	59.7	0.35	Fine
16/02/03	11:17	53.5	51.9	57.8	54.8	53.3	60.7	48.5	49.3	50.6	1.02	Cloudy
23/02/03	14:00	58.4	61.4	60.7	61.3	63.8	64.0	56.1	56.5	56.4	0.80	Cloudy

Remark (*): The noise monitoring cancelled due to no construction works.

Monitoring Location: NM2 (CUHK Residence No.10)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
02/02/03*	---	---	---	---	---	---	---	---	---	---	---	---
09/02/03	16:32	56.5	56.6	55.8	57.8	57.6	57.2	53.9	54.1	53.6	0.50	Fine
16/02/03	11:42	56.7	55.9	57.3	59.4	58.0	60.1	53.7	53.0	53.2	1.14	Cloudy
23/02/03	13:35	59.2	60.7	61.1	62.6	64.1	64.3	55.3	56.0	56.7	0.70	Cloudy

Remark (*): The noise monitoring cancelled due to no construction works.

Monitoring Location: NM3 (Cheung Shue Tan Village)

Date	Start Sampling Time	Noise Level dB (A)									Wind Speed (m/s)	Weather Condition
		$L_{eq}(5)$			L10			L90				
02/02/03*	---	---	---	---	---	---	---	---	---	---	---	---
09/02/03	15:18	54.6	53.0	53.4	55.2	54.3	54.3	51.8	51.3	51.6	0.27	Fine
16/02/03	14:30	52.4	50.9	51.7	53.9	52.1	54.0	47.3	48.2	47.7	0.64	Cloudy
23/02/03	13:08	55.3	51.9	50.3	58.1	56.1	54.0	48.2	45.3	45.1	0.40	Cloudy

Remark (*): The noise monitoring cancelled due to no construction works.

Appendix C3

Graphical Plots of Noise Monitoring Data

Appendix D

Weather Condition

Weather Condition

Date	Rainfall (mm)	Max. Temp (^{o}C)	Min. Temp. (^{o}C)	Relative Humidity (%)	Wind Direction	Wind Speed (m/s)
01/02/03	Trace	22.2	17.7	82	E	<5
02/02/03	-	17.8	14.9	76	NE	<5
03/02/03	Trace	15.9	14.7	80	E	<5
04/02/03	-	17.7	13.0	65	E	<5
05/02/03	-	16.7	12.4	60	E	<5
06/02/03	-	16.6	13.1	73	E	<5
07/02/03	Trace	16.9	15.1	76	N	<5
08/02/03	14.4	20.3	16.0	88	N	<5
09/02/03	-	20.0	17.2	92	NW	<5
10/02/03	-	22.1	18.2	87	NE	<5
11/02/03	-	23.9	18.0	85	N	<5
12/02/03	Trace	18.3	14.8	83	N	<5
13/02/03	Trace	17.1	14.2	80	NE	<5
14/02/03	Trace	18.4	16.1	84	SE	<5
15/02/03	Trace	20.7	17.8	90	E	<5
16/02/03	Trace	24.6	19.7	80	SE	<5
17/02/03	Trace	21.1	17.4	90	E	<5
18/02/03	Trace	21.5	17.6	63	NE	<5
19/02/03	Trace	22.6	18.7	70	NE	<5
20/02/03	Trace	19.8	16.7	76	E	<5
21/02/03	-	19.3	16.8	86	E	<5
22/02/03	-	24.8	18.6	50	E	<5
23/02/03	-	24.1	19.4	55	E	<5
24/02/03	Trace	24.6	19.0	60	NE	<5
25/02/03	Trace	20.2	17.8	88	E	<5
26/02/03	-	23.7	18.8	81	E	<5
27/02/03	Trace	25.7	20.3	48	E	<5
28/02/03	0.7	21.8	19.0	88	E	<5

Remark: Data of wind speed and wind direction were extracted from Hong Kong Observatory (Shatin Station).

Appendix E

Event-Action Plans

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET Leader	**IC(E)**	**ER**	**CNOTRACTOR**
Action Level				
1. Exceedance of one sample	1. Identify source 2. Inform IC(E) and ER 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET 2. Check Contractor's working method.	1. Notify Contractor	1. Rectify any unacceptable practice 2. Amend working methods if possible
2. Exceedance for two more consecutive samples	1. Identify source 2. Inform IC(E) and ER 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with IC(E) and Contractor on remedial actions required 6. If exceedance continuous, arrange meeting with IC(E) and ER 7. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET 2. Check Contactor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervisor implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial action to IC(E) within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if possible
Limit Level				
1. Exceedance of one sample	1. Identify source 2. Inform ER and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results	1. Check monitoring data submitted by ET 2. Check Contractor's working method. 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposal remedial measures 5. Supervisor implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance 2. Submit proposal for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify IC(E), ER, Contractor and EPD 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Arrange meeting with IC(E) and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER to discuss the remedial action to taken 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET, and Contractor on potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with the IC(E), agreed with the Contractor on the remedial measures to be implemented 4. Ensure remedial measures properly implemented 5. If exceedance continues, consider what portion of this work is responsible and instruct the Contract to stop that portion of work until the exceedance is	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if possible still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance if abated.

abated.

Table 3.2d Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET Leader	**IC(E)**	**ER**	**CNOTRACTOR**
Action Level	1. Notify IC(E) and Contractor 2. Carry out investigation 3. Report the results of investigation to the IC(E) and Contractor 4. Discuss with the Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analyzed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analyzed noise problem 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposal to IC(E) 2. Implement noise mitigation proposals
Limit Level	1. Notify IC(E), ER, and Contractor 2. Identify source 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 IC(E), ER and EPD the causes & action taken for the exceedances 7. Assess effectiveness of Contractor's remedial action and keep IC(E), EPD and ER informed to the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advice the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what protion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Appendix F

Construction Programme

Appendix G

Construction Site Area

Appendix H

Summary of the Implementation Status of Mitigation Measures

The Summary of implementation status of Mitigation Measures

Aspect	Mitigation Measures	Implementation Status		
		Y	N	N/A
Air	- The height from which fill materials were dropped was controlled to a practical height to minimize the fugitive dust arising form unloading.	√		
	- During transportation by truck, material was loaded to a level higher than the side and tail boards, and should be dampened or covered before transport.	√		
	- All stockpile of aggregate or spoil were enclosed or covered and water applied in dry or windy condition.		√	
	- Effective water sprays were used on the site at potential dust emission sources such as unpaved area.	√		
	- The haul road was either paved or regular watering.	√		
	- Vehicle speed was limited to 20 km/hr.	√		
	- Adequately designed wheel washing facilities including a high pressure water jet were provided at all main entrance of work site.	√		
Noise	- Only well maintained plant were operated on-site and plant should be serviced regularly during the construction works.	√		
	- Machines and plants that were in intermittent use were shut down between work periods or throttled down to a minimum.	√		
	- Plant known to emit noise strongly in on direction, where possible, were orientated so that the noise is directed away from nearby NSRs.	√		
	- Silencers or mufflers on construction equipment were considered.	√		
Water	- Recirculation system was used to reduce SS from the vehicle wheel washing facility.	√		
	- Fuel tanks on site were housed within drainable trays and regularly drained of rain water.	√		
	- Washing area and road exiting were paved from washing facility.	√		
	- Permanent / Temporary ditches were provided to facilities run-off discharge into the appropriate watercourses, via a sediment trap/sediment retention basin, prior to discharge.	√		
	- Sedimentation tanks with adequate capacity to settle the sand and silt out were provided.	√		
	- Sedimentation tanks were regularly cleaned and maintained in order to control their efficiency and to prevent the recycled water overflow to drains.	√		
	- All drainage facilities were adequate for the controlled release of storm flows.	√		
	- Exposed soil areas were minimized to reduce the potential for increased siltation and contamination of run-off.	√		
	- All chemical stores were contained (bunded) such that spills are not slowed to gain access to water bodies.	√		
	- Chemical toilets were provided to handle the sewage from the on-site construction workforce.	√		

The Summary of implementation status of Mitigation Measures

Aspect	Mitigation Measures	Implementation Status		
		Y	N	N/A
Waste	- Wastes were handle and store in a manner, which ensure that they were held securely without loss or leakage, thereby minimizing the potential for pollution.	√		
	- Authorized or licensed waste hauliers were use to collect the specific category of waste.	√		
	- Wastes were remove in a timely manner.	√		
	- The waste storage areas were maintained and cleaned regularly.	√		
	- Windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers were minimized.	√		
	- Waste disposal permits were obtained form the appropriate authorities.	√		
	- Wastes were disposed at licensed sites.	√		
	- Procedures such as a ticketing system were developed to facilitate tracing of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur.	√		
	- Records of the quantities of wastes generated, recycled and disposal were maintained.	√		
Chemical Waste	- Under the Waste Disposal (Chemical Waste) (General) Regulation, chemical waste producers were registered with EPD.	√		
	- Chemical wastes were transported by a registered chemical waste collector to a facility licensed to receive chemical waste.	√		
	- Containers used for the storage of chemical wastes were:			
	1. - Suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;	√		
	2. - Enclosed on at least 3 sides;	√		
	3. - Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest;	√		
	4. - Have adequate ventilation;	√		
	5. - Covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary);	√		
	6. - Arranged so that incompatible materials are adequately separated.	√		

Appendix I

IEC Comments on Monthly EM&A Report –January 2003

IEC Comments on Monthly Environmental Monitoring and Audit Report – January 2003

Item No.	Document Reference	Comment	ET Response
1	2.3 Construction Programme	Appendix G is not the construction programme. Construction programme should be in Appendix F.	It will be incorporated. (Section 2.3)
2	3.0 1st sentence	There is no Figure H in the report.	It should be "Appendix G" instead of "Figure H". It will be incorporated. (Section 3.0)
3	Table 3.1 Location (Zone L, Q, SRW)	Under the "Major Construction Activity", words seem to be missing after temporary.	Refer to Table 3.1, it should be "Erecting hoarding, signboards and temporary gates" instead of "Erecting hoarding, signboards and temporary".
4	4.2	It is believed that Appendix A1 mentioned in the paragraph should refer to Appendix B1 of the report.	It will be incorporated. (Section 4.2)
5	4.5.3	According to the EM&A Manual (Section 2.3.6), wind data monitoring equipment should be provided and set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. No wind monitoring was mentioned in the report. Please clarify.	According to the Section 3.1.2.6 of EM&A Manual of Remaining Engineering Infrastructure Works for Pak Shek Kok Development (TDD Contract NO. TP 35/02) (Revision 4), "if wind data monitoring equipment is not available, wind data will be obtained from the Web Site of Hong Kong Observatory (HKO), where wind data from the monitoring station at Shatin (near the Horse Race Course) should be applied." Since there have some technical problems to set-up wind data monitoring equipment near the monitoring locations, wind data (wind speed and wind direction) were directly extracted from HKO (Shatin Station) and it was agreed by IEC before the dust impact monitoring started. Wind data was mentioned in the monthly EM&A report (Appendix D).

IEC Comments on Monthly Environmental Monitoring and Audit Report – January 2003

Item No.	Document Reference	Comment	ET Response
6	4.7	Should read as Appendix E.	It will be incorporated. (Section 4.7)
7	5.1	Please delete “for 1-hr TSP monitoring”	It will be incorporated. (Section 5.1)
8	5.2 (Table 5.1)	The model of calibrator stated in Table 5.1 does not match the model calibrated (Appendix C2)	The Calibrator model should be NC-73 Sound Level Calibrator instead of NL-73 Sound Level Meter. It will be incorporated. (Table 5.1)
9	5.7	Should read as Appendix E.	It will be incorporated. (Section 5.7)
10	5.4	Table 5.4 indicated the noise monitoring programme, night time monitoring was not stated. Please clarify whether any construction work was carried out during night time. If so, night time monitoring should be carried out.	Since there were no construction works carried out during night-time in January 2003, no night-time noise monitoring was required. The night-time monitoring programme will be incorporated. (Table 5.4).
11	5.8	As the Action Limit (Noise level) is determined by any documented complaint, the report did not mention documented complaint received of the reporting month although Section 6.2 indicated that no environmental complaints were received. The report should also indicate any documented compliant was received for noise level, thus determine any exceedance of Action Level.	It will be incorporated. (Section 5.8).
12	8.1	Appendix E1 was not found.	It should be “Appendix H” instead of “Appendix E1”. The weekly audit findings were present as summary of the implementation status of the mitigation measures on waste management. (Appendix H)

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Item No.	Document Reference	Comment	ET Response
13	9.1	Appendix I was not found. Should it be read as Appendix H?	Refer to Section 9.1, it should be "Appendix H" instead of "Appendix I". It will be revised and incorporated. (Section 9.1)
14	Section 9.1	Please specify what are the required mitigation measures implemented in the 3rd paragraph.	The required mitigation measures mean the mitigation measures stated in Appendix H.
15	Appendix B2	Please explain how the maximum, minimum and average values were obtained from 1-hour dust monitoring equipment.	The procedure for obtaining maximum, minimum and average values from dust meter have indicated at Section 4.5.2.
16	Appendix C1	There is only IEC 651:1979(Type 1) specification mentioned in the calibration report. However, according to EPD's technical memorandum, sound level meters shall comply with IEC 651:1979 (Type 1) and 804: 1985 (Type 1). Therefore, calibration is required for IEC 804:1985.	The sound level meter (Rion NL-14) used for noise monitoring can be applicable with both IEC 651:1979 (Type I) and IEC 804:1985 (Type 1) according to the Manufacturer's information. After checking the calibration laboratory, it finds that the sound level meter can also be calibrated under IEC 804:1985 (Type 1) specification. Hence, sound level meter will be sent to the calibration laboratory for re-calibration and then the calibration report complied with both IEC specifications will be submitted.

Figures